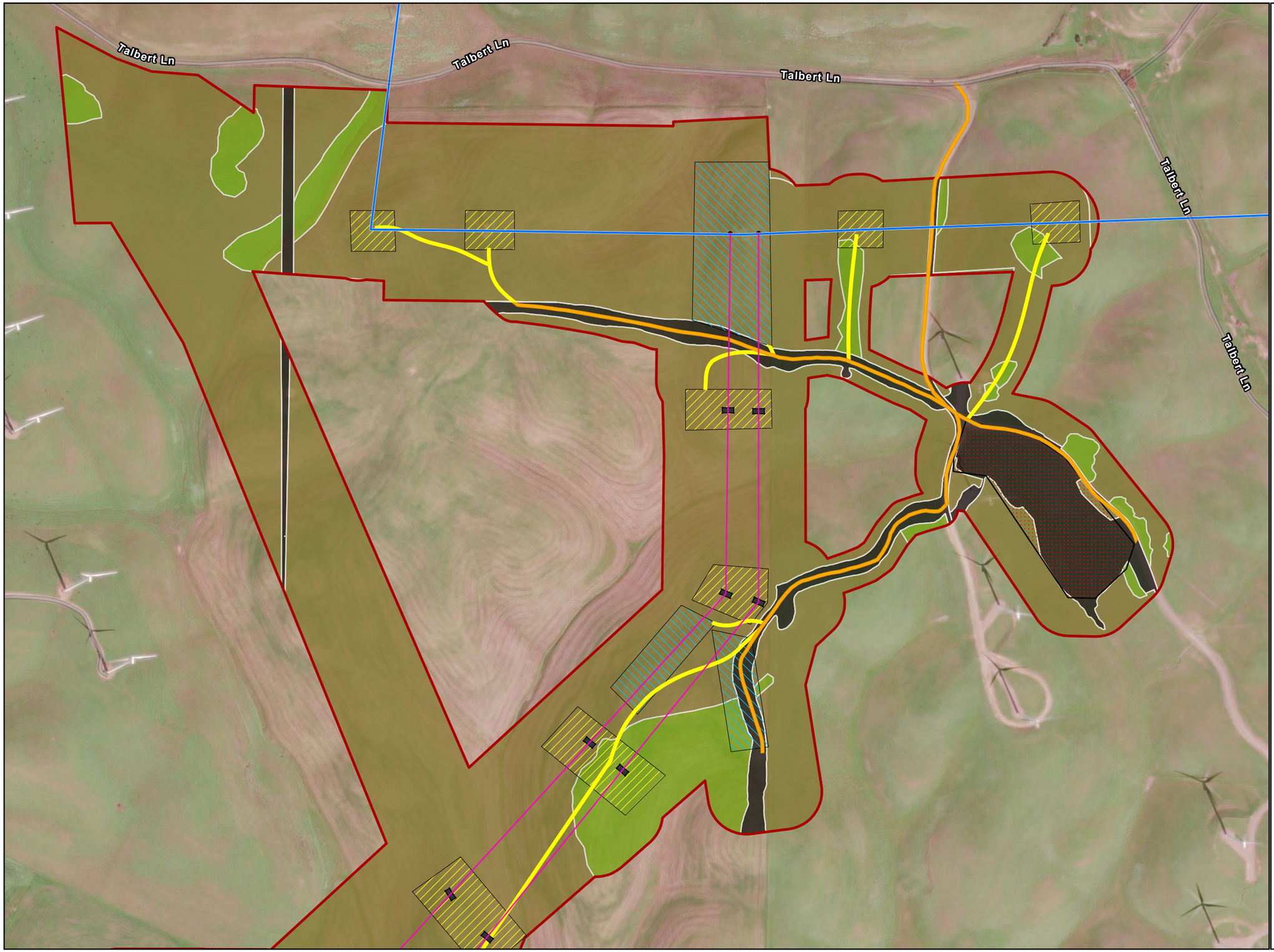
APPENDIX F

Biological Resources Supplemental Information

Appendix F.1	**Proposed Project Biological Resources Map Series**
Appendix F.2	**Biological Resources Technical Reports**
Appendix F.3	**Aquatic Resources Technical Report**
Appendix F.4	**Bumblebee Habitat Assessment**
Appendix F.5	**NOAA NMFS Biological Assessment**
Appendix F.6	**Alternatives Biological Resources Map Series**
Appendix F.7	**Species Potential to Occur Tables for Alternatives 1 and 2**
Appendix F.8	**Biological Resources Technical Report Addendum (Alternative 6a/6b)**
Appendix F.9	**Species Potential to Occur Tables for Alternatives 4 and 6a/6b**
Appendix F.10	**Breeding Season Burrowing Owl Survey Report**
Appendix F.11	**PG&E Preliminary Delineation of Aquatic Resources**

APPENDIX F.1

Proposed Project Biological Resources Map Series



Vegetation Community Maps (1 of 11)

- Biological Study Area
- Proposed PG&E 500 kV Interconnection Lines (Overhead)
- Existing PG&E Vaca Dixon-Tesla 500 kV Line

Project Feature Footprint (Permanent Impact)

- Overhead/Underground Structure

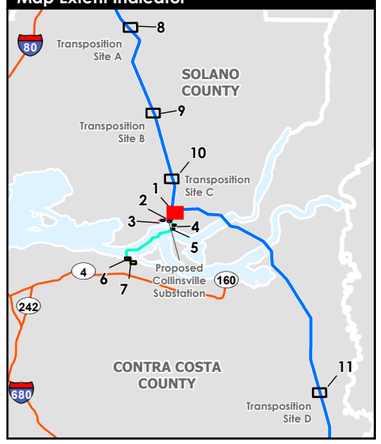
Construction Work Areas (Temporary Impact)

- Construction Access (Existing)
- Construction Access (Overland)
- Overhead/Underground Structure Construction
- Pulling Site
- Staging Area

Vegetation Communities

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- Road

Map Extent Indicator



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Vegetation Community Maps (2 of 11)

Biological Study Area
Proposed Collinsville Substation
Proposed LSPGC 230 kV Line (Overhead Segment)
Proposed PG&E 12 kV Line (Overhead)
Proposed PG&E 500 kV Interconnection Lines (Overhead)

Project Feature Footprint (Permanent Impact)

Overhead/Underground Structure
Substation Features
Substation Grading Limits (Maximum)

Construction Work Areas (Temporary Impact)

Construction Access (Existing)
Construction Access (Overland)
Overhead/Underground Structure Construction
Pulling Site
Staging Area
Sensitive Natural Communities

Vegetation Communities

Brassica nigra - Centaurea (solstitialis, melitensis) Herbaceous Semi-Natural Alliance
Distichlis spicata - Frankenia salina Coastal Herbaceous Alliance
Lolium perenne Herbaceous Semi-Natural Alliance
Polygonum lapathifolium - Xanthium strumarium Herbaceous Alliance
Rosa californica Shrubland Alliance
Sarcocornia pacifica Herbaceous Alliance
Schoenoplectus (acutus, californicus) Herbaceous Alliance
Schoenoplectus americanus Herbaceous Alliance
Typha (angustifolia, domingensis, latifolia) Herbaceous Alliance
Bare Ground
Road

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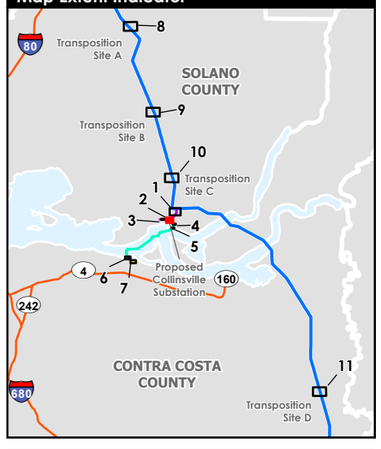

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Vegetation Community Maps (3 of 11)

Collinsville Rd

bruzzini Hill Rd

Stratton Ln

Stratton Ln

Stratton Ln

Stratton Ln

Stratton Ln

Collinsville Rd

- Biological Study Area
- Proposed PG&E 12 kV Line (Overhead)

Project Feature Footprint (Permanent Impact)

- Overhead/Underground Structure

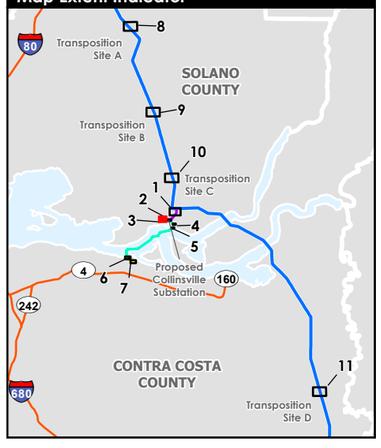
Construction Work Areas (Temporary Impact)

- Overhead/Underground Structure Construction
- Sensitive Natural Communities

Vegetation Communities

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Distichlis spicata - Frankenia salina* Coastal Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Sarcocornia pacifica* Herbaceous Alliance
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- Bare Ground
- Developed
- Road

Map Extent Indicator



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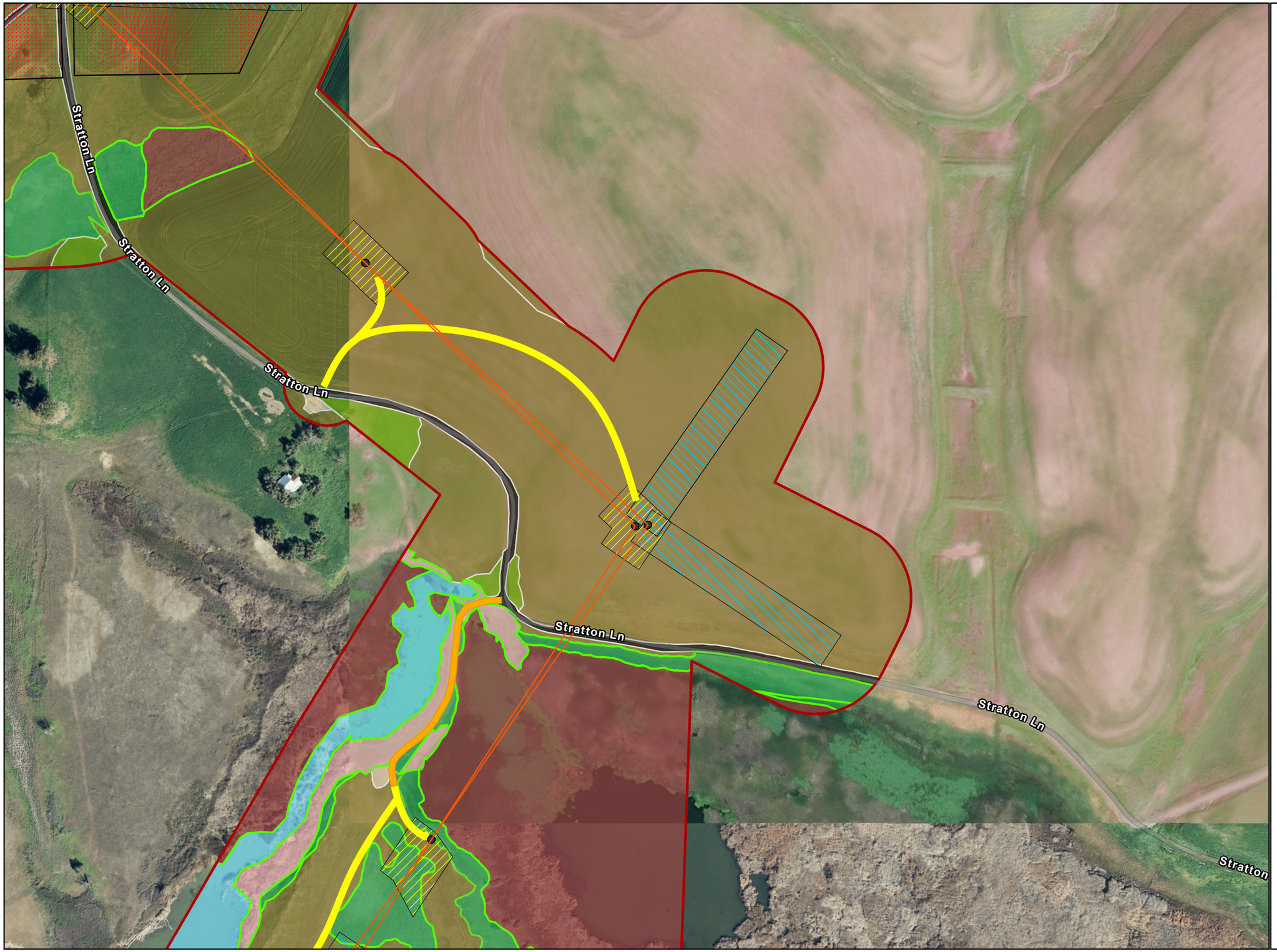


Vegetation Community Maps (4 of 11)

- Biological Study Area
- Proposed LSPGC 230 kV Line (Overhead Segment)

Project Feature Footprint (Permanent Impact)

- Overhead/Underground Structure

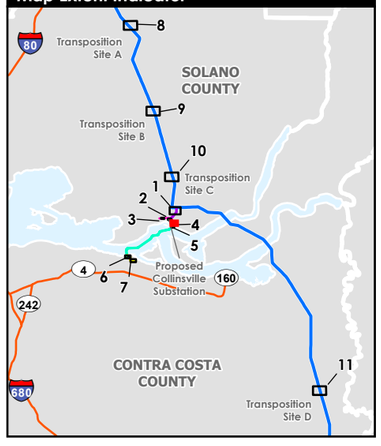
Construction Work Areas (Temporary Impact)

- Construction Access (Existing)
- Construction Access (Overland)
- Overhead/Underground Structure Construction
- Pulling Site
- Staging Area
- Sensitive Natural Communities

Vegetation Communities

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Distichlis spicata - Frankenia salina* Coastal Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Rosa californica* Shrubland Alliance
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- Open Water
- Bare Ground
- Road

Map Extent Indicator



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Vegetation Community Maps (5 of 11)

Biological Study Area

Proposed LSPGC 230 kV Line (Overhead Segment)

Proposed LSPGC 230 kV Line (Submarine Segment)

Project Feature Footprint (Permanent Impact)

Overhead/Underground Structure

Construction Work Areas (Temporary Impact)

Construction Access (Existing)

Construction Access (Overland)

Overhead/Underground Structure Construction

Pulling Site

Sensitive Natural Communities

Vegetation Communities

Distichlis spicata - Frankenia salina Coastal Herbaceous Alliance

Juncus Arcticus (var. balticus, mexicanus) Herbaceous Alliance

Lolium perenne Herbaceous Semi-Natural Alliance

Rosa californica Shrubland Alliance

Salix exigua Shrubland Alliance

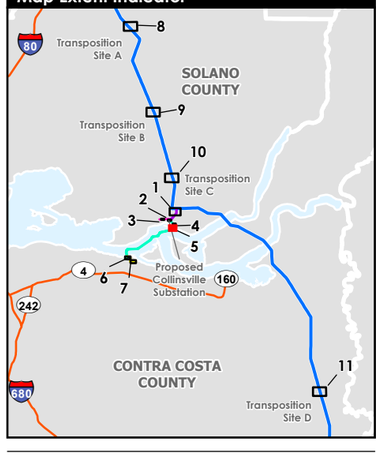
Schoenoplectus (acutus, californicus) Herbaceous Alliance

Schoenoplectus californicus - Schoenoplectus acutus / Rosa californica Association

Open Water

Bare Ground

Map Extent Indicator



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Vegetation Community Maps (6 of 11)

- Biological Study Area
- Existing Pittsburg Substation
- Proposed LSPGC 230 kV Line (Submarine Segment)
- Proposed LSPGC 230 kV Line (Underground Segment)
- Proposed LSPGC Telecommunication Interconnection Lines (Underground)

Project Feature Footprint (Permanent Impact)

- Overhead/Underground Structure

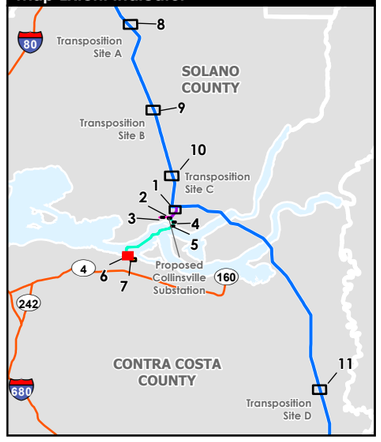
Construction Work Areas (Temporary Impact)

- Overhead/Underground Structure Construction
- Staging Area
- Sensitive Natural Communities

Vegetation Communities

- *Baccharis pilularis* Shrubland Alliance
- *Juncus Arcticus (var. balticus, mexicanus)* Herbaceous Alliance
- *Lepidium latifolium – Lactuca serriola* Herbaceous Alliance
- Ornamental Vegetation
- Rip Rap
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- Open Water
- Bare Ground
- Developed
- Disturbed

Map Extent Indicator



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Vegetation Community Maps (7 of 11)

- Biological Study Area
- Existing Pittsburg Substation
- Proposed LSPGC Telecommunication Interconnection Lines (Underground)

Project Feature Footprint (Permanent Impact)

- Overhead/Underground Structure

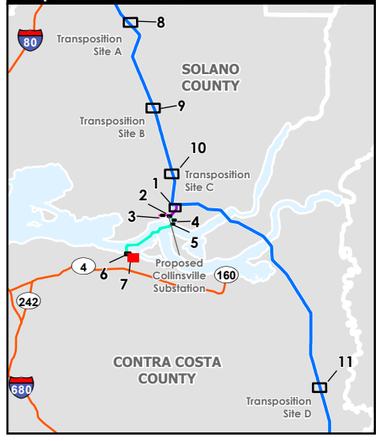
Construction Work Areas (Temporary Impact)

- Overhead/Underground Structure Construction
- Staging Area

Vegetation Communities

- Ornamental Vegetation
- Developed
- Disturbed

Map Extent Indicator



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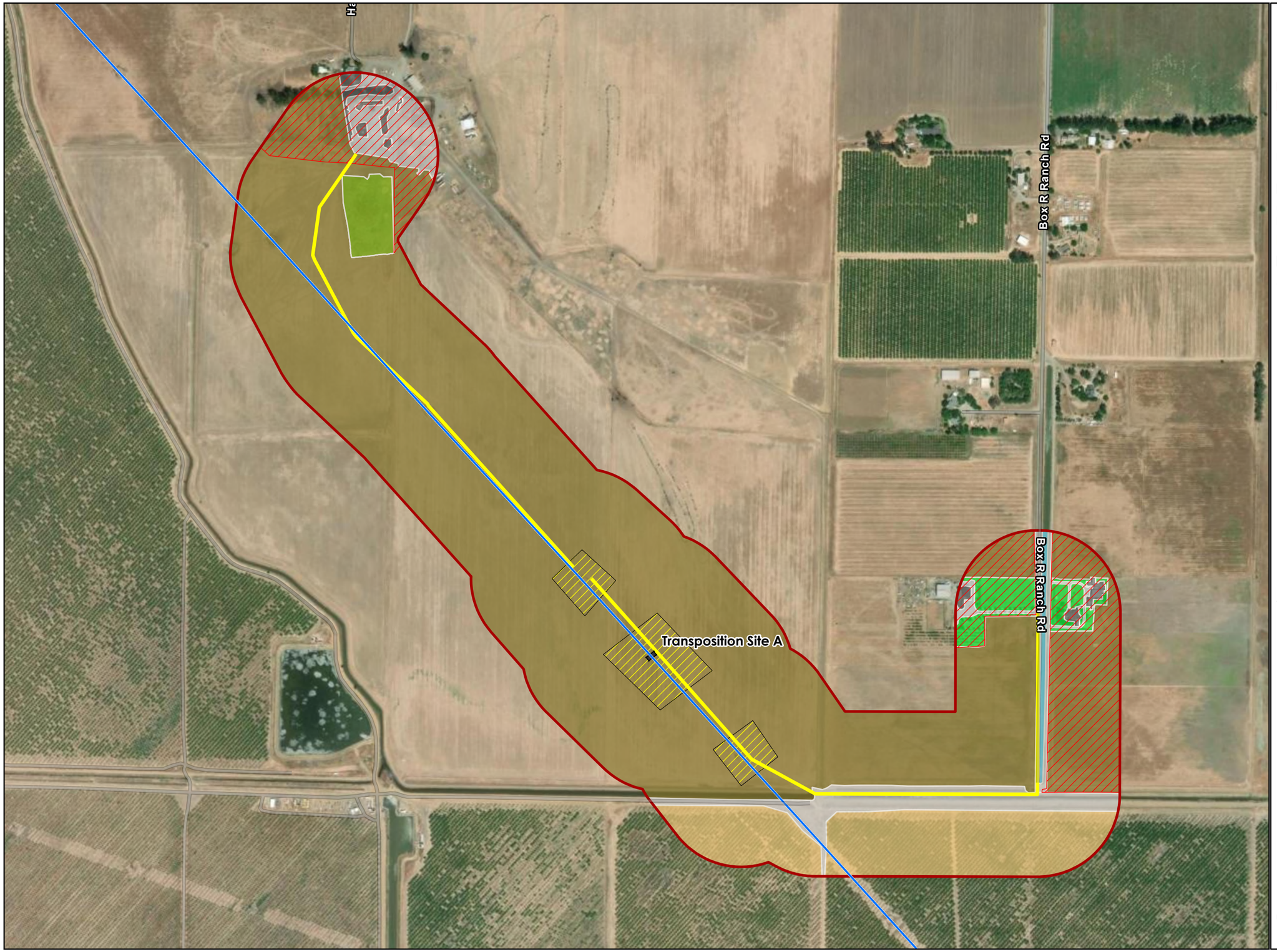


Vegetation Community Maps (8 of 11)

- Biological Study Area
- Limited Survey Access
- Existing PG&E Vaca Dixon-Tesla 500 kV Line

Project Feature Footprint (Permanent Impact)

- Overhead/Underground Structure

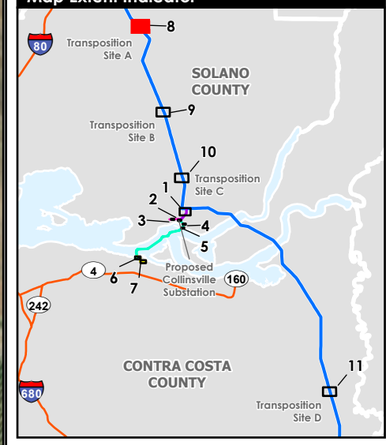
Construction Work Areas (Temporary Impact)

- Construction Access (Overland)
- Overhead/Underground Structure Construction

Vegetation Communities

- Agriculture
- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- Ornamental Vegetation
- Open Water
- Developed
- Disturbed

Map Extent Indicator



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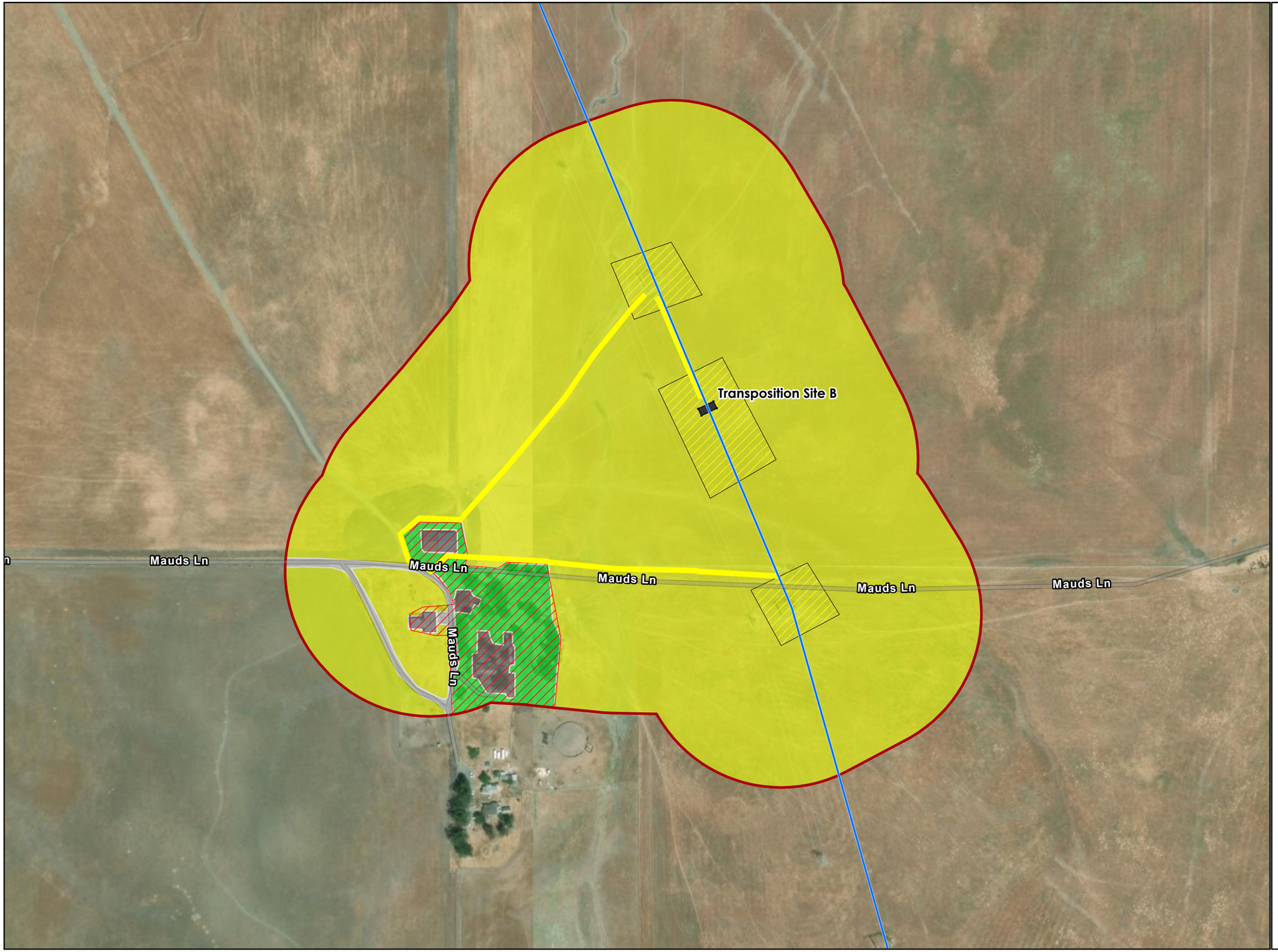


Vegetation Community Maps (9 of 11)

- Biological Study Area
- Limited Survey Access
- Existing PG&E Vaca Dixon-Tesla 500 kV Line

Project Feature Footprint (Permanent Impact)

- Overhead/Underground Structure

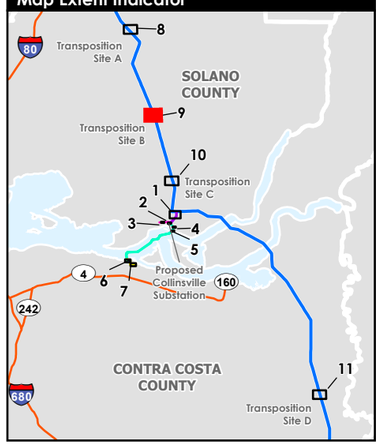
Construction Work Areas (Temporary Impact)

- Construction Access (Overland)
- Overhead/Underground Structure Construction

Vegetation Communities

- *Avena spp. - Bromus spp.* Heraceous SNA
- Ornamental Vegetation
- Developed
- Disturbed

Map Extent Indicator



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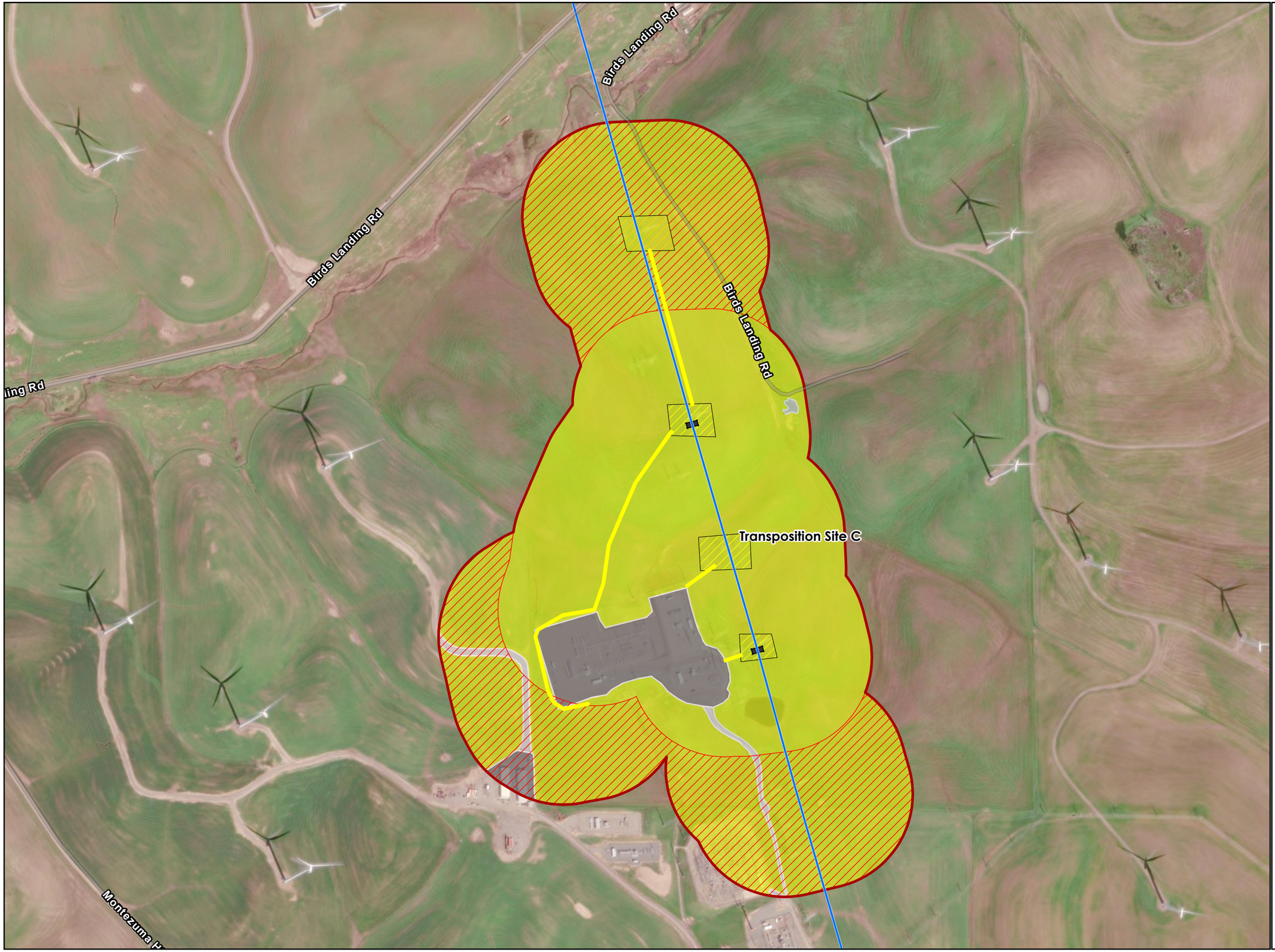


Vegetation Community Maps (10 of 11)

Biological Study Area

Limited Survey Access

Existing PG&E Vaca Dixon-Tesla 500 kV Line

Project Feature Footprint (Permanent Impact)

Overhead/Underground Structure

Construction Work Areas (Temporary Impact)

Construction Access (Overland)

Overhead/Underground Structure Construction

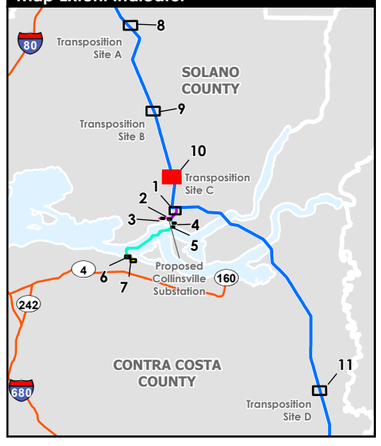
Vegetation Communities

Avena spp. - Bromus spp. Heraceous SNA

Developed

Disturbed

Map Extent Indicator



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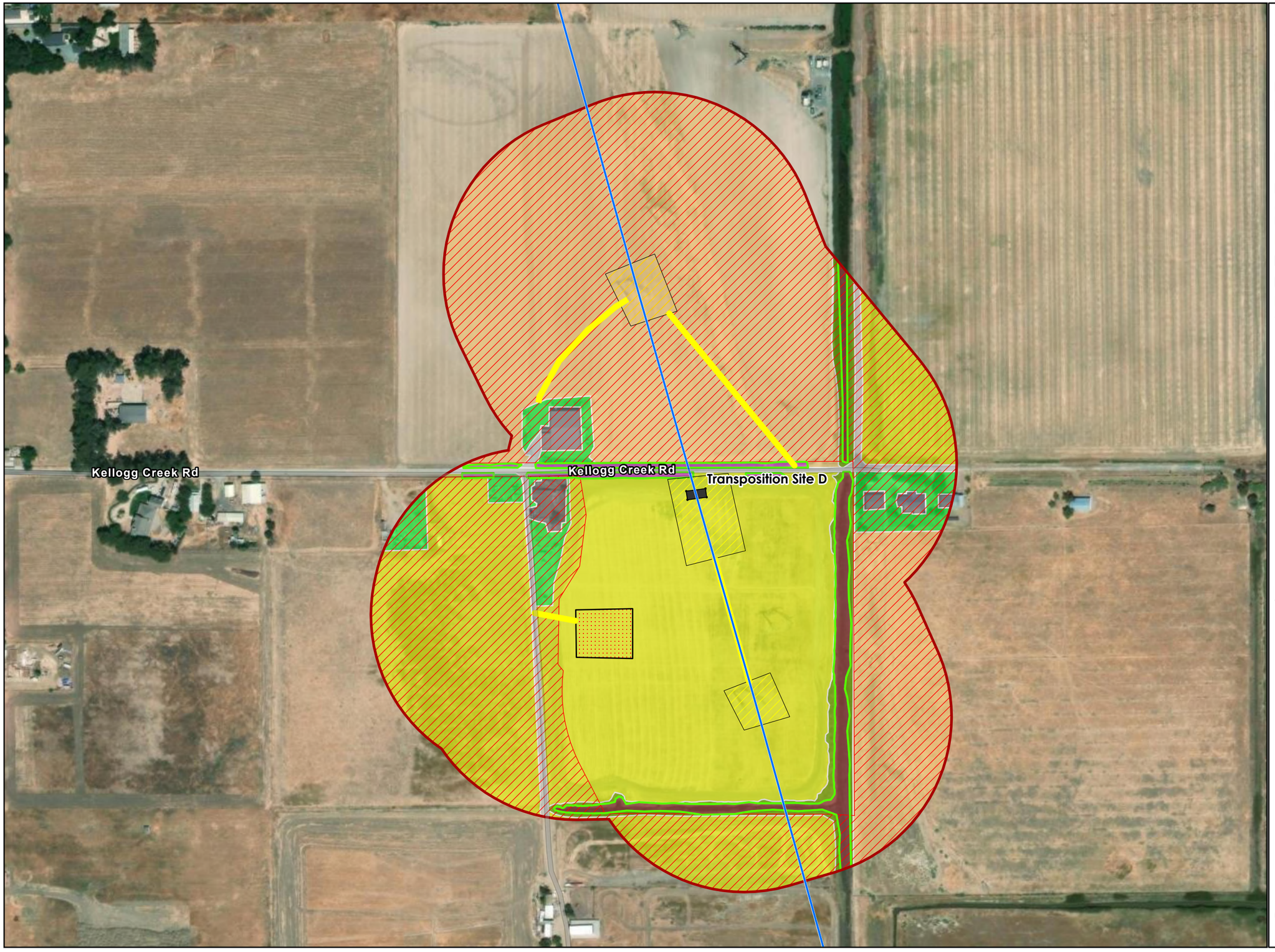


Vegetation Community Maps (11 of 11)

- Biological Study Area
- Limited Survey Access
- Existing PG&E Vaca Dixon-Tesla 500 kV Line

Project Feature Footprint (Permanent Impact)

- Overhead/Underground Structure

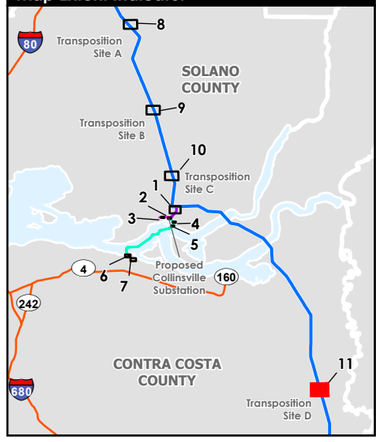
Construction Work Areas (Temporary Impact)

- Construction Access (Overland)
- Overhead/Underground Structure Construction
- Staging Area
- Sensitive Natural Communities

Vegetation Communities

- Agriculture
- *Allenrolfea occidentalis* Shrubland Alliance
- *Avena spp. - Bromus spp.* Heraceous SNA
- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- Ornamental Vegetation
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- Developed
- Disturbed

Map Extent Indicator



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APPENDIX F.2

Biological Resources Technical Reports

INSIGNIA ENVIRONMENTAL

LS POWER GRID CALIFORNIA, LLC

COLLINSVILLE 500/230 KILOVOLT SUBSTATION PROJECT

TERRESTRIAL BIOLOGICAL RESOURCES TECHNICAL REPORT

SEPTEMBER 2025

PREPARED FOR:

LS POWER GRID CALIFORNIA

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Attachment A: Collinsville Terrestrial Biological Resources Technical Report Addendum
Attachment B: Collinsville 500/230 Kilovolt Substation Project Aquatic Resources Delineation Report
Attachment C: Collinsville 500/230 Kilovolt Substation Project Botanical Survey Report
Attachment D: Collinsville 500/230 Kilovolt Substation Project Botanical Survey Report Addendum
Attachment E: Biological Resources Map
Attachment F: Habitat Assessment Photographs
Attachment G: CNDDB Occurrences of Special-Status Plant Species
Attachment H: CNDDB Occurrences of Special-Status Wildlife Species
Attachment I: Linear Water Feature Photographs
Attachment J: Wetland Feature Photographs
Attachment K: Potentially Jurisdictional Water Features Table
Attachment L: National Wetlands Inventory Map

1 – INTRODUCTION

LS Power Grid California, LLC (LSPGC) retained Insignia Environmental (Insignia) to conduct a pre-project survey for the Collinsville 500/230 Kilovolt (kV) Substation Project (Proposed Project). The Proposed Project would involve the construction of a new 500/230 kV substation (Collinsville Substation), the construction of two new 500 kV single-circuit transmission line segments that will loop Pacific Gas and Electric Company's (PG&E's) existing Vaca Dixon-Tesla 500 kV Transmission Line into the proposed Collinsville Substation, and the construction of one new 230 kV double-circuit transmission line that will connect the proposed Collinsville Substation to PG&E's existing Pittsburg Substation. The Proposed Project's general location is depicted in Figure 1: Project Overview Map and the Proposed Project components located within the survey area associated with this report are depicted in Figure 2: Project Components Map. The Proposed Project has been designed to address overloads on the existing Contra Costa-Newark 230 kV corridor and provide an additional supply into the northern greater San Francisco Bay Area to increase reliability to the area and advance additional renewable generation.

This Biological Resources Technical Report was prepared to identify any existing or potentially sensitive biological resources. (e.g., vegetation communities, hydrologic features, and special-status plant and animal species and their associated habitats) that may be present within or adjacent to the Proposed Project's survey area.[1]

2 – PROJECT DESCRIPTION

2.0 PROJECT LOCATION

As depicted in Figure 2: Project Components Map, the Collinsville Substation will be near the unincorporated community of Collinsville, located in the southwestern portion of Solano County. The survey area is bordered on the south and southwest by the Sacramento River, where it debouches into the Suisun Bay; on the west by the Montezuma Hills and Suisun Marsh; and to the north and east by agricultural lands. The Proposed Project will create a connection to the existing Pittsburg Substation located in the City of Pittsburg in the northern portion of Contra Costa County.

2.1 PROJECT COMPONENTS

The main components of the Proposed Project are depicted on Figure 2: Project Components Map and include the following:

- Constructing a new 500/230 kV substation (the proposed LSPGC Collinsville Substation).

[1] The survey area primarily consists of all terrestrial areas of the Proposed Project area north of the Sacramento River, as well as an approximately 10-acre buffer. Terrestrial areas south of Suisun Bay, in the vicinity of PG&E's existing Pittsburgh Substation, comprise a small portion of the survey area.

- Constructing two new approximately 1.2-mile-long, single-circuit 500 kV transmission line segments extending to interconnect (or "loop") PG&E's existing Vaca Dixon-Tesla 500 kV Transmission Line into the proposed LSPGC Collinsville Substation.

- Constructing a new approximately 6-mile-long, double-circuit 230 kV transmission line to connect the proposed LSPGC Collinsville Substation to PG&E's existing Pittsburg Substation.

- Extending and connecting PG&E's existing 12 kV Peabody 2107 Circuit distribution line to the proposed LSPGC Collinsville Substation.

- Constructing two new telecommunications paths to the proposed LSPGC Collinsville Substation, including a new microwave tower that would be constructed and owned by PG&E at the proposed substation, as well as a new fiber optic path consisting of two fiber optic cables for redundancy that would be installed between existing fiber in the city of Pittsburg and the proposed substation.

- Constructing three new PG&E 500 kV transposition structures, removing two existing lattice steel poles (LSPs), and replacing two existing lattice steel towers with two new three-pole dead-end tubular steel poles along PG&E's existing Vaca Dixon-Tesla 500 kV Transmission Line.

All biological resource studies, including an assessment of any additional regulatory framework, associated with the PG&E 500 kV transposition structures are documented in Attachment A: Collinsville Terrestrial Biological Resources Technical Report Addendum. As a result, they are not discussed further in this report. The transposition structures are depicted on Figure 1: Project Overview Map and Figure 2: Project Components Map to provide regional context.

3 – REGULATORY FRAMEWORK

3.0 FEDERAL

3.0.0 Federal Endangered Species Act

The federal Endangered Species Act (FESA) protects plant and wildlife species that are listed as endangered or threatened by the United States (U.S.) Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration's (NOAA's) National Marine Fisheries Service (NOAA Fisheries).

Under Section 9 of the FESA, any take of endangered wildlife is prohibited; "take" is defined as to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in such conduct" (16 U.S. Code [U.S.C.] 1532[19] and 1538). This can also include the modification of a species' habitat. For plants, this statute governs removing, possessing, maliciously damaging, or destroying any listed plant on federal land, as well as removing,

Figure 1: Project Overview Map — **Collinsville 500/230 Kilovolt Substation Project**

- Proposed LSPGC Collinsville Substation
- Existing PG&E Pittsburg Substation
- Proposed PG&E 500 kV Transposition Structure
- Proposed Project Transmission Lines
- Proposed PG&E 12 kV Distribution Line
- Proposed LSPGC Telecommunications Line
- Existing PG&E Vaca Dixon-Tesla Transmission Line
- Navigational Channel

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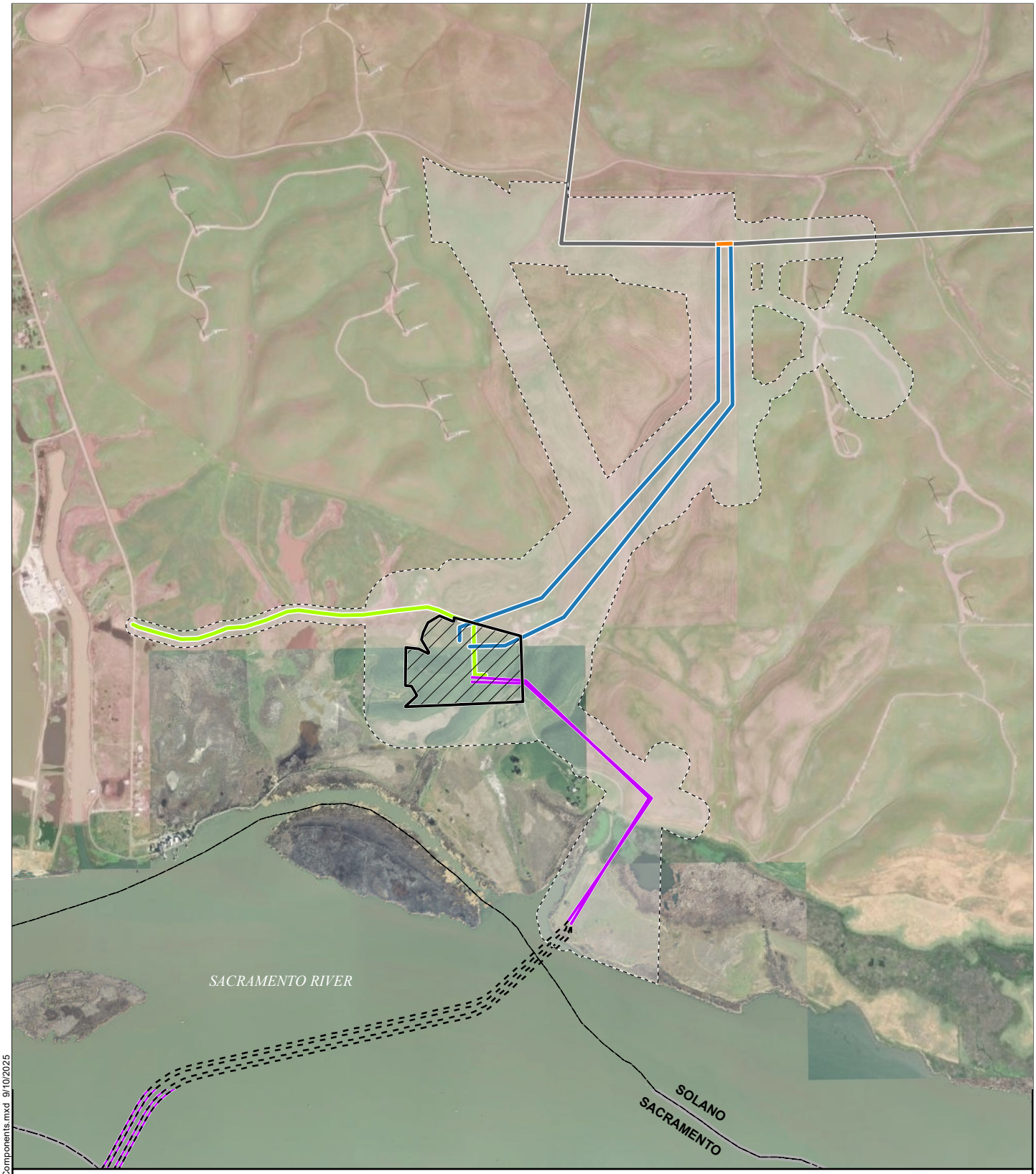

Figure 2: Project Components Map 1 of 6 **Collinsville 500/230 Kilovolt Substation Project**

- Existing PG&E 500 kV Overhead Transmission Line
- Proposed LSPGC 230 kV Overhead Segment
- Proposed LSPGC 230 kV Submarine Segment
- Proposed PG&E 12 kV Distribution Line
- Proposed PG&E 500 kV Interconnection
- Existing PG&E 500 kV Overhead Transmission Line to be Removed
- County Boundary
- Survey Area
- Proposed Collinsville Substation

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LS Power INSIGNIA ENVIRONMENTAL

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Figure 2: Project Components Map 2 of 6 **Collinsville 500/230 Kilovolt Substation Project**

- Proposed LSPGC 230 kV Submarine Segment
- Proposed LSPGC 230 kV Underground Segment
- Proposed LSPGC Telecommunications Line
- Survey Area
- Existing PG&E Pittsburg Substation
- Proposed Riser
- Proposed Utility Vault

1:8,000

0 500 1,000 Feet

LS Power INSIGNIA ENVIRONMENTAL

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Figure 2: Project Components Map 3 of 6 **Collinsville 500/230 Kilovolt Substation Project**

- Proposed PG&E 500 kV Transposition Structure
- Existing PG&E 500 kV Overhead Transmission Line
- Survey Area

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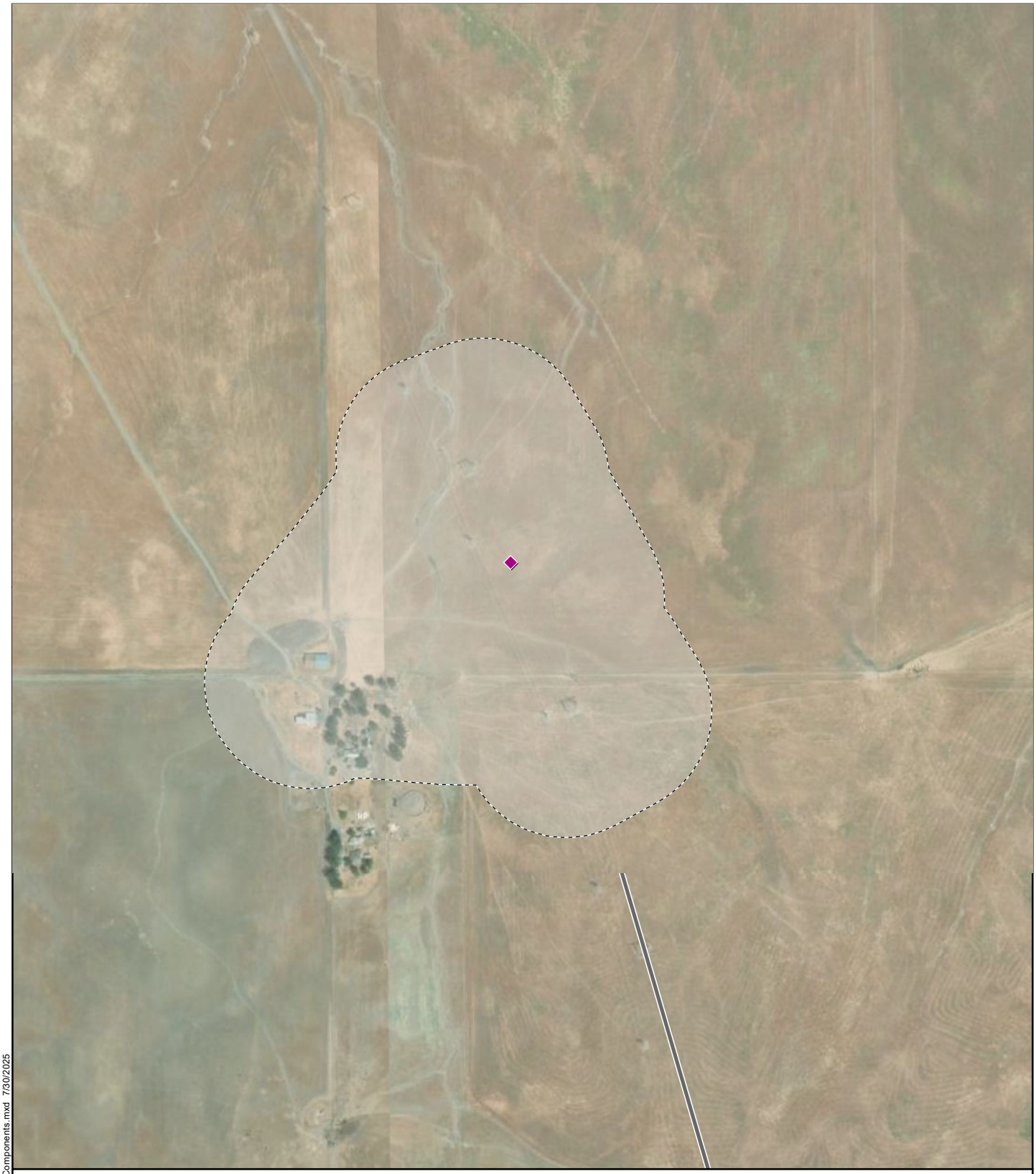

Figure 2: Project Components Map 4 of 6 **Collinsville 500/230 Kilovolt Substation Project**

- Proposed PG&E 500 kV Transposition Structure
- Existing PG&E 500 kV Overhead Transmission Line
- Survey Area

1:8,000

0 500 1,000 Feet

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Figure 2: Project Components Map 5 of 6 **Collinsville 500/230 Kilovolt Substation Project**

- Proposed PG&E LSP Removal
- Proposed PG&E Three-Pole Dead-End TSP
- Existing PG&E 500 kV Overhead Transmission Line
- Survey Area

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Figure 2: Project Components Map 6 of 6 **Collinsville 500/230 Kilovolt Substation Project**

- Proposed PG&E 500 kV Transposition Structure
- Existing PG&E 500 kV Overhead Transmission Line
- Survey Area

1:8,000

0 500 1,000 Feet

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cutting, digging up, damaging, or destroying any listed plant on non-federal land in knowing violation of state law (16 U.S.C. 1538[c]). Under Section 7 of the FESA, federal agencies are required to consult with the USFWS and/or NOAA Fisheries if their actions, including permit approvals or federal funding, could adversely affect a listed species (including plants) or its critical habitat. Through Section 7 consultation and the issuance of a Biological Opinion, the USFWS and/or NOAA Fisheries may issue an incidental take permit, allowing take of the species that is incidental to another authorized activity, provided that the action will not jeopardize the continued existence of the species.

Section 10 of the FESA provides for the issuance of incidental take permits for private actions that have no federal involvement through the development of a Habitat Conservation Plan (HCP).

3.0.1 Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (MBTA) recognizes international treaties between the U.S. and other countries that have afforded protection to migratory birds and any of their parts, eggs, and nests, from activities such as hunting, pursuing, capturing, killing, selling, and shipping, unless expressly authorized in the regulations or by permit. The MBTA prohibits acts to "pursue, hunt, take, capture, or kill, or attempt to take, capture, or kill" migratory birds and a range of buying, selling, and transporting activities (16 U.S.C. 703). "Take" is defined as "to pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to pursue or collect" a bird. Birds, nests, and eggs are all protected. The regulations governing migratory bird permits can be found in Title 50, Part 13 (General Permit Procedures) and Part 21 (Migratory Bird Permits) of the Code of Federal Regulations.

3.0.2 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (BGEPA) affords additional legal protection to bald eagles and golden eagles. This law prohibits the take, sale, purchase, barter, offer of sale, purchase, or barter, transport, export or import, at any time or in any manner of any bald or golden eagle, alive or dead, or any part, nest, or egg thereof (16 U.S.C. 668-668d). The BGEPA also defines "take" to include "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb," and includes criminal and civil penalties for violating the statute. The USFWS further defines the term "disturb" as agitating or bothering an eagle to a degree that causes or is likely to cause injury, or a decrease in productivity or nest abandonment by substantially interfering with normal breeding, feeding, or sheltering behavior.

3.0.3 Clean Water Act

Section 404

Section 404 of the Clean Water Act (CWA) requires project proponents to obtain a permit from the U.S. Army Corps of Engineers (USACE) before performing any activity involving a discharge of dredged or fill material into waters of the U.S. Waters of the U.S. include the following:

- navigable waters of the U.S.,
- interstate waters,

- all other waters where the use or degradation or destruction of the waters could affect interstate or foreign commerce,
- tributaries to any of these waters, and
- wetlands that meet any of these criteria or that are adjacent to any of these waters or their tributaries.

Many surface waters and wetlands in California meet the criteria for waters of the U.S.

Section 402

CWA Section 402 regulates construction-related storm water discharges to surface waters through the National Pollutant Discharge Elimination System program, which is administered by the U.S. Environmental Protection Agency (EPA). In California, the State Water Resources Control Board is authorized by the EPA to oversee the program through the Regional Water Quality Control Boards (RWQCBs). The Proposed Project is within the jurisdiction of the Central Valley RWQCB (Region 5).

Section 401

Under CWA Section 401(a)(1), the applicant for a federal license or permit to conduct an activity that may result in a discharge into waters of the U.S. must provide the federal licensing or permitting agency with a certification that any such discharge will not violate state water quality standards. The RWQCBs administer the Section 401 program to prescribe measures for projects that are necessary to avoid, minimize, and mitigate adverse effects on water quality and ecosystems.

3.0.4 Plant Protection Act of 2000

Some non-native plant species are officially categorized as “noxious weeds” because they are highly invasive or interfere with an area’s management objectives, or both. Both the U.S. and California governments maintain lists of plants that are considered threats to the well-being of the nation or the state. The Federal Noxious Weed Act of 1974, as amended (7 U.S.C. 2801 et seq.; 88 Stat. 2148), established a federal program to control the spread of noxious weeds. The act was superseded by the federal Plant Protection Act of 2000 (7 U.S.C. 7701 et seq.; 114 Stat. 438), which consolidated and modernized all major statutes pertaining to plant protection and quarantine (e.g., the Federal Noxious Weed Act and Plant Quarantine Act).

The Plant Protection Act revised the original definition of a “noxious weed” as listed in the Federal Noxious Weed Act to include the following:

> “any plant or plant product that can directly or indirectly injure or cause damage to crops (including nursery stock or plant products), livestock, poultry, or other interests of agriculture, irrigation, navigation, the natural resources of the United States, the public health, or the environment.”

Under the Plant Protection Act, the Secretary of Agriculture was authorized to designate plants as “noxious weeds” by regulation, and to prohibit or restrict all such weeds from entering the U.S. or moving through interstate commerce. The secretary was also given authority to inspect, seize, and destroy products and to quarantine areas, if necessary, to prevent the spread of such

weeds. The Secretary of Agriculture was also authorized to cooperate with other federal, state, and local agencies; farmers' associations; and private individuals in measures to control, eradicate, prevent, or retard the spread of such weeds.

3.1 CALIFORNIA

3.1.0 Fish and Game Code Sections 3511, 4700, 5050, and 5515

The state of California first began to designate species as "fully protected" prior to the creation of the California Endangered Species Act (CESA) and the FESA. Lists of fully protected species were initially developed to provide protection to animals (i.e., fish, amphibians, reptiles, birds, and mammals) that were rare or facing possible extinction. Most fully protected species have since been listed as threatened or endangered under the CESA and/or the FESA. Fully protected species may not be taken or possessed at any time, and incidental take permits cannot be issued for these species (California Fish and Game Code Section 4700).

3.1.1 Fish and Game Code Sections 3503, 3503.5, and 3513

California Fish and Game Code Section 3503 states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. Section 3503.5 specifies these protections for birds in the orders Falconiformes and Strigiformes (i.e., raptors). Section 3513 also makes it unlawful to take, possess, or destroy any birds of prey or to take, possess, or destroy the nest or eggs of any such bird.

3.1.2 Porter-Cologne Water Quality Control Act

Under the Porter-Cologne Water Quality Control Act, waters of the state fall under the jurisdiction of the appropriate RWQCB. The RWQCB must prepare and periodically update water quality control plans, also known as basin plans. Each basin plan establishes numerical or narrative water quality objectives to protect established beneficial uses, which include wildlife, fisheries, and their habitats. Projects that affect wetlands or waters of the state, including groundwater, must meet the discharge requirements of the RWQCB, which may be issued in addition to a water quality certification or waiver under Section 401 of the CWA.

3.1.3 Native Plant Protection Act

The Native Plant Protection Act (NPPA) (California Fish and Game Code Sections 1900-1913) was created with the intent to "preserve, protect, and enhance rare and endangered plants in this State." The NPPA is administered by the California Department of Fish and Wildlife (CDFW). The California Fish and Game Commission has the authority to designate native plants as "endangered" or "rare" and to protect them from take. The NPPA also stipulates that no person may take or possess any endangered or rare native plant, or any part or product thereof. However, this does not apply to the removal of endangered or rare native plants within a right-of-way by the owner of the land or his/her agent, nor does it apply to the obligation of a publicly or privately owned public utility to provide service to the public.

3.1.4 California Code of Regulations

Title 14, Section 251.1 of the California Code of Regulations (CCR) restricts the harassment of nongame birds and mammals. Harassment is defined as an intentional act that disrupts an animal's normal behavior patterns, which includes, but is not limited to breeding, feeding, or sheltering. Sections 670.2 and 670.5 list animals designated as "threatened" or "endangered" in California. California Species of Special Concern (SSC) is a category conferred by the CDFW on species that are indicators of regional habitat changes or that are considered potential future protected species. SSCs do not have any special legal status, but this category is intended as a management tool to take these species into special consideration when decisions are made concerning the future of any land parcel.

3.2 LOCAL

The CPUC has sole and exclusive state jurisdiction over the siting and design of the Proposed Project. Pursuant to CPUC General Order 131-D (GO 131-D), Section XIV.B, "Local jurisdictions acting pursuant to local authority are preempted from regulating electric power line projects, distribution lines, substations, or electric facilities constructed by public utilities subject to the CPUC's jurisdiction. However, in locating such projects, the public utilities shall consult with local agencies regarding land use matters" (CPUC, 1995). Consequently, public utilities are directed to consider local regulations and consult with local agencies, but county regulations are not applicable as Solano County does not have jurisdiction over the Proposed Project. This section includes a summary of local biological resources-related policies, plans or programs for informational purposes and to assist with CEQA review. Although LS Power Grid California, LLC (LSPGC) is not subject to local discretionary permitting, ministerial permits would be secured as appropriate.

3.2.0 Solano County General Plan

The Solano County General Plan Conservation Element and Open Space Element (Solano County 2008) include the following policies that may be applicable to resources affected by the Proposed Project:

- Policy RS.P-1: Protect and enhance the county's natural habitats and diverse plant and animal communities, particularly occurrences of special-status species, wetlands, sensitive natural communities, and habitat connections.

- Policy RS.P-2: Manage the habitat found in natural areas and ensure its ecological health and ability to sustain diverse flora and fauna.

- Policy RS.P-3: Focus conservation and protection efforts on high-priority habitat areas depicted in Figure RS-1 [of the Solano County General Plan].

- Policy RS.P-4: Together with property owners and federal and state agencies, identify feasible and economically viable methods of protecting and enhancing natural habitats and biological resources.

- Policy RS.P-5: Protect and enhance wildlife movement corridors to ensure the health and long-term survival of local animal and plant populations. Preserve contiguous habitat areas to increase habitat value and to lower land management costs.

- Policy RS.P-6: Protect oak woodlands and heritage trees and encourage the planting of native tree species in new developments and along road rights-of-way.

- Policy RS.P-7: Preserve and enhance the diversity of habitats in marshes, delta to maintain these unique wildlife resources.

- Policy RS.P-8: Protect marsh waterways, managed wetlands, tidal marshes, seasonal marshes, and lowland and grasslands because they are critical habitats for marsh-related wildlife and are essential to the integrity of the marshes.

- Policy RS.P-9: Encourage restoration of historic marshes to wetland status, either as tidal marshes or managed wetlands. When managed wetlands are no longer used for waterfowl hunting, restore them as tidal marshes.

3.2.1 Habitat Conservation Plans

Solano County Water Agency Solano Multispecies Habitat Conservation Plan

In October 2012, the Solano County Water Agency (SCWA) published a draft of the Solano Multispecies HCP (SCWA 2012), but the HCP has not yet been adopted. The draft HCP establishes a framework for complying with federal and state endangered species regulations while accommodating future urban growth, infrastructure development, and ongoing operations and maintenance for flood control, irrigation facilities, and other public infrastructure undertaken by or under the permitting authority/control of the plan participants in Solano County over the next 30 years (SCWA 2012). A total of 37 species are proposed to be covered under the HCP.

East Contra Costa County Habitat and Natural Community Conservation Plan

The East Contra Costa County Habitat Conservation Plan Association intends to use the East Contra Costa County Habitat and Natural Community Conservation Plan (HNCCP) to protect natural resources in eastern Contra Costa County while improving environmental permitting processes for impacts to endangered species and contributing to their recovery. The East Contra Costa County HNCCP covers the cities of Clayton, Pittsburg, Antioch, Oakley, and Brentwood, and the unincorporated areas between those cities. The Pittsburg Substation falls within the East Contra Costa County HNCCP. The East Contra Costa County HNCCP addresses comprehensive species, wetlands, and ecosystem conservation. Agencies involved with approving permits for endangered species within the county request from USFWS and California Department of Fish and Wildlife (CDFW) to have authorized 30-year take permits for species covered under the federal Endangered Species Act (ESA) and the Natural Community Conservation Planning Act (NCCPA).

PG&E Bay Area Operations and Maintenance Habitat Conservation Plan

This HCP is intended to avoid, minimize, and mitigate temporary and permanent impacts on threatened and endangered species resulting from PG&E's operations and management and minor new construction activities in the Plan Area. It additionally provides the basis for incidental take authorization pursuant to the ESA for PG&E's current and future operations and management activities and minor new construction in the Plan Area.

4 – PRELIMINARY AGENCY CONSULTATION

No pre-survey contact with applicable wildlife agencies was conducted with regards to this BRTR. No agency-approvals were required for biologists conducting surveys. Agency protocols and best practices applied to the survey effort are detailed in Section 5.2 Biological Resource Survey Method.

5 – METHODS

5.0 DEFINITIONS

The following definitions were used to define special-status resources within the survey area.

5.0.0 Special-Status Plants

Plants were considered special-status species if they met one or more of the following criteria:

- species listed or candidates for listing as threatened or endangered under the FESA;
- species listed or candidates for listing as threatened or endangered under the CESA;
- species meeting the definition of endangered, rare, or threatened under the California Environmental Quality Act (CEQA) (14 CCR Section 15380) that may include species not found on either federal or state endangered species lists; and
- species considered by the California Native Plant Society (CNPS) to be rare, threatened, or endangered in California (i.e., California Rare Plant Ranks [CRPRs] 1A, 1B, 2A, 2B, and 3).

5.0.1 Sensitive Natural Communities and Habitats

Natural communities were considered sensitive if they met one or more of the following criteria:

- sensitive vegetation communities/habitats identified in local or regional plans, policies, or regulations, or designated as sensitive by the CDFW or USFWS (including communities assigned a State Rarity Rank of S1-S3 under the CDFW Vegetation Classification and Mapping Program);
- areas that provide habitat for locally unique biotic species/communities (e.g., oak woodlands, grasslands, and forests);

- habitat that contains or supports rare, endangered, or threatened wildlife or plant species as defined by the CDFW and USFWS;
- habitat that supports one or more CDFW Species of Special Concern;
- areas that provide habitat for rare or endangered species and that meet the definition in CEQA Guidelines Section 15380;[2]
- existing game and wildlife refuges and reserves;
- lakes, wetlands, estuaries, lagoons, streams, and rivers; and
- riparian corridors.

5.0.2 Special-Status Wildlife

Wildlife species were considered special-status species if they met one or more of the following criteria:

- species listed or candidates for listing as threatened or endangered under the FESA;
- species listed or candidates for listing as threatened or endangered under the CESA;
- species that are fully protected in California (California Fish and Game Code Sections 3511, 4700, 5050, and 5515);
- species meeting the definition of endangered, rare, or threatened under CEQA (14 CCR Section 15380) that may include species not found on either federal or state endangered species lists;
- migratory birds and any of their parts, eggs, and nests, as protected by the MBTA;
- birds of prey (California Fish and Game Code Sections 3503, 3503.5, 3513, and 3800);
- species designated as an SSC or as fully protected by the CDFW;
- species protected under the BGEPA;
- species designated as Birds of Conservation Concern or Watch List species by the CDFW; and
- bats considered by the Western Bat Working Group to be “high” or “medium” priority species.

[2] California Code of Regulations Title 14; Division 6; Chapter 3; Section 15380 - Endangered, Rare or Threatened Species

5.0.3 Special-Status Species with Potential to Occur

Species identified from a literature search were assigned one of the following potentials to occur:

- Present: The species was observed during surveys.

- High Potential: Suitable habitat for the species is present within the survey area, and recent (i.e., within 30 years) occurrences have been reported within 1 mile of the survey area; or marginal habitat is present, and recent occurrences have been recorded within 0.25 mile of the survey area. For plants, recent occurrences have been recorded within 0.25 mile, but the species was not observed during floristic surveys or was surveyed for outside of the known bloom period for the species.

- Moderate Potential: Suitable habitat for the species is present, and the survey area is located within the species' known range, but no recent (i.e., within 30 years) occurrences have been recorded between 1 and 5 miles from the survey area; or marginal habitat is present, the survey area is located within the species' known range, and multiple recent occurrences have been recorded between 1 and 5 miles from the survey area. For plants, recent occurrences have been recorded within 1 mile, but the species was not observed during floristic surveys or was surveyed for outside of the known bloom period for the species.

- Low Potential: Poor or marginal habitat for the species exists, and at least one recent occurrence has been recorded between 1 and 5 miles from the survey area; barriers to migration/dispersal may be present; or suitable habitat for the species is present within the survey area, but either no recent occurrences have been recorded between 1 and 5 miles from the survey area or the survey area is located outside of the species' known range. For plants, recent occurrences have been recorded within 5 miles, but the species was not observed during floristic surveys or was surveyed for outside of the known bloom period for the species.

- No Potential: No habitat exists for the species; no occurrences have been recorded between 1 and 5 miles from the survey area, or the survey area is outside of the species' known geographic or elevation range; and/or the species has been confirmed to be extirpated from the area.

5.1 RECORDS SEARCH

A literature and database review, including a geographic information system (GIS) review of records from the California Natural Diversity Database (CNDDB) (CDFW 2023), was conducted of the U.S. Geological Survey 7.5-minute quadrangles within and adjacent to the survey area. Records for all known special-status species within 0.25 mile, 1 mile, and 5 miles of the Proposed Project were compiled and reviewed. The CNPS Inventory of Rare and Endangered Plants of California (CNPS 2023a) was reviewed to obtain additional information regarding special-status plant species. The U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) (USFWS 2023a) was queried for a list of federally threatened and endangered species known to occur within or near the Proposed Project and to determine the project's proximity to USFWS designated critical habitat.

Further, the USFWS National Wetlands Inventory (USFWS 2023b) and the USGS National Hydrography Dataset (USGS 2023) were queried to determine if potentially jurisdictional waters had been previously mapped within the survey area.

5.2 BIOLOGICAL RESOURCE SURVEY METHOD

The geographical boundaries of the survey area were provided by LSPGC in the form of GIS shapefiles. This survey area included land-based portions of the proposed substation sites, as well as proposed transmission line routes, staging areas, and access roads. Due to access constraints imposed by the property owner, the terrestrial areas south of Suisun Bay, in the vicinity of PG&E's existing Pittsburgh Substation were not included in biological resource surveys.

On the dates of May 23 to 26, 30, and 31, June 9, and July 10, 11, and 12, September 21 and 22 2023, and December 19, 2023, Insignia biologists conducted surveys to characterize the existing conditions within the survey area and identify potential biological resources (e.g., habitat for special-status species, sensitive natural communities, and jurisdictional waters) that may occur. The survey area is shown in Attachment E: Biological Resources Map. Approximately 569.7 acres of terrestrial habitat and land cover were surveyed.

The biologists conducted a habitat assessment, floristic botanical surveys, and a preliminary assessment of water features potentially under the jurisdiction of the USACE, RWQCB, and CDFW within the approximately 325-acre survey area (original survey area) between May 23 and July 12, 2023. Following the initial surveys, the original survey area was expanded to include an additional approximately 244 acres (expanded survey area), as shown in Attachment E: Biological Resources Map. A habitat assessment and preliminary assessment of water features was conducted on September 21 and 22 and December 19 within this expanded survey area, which includes terrestrial areas north of the Sacramento River and terrestrial areas south of Suisun Bay in the vicinity of PG&E's existing Pittsburgh Substation. Floristic botanical surveys were completed in 2024 within the expanded survey area. All sensitive natural resources observed were photographed and recorded using a submeter-accurate Global Positioning System (GPS) unit.

Surveys were conducted during daylight hours with clear to partly cloudy skies and did not occur in inclement weather conditions or fog cover. Temperatures ranged from 65 to 91 degrees Fahrenheit with wind speeds between 5 and 20 miles per hour.

5.2.0 Habitat Assessment

A habitat assessment was conducted within the survey area to determine whether the Proposed Project contained habitat suitable to support special-status species. Insignia biologists searched for areas of potential habitat by walking meandering transects that covered 100 percent of the survey area that was accessible. Areas that were inaccessible due to tall, non-transparent fencing and/or lack of landowner permission were not surveyed. The areas not surveyed are shown in Attachment E: Biological Resources Map.

As part of the habitat assessment, natural communities were mapped to the alliance level, as described in *A Manual of California Vegetation Online* (CNPS 2023b). Other non-vegetative

land covers were documented as well. The biologists identified dominant species, assigned alliances, and mapped the natural community and land cover boundaries using a submeter-accurate GPS unit. Natural communities were evaluated using NatureServe's Heritage Methodology, the same system used to assign global and state rarity ranks for plant and animal species in the California Natural Diversity Database (CNDDB). Sensitive natural communities are natural communities with ranks of S1, S2, or S3.

5.2.1 Special-Status Plant Surveys

Special-status plant surveys were conducted and covered 100 percent of the original survey area. The results of this survey are summarized in Section 6.3 Special-Status Plant Species. A more detailed description of these surveys is provided in Attachment C: Collinsville 500/230 Kilovolt Substation Project Botanical Survey Report. Following the botanical surveys in July 2023, the survey area was expanded by approximately 244 acres. This expansion also occurred after the bloom period for most of the special-status plants with potential to occur concluded. Surveys within the expanded survey area were completed in 2024 and are detailed in Attachment D: Collinsville 500/230 Kilovolt Substation Project Botanical Survey Report Addendum. These results supplement those summarized in Section 6.3 Special-Status Plant Species.

Transect spacing between surveyors was less than or equal to 10 meters. Surveys were fully floristic in nature. The surveys were conducted in accordance with guidelines published by the CNPS (2001), the CDFW (2009), and the USFWS (2000), which state the following:

- Surveys should be conducted at the proper time of year when locally significant plants are both evident and identifiable.
- Surveys must be floristic in nature, and the species, subspecies, or variety must be identified for every observed plant to determine the rarity status.
- Surveys must be conducted in a manner that is consistent with conservation ethics and accepted plant collection and documentation techniques.

Field surveys were conducted within the bloom period for all but four special-status plant species with the potential to occur within the survey area; these special-status species are discussed further in Section 6 – Results. If present within the original survey area, the likelihood of encountering these four species was considered reasonably high; two of these species are perennial and observable year-round and the other two are annual species that have bloom periods extending into April. Given the unusually protracted rainy season and the associated cooler temperatures of the preceding winter, it was assumed that annual plants would delay their bloom periods by approximately 1 month (Moore and Laurenroth 2017).

5.2.2 Preliminary Jurisdictional Determination

Potentially jurisdictional waters assessments were conducted by walking meandering transects that were spaced no more than 15 meters apart and covered 100 percent of the survey area. Insignia biologists used guidance from *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (USACE 2008) to determine the location and size of linear water features potentially under the jurisdiction of the USACE, RWQCB, and/or CDFW. Photographs were taken for each linear water feature to record downstream and upstream conditions. OHWM indicators and measurements of each

jurisdictional linear water feature were recorded on electronic data sheets. Top of bank (TOB) measurements were also noted for each linear water feature to assess the areas that may be CDFW-jurisdictional under Section 1600 of the California Fish and Game Code.

Potentially jurisdictional wetland features were identified through combined observations of visible hydrology, vegetation typically associated with wetlands, and elevation relative to the surrounding topography.

Formal wetland delineations of all potential wetlands identified in this report were conducted in 2024. The results of these delineations are detailed in Attachment A: Collinsville Terrestrial Biological Resources Technical Report Addendum and supersede the data associated wetlands identified in Attachment E: Biological Resources Map and Attachment K: Potentially Jurisdictional Water Features Table.

6 – RESULTS

6.0 GEOGRAPHY, CLIMATE, AND HYDROLOGY

The Proposed Project area receives an average of 23 inches of rainfall per year, with the majority of precipitation falling between November and March. Average annual temperatures range from 48 to 73 degrees Fahrenheit (NOAA 2023). The elevation ranges from 3 to 250 feet above sea level.

6.1 RECORDS SEARCH

Results of the initial desktop analysis indicated that the upland areas around the proposed Collinsville Substation and transmission line routes are mainly grassland habitat and agricultural areas. Grassland habitats, in general, may provide suitable habitat for special-status plants. The survey area along the northern shore of the Sacramento River supports native riparian habitat areas and freshwater/estuarine wetlands. Areas adjacent to PG&E's existing Pittsburg Substation in Contra Costa County may have some fringe marsh habitat near the shoreline, but the majority of the facility is developed (e.g., graveled or paved) and rip-rap is present along much of the shoreline.

From this records search, Insignia compiled a list of 28 special-status plant species and 32 special-status wildlife species that have the potential to occur within 5 miles of the survey area. Eight potentially jurisdictional waters were identified within the survey area during USGS National Wetland Inventory database review.

6.2 VEGETATION COMMUNITIES

Twenty-two vegetation community alliances and land cover types were identified in the survey area, as presented in Table 1: Vegetation Community Alliances and Land Cover Types. The vegetation community and land cover locations are documented in Attachment E: Biological Resources Map. Photographs are provided in Attachment F: Habitat Assessment Photographs. The natural communities observed in the Survey Area are ranked S3, S4, S5, and semi-natural alliance (SNA) (semi-natural stands dominated by non-native species). Six of the 15 natural

Table 1: Vegetation Community Alliances and Land Cover Types

Vegetation Community Alliance or Land Cover Type	Approximate Size in Area Surveyed (acres)
Baccharis pilularis Shrubland Alliance	0.1
Bare Ground	1.6
Brassica nigra – Centaurea (*solstitialis, melitensis*) Herbaceous SNA	29.3
Developed	28.9
Distichlis spicata Herbaceous Alliance	17.5
Disturbed	16.6
Frankenia salina Herbaceous Alliance*	3.8
Juncus arcticus (var. *balticus, mexicanus*) Herbaceous Alliance	1.5
Lepidium latifolium – Lactuca serriola Herbaceous SNA	7.9
Lolium perenne Herbaceous SNA	394.2
Open Water	7.4
Ornamental Vegetation	2.9
Polygonum lapathifolium – Xanthium strumarium Herbaceous Alliance	0.1
Rip-Rap	0.5
Rosa californica Shrubland Alliance*	3.2
Salix exigua Shrubland Alliance	2.6
Sarcocornia pacifica (*Salicornia depressa*) Herbaceous Alliance*	1.0
Schoenoplectus (*acutus, californicus*) Herbaceous Alliance*	17.6
Schoenoplectus acutus/*Rosa californica* Association*	2.1
Schoenoplectus americanus Herbaceous Alliance*	0.3
Typha (*angustifolia, domingensis, latifolia*) Herbaceous Alliance	<0.1
Not Surveyed**	2.0
Total* **	**569.7**

* CDFW-designated sensitive natural community (State Rarity Rank S1-S3).
** Areas that were inaccessible due to tall, non-transparent fencing and/or lack of landowner permission were not surveyed.
*** Due to rounding, total may not sum.

communities observed are considered sensitive. The following subsections describe each vegetation community identified within the survey area.

Approximately 2 acres of the survey area were inaccessible to Insignia biologists due to tall, non-transparent fencing and lack of landowner permission, as shown in Attachment E: Biological Resources Map. Based on aerial imagery from Google Earth, the unsurveyed areas are at an elementary school and are suspected to include both developed and bare ground.

6.2.0 *Baccharis pilularis* Shrubland Alliance (S5)

The *Baccharis pilularis* Shrubland Alliance can be found in coastal bluffs, terraces, stabilized dunes, and river mouths with variable soils ranging from sandy to relatively heavy clay. Coyote brush (*Baccharis pilularis*) is the dominant plant species; it generally occupies at least 50 percent of the shrub canopy or is co-dominant with silk tassel bush (*Garrya elliptica*) or coffeeberry (*Frangula californica*). This community was observed within the survey area south of Suisun Bay near PG&E's existing Pittsburg Substation and alongside non-native forbs.

6.2.1 *Brassica nigra - Centaurea* (*solstitialis, melitensis*) Herbaceous Semi-Natural Alliance

This community is typically associated with disturbed areas where black mustard (*Brassica nigra*) and short-pod mustard (*Hirshfeldia incana*) achieve 80 percent relative cover in the herbaceous layer. Similar ruderal forbs, including tocolote (*Centaurea melitensis*) and yellow star thistle (*Centaurea solstitialis*), may achieve dominance or co-dominance. Within the survey area, this community was generally observed in dense colonies between stands of non-native grassland in areas where heavy cattle grazing historically occurred.

6.2.2 *Distichlis spicata* Herbaceous Alliance (S4)

The *Distichlis spicata* Herbaceous Alliance is found commonly in alkaline or saline ecosystems adjacent to estuarine marshes or other wetland habitats that may be tidally influenced. Salt grass (*Distichilis spicata*) typically contains greater than 30 percent relative cover in the herbaceous layer; however, it can be co-dominant with other halophytes, including spear-leaved orache (*Atriplex prostrata*) and alkali heath (*Frankenia salina*). The herbaceous layer is continuous and typically leaves an undeveloped or sparse shrub layer. This community was generally observed north of the Sacramento River within standing water in tidally influenced brackish areas.

6.2.3 *Frankenia salina* Herbaceous Alliance (S3)

The *Frankenia salina* Herbaceous Alliance is found commonly adjacent to coastal salt marshes or brackish marshes. Typically, alkali heath contains greater than 30 percent relative cover in the herbaceous layer and stands are often found in the high marsh where soils are intermittently or seasonally flooded. Pickleweed (*Salicornia pacifica*) is often found among this community in lower percentages of 5 to 10 percent. This community was observed in the portion of the survey area located on the northern shore of the Sacramento River at the highest point of the marsh and adjacent to water that seasonally and tidally inundates this community.

6.2.4 *Juncus arcticus* (var. *balticus*, *mexicanus*) Herbaceous Alliance (S4)

The *Juncus arcticus* (var. *balticus*, *mexicanus*) Herbaceous Alliance varies widely in species composition based on the geographic location, but it typically includes greater than 30 percent relative cover in the shrub layer of arctic rush (*Juncus arcticus*) or Baltic rush (*Juncus balticus*). This community generally occurs in wet meadows with poor draining soils between estuarine marshes and sloughs. This community was observed in the portion of the survey area located on the northern shore of the Sacramento River adjacent to the shoreline and in upland areas of the marsh between sloughs.

6.2.5 *Lolium perenne* Herbaceous Semi-Natural Alliance

This community contains Italian rye grass (*Festuca perennis*) that is dominant or co-dominant with other non-natives in the herbaceous layer, including rip-gut brome (*Bromus diandrus*), sea barley (*Hordeum marinum*), and wild oat (*Avena fatua*). Typically, the herbaceous layer is continuous and often forms monocultures, which contributes to a poorly developed shrub layer. Within the survey area, this community is the most widespread and is found in upland areas that lack native species and have low species diversity. Additionally, this community shows evidence of heavy grazing, landowner maintenance, and agriculture use. During the September 2023 survey, large tracts of this community were being actively converted into access roads as part of the Solano 4 Wind Project.

6.2.6 *Polygonum lapathifolium – Xanthium strumarium* Herbaceous Alliance (S4)

This community contains rough cocklebur (*Xanthium strumarium*) that is dominant or co-dominant with lanceleaf water plantain (*Alisma lanceolatum*), Northern water plantain (*Alisma triviale*), Common sunflower (*Helianthus annuus*) as well as a variety of knotweeds and smartweeds (*Polygonum* spp.) in the herbaceous layer. Within the survey area, this community is dominated primarily by rough cocklebur and other smartweeds. During the September 2023 survey, one isolated community was found situated west of Stratton Lane and east of Latin Lane within stands of *Lolium perenne* Herbaceous Semi-Natural Alliance.

6.2.7 *Lepidium latifolium – Lactuca serriola* Herbaceous Semi-Natural Alliance

The *Lepidium latifolium – Lactuca serriola* Herbaceous SNA is dominated by non-native species in the shrub layer. This vegetation community can be found near disturbed or developed areas within the survey area south of Suisun Bay adjacent to PG&E's existing Pittsburg Substation. Species observed within this cover type include stinkwort (*Dittrichia graviolens*) as 30 percent of the ground cover, accompanied by Russian thistle (*Salsola* spp.), coyote brush, and various others to create an intermittent to continuous herbaceous layer.

6.2.8 *Rosa californica* Shrubland Alliance (S3)

The *Rosa californica* Shrubland Alliance is commonly found in creek bottoms, stream terraces, and bordering sloughs and channels. California wild rose (*Rosa californica*) typically contains greater than 50 percent relative cover in the shrub canopy and may be co-dominant with Himalayan blackberry (*Rubus armeniacus*). The shrub layer is thick and continuous while the herbaceous layer is open. Emergent trees, including willows (*Salix* spp.), may be present in low quantities. This community is found within the survey area on the northern shore of the Sacramento River adjacent to intertidal sloughs. Himalayan blackberry was commonly observed,

and in some cases co-dominant, among thick patches of California wild rose. Isolated red willows (*Salix laevigata*) were observed scattered throughout this community.

6.2.9 *Salix exigua* Shrubland Alliance (S4)

The *Salix exigua* Shrubland Alliance is widespread in California and contains significant variation when determining habitat and shrub composition. Often the shrub layer is intermittent to continuous dominated by sandbar willow (*Salix exigua*) and contains greater than 20 percent absolute cover in the shrub layer. In a high-quality habitat, sandbar willow may be co-dominant with other willow species and emergent riparian trees may be present at a low cover. Within the survey area, this community was observed between tidally influenced sloughs and estuarine marshes containing sandy soil. Heavy cattle grazing was observed to have a direct impact on this community, leading to a sparse shrub layer dominated by sandbar willows that are in the process of re-growing.

6.2.10 *Sarcocornia pacifica* (*Salicornia depressa*) Herbaceous Alliance (S3)

The *Sarcocornia pacifica* (*Salicornia depressa*) Herbaceous Alliance is found almost exclusively in coastal salt marsh and alkaline flat habitats and typically contains greater than 50 percent cover of pickleweed (*Sarcocornia pacifica*) in the herbaceous layer. Other salt-tolerant marsh plants such as alkali heath (*Frankenia salina*) and salt grass (*Distichlis spicata*) are frequently associated with this community. Within the survey area, this community was observed within dry salt flats adjacent to grazed and cultivated Italian ryegrass fields. Along the margins of these communities, pickleweed was codominant with annual grasses.

6.2.11 *Schoenoplectus* (*acutus*, *californicus*) Herbaceous Alliance (S3S4)

This community is found in a variety of wetland habitats, including brackish marshes, freshwater ponds, sloughs, swamps, and roadside ditches. The herbaceous layer is intermittent to continuous, forming thick stands that often result in a poorly developed shrub layer. Hardstem bulrush (*Schoenoplectus acutus*) or giant bulrush (*Schoenoplectus californicus*) typically contain greater than 50 percent relative cover in the herbaceous layer. Within the survey area, this community was observed adjacent to the north shore of the Sacramento River, within sloughs, and in tidally influenced areas that are semi-brackish. Species composition varied depending on the salinity of the water and proximity to the shoreline, as hardstem bulrush is generally less tolerant of brackish conditions.

6.2.12 *Schoenoplectus acutus/Rosa californica* Association (S3S4)

Schoenoplectus acutus/Rosa californica Association occurs on tidal sloughs that are seasonally or tidally inundated with brackish or semi-brackish water. This association contains greater than 50 percent relative cover of hardstem bulrush and giant bulrush with as low as 5 percent absolute cover of California wild rose. Within the survey area, this habitat occurred primarily on man-made earthen levees bordering sloughs adjacent to the shoreline. California wild rose was observed in high quantities growing among stands of bulrush (*Schoenoplectus* spp.), sometimes achieving 20 to 30 percent relative cover.

6.2.13 *Schoenoplectus americanus* Herbaceous Alliance (S3)

Similar to the *Schoenoplectus* (*acutus*, *californicus*) Herbaceous Alliance, this community is found in a variety of wetland habitats, including brackish marshes, freshwater ponds, sloughs, swamps, and roadside ditches. The herbaceous layer is intermittent to continuous, forming thick stands. Chairmaker's bulrush (*Schoenoplectus americanus*) typically make up greater than 50 percent of relative cover. Within the survey area, this community was observed within wetlands adjacent to Stratton Lane and immediately adjacent to dense stands of *Schoenoplectus acutus*.

6.2.14 *Typha* (*angustifolia*, *domingensis*, *latifolia*) Herbaceous Alliance (S5)

Typha (*angustifolia*, *domingensis*, *latifolia*) Herbaceous Alliance occurs in semi-permanently flooded freshwater or brackish marshes. This alliance contains 50 percent or greater of various Typha spp. along with saltgrass and smartweed comprising the remainder of the herbaceous layer. Within the survey area, this community occurred within wetland habitats immediately adjacent to Stratton Lane.

6.3 SPECIAL-STATUS PLANT SPECIES

Background research conducted for the Proposed Project generated a list of 28 special-status plant species that have a potential to occur in the survey area. This list was generated by comparing the species' ranges and habitat requirements with the location of the Proposed Project and habitat types within it. These species are presented in Table 2: Special-Status Plant Species with the Potential to Occur, which provides the listing status, life history, and bloom period for each species. Special-status plant surveys were fully floristic. CNDDB occurrences of special-status wildlife are presented in Attachment G: CNDDB Occurrences of Special-Status Plant Species.[3]

Reference checks were performed for recorded populations of special-status plant species. Eight reference sites were visited by the botanical survey team prior to floristic botanical surveys within the survey area. Many locations with historically documented occurrences of special-status plants have been converted to active agriculture, which is extensive and is the primary land use within 5 miles of the survey area. Further, reference populations for many special-status plant species were located on private property that was inaccessible to the survey team. No special-status plants were observed during field reference checks.

To supplement field reference checks, local botanists working in areas adjacent to the Proposed Project were consulted. Four special-status plant species (*Fritillaria liliacea*, *Helianthella castanea*, *Centromadia parryi* ssp. *parryi*, and *Senecio aphanactis*) were confirmed to be blooming in habitats adjacent to the Proposed Project before or during the May and July survey periods (H. Bartosh 2023).

[3] The findings pertaining to the presence of special-status plants presented in this report are supplemented by those documented in Attachment C: Collinsville 500/230 Kilovolt Substation Project Botanical Survey Report.

Table 2: Special-Status Plant Species with the Potential to Occur

Common Name	Scientific Name	Listing Status[4]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Survey Area
Alkali milkvetch	*Astragalus tener* var. *tener*	1B.2	This species occurs in alkali playas, valley and foothill grasslands, vernal pools, and wetlands at elevations between 5 and 195 feet.	March to June	Annual herb	Suitable habitat and conditions for this species are present within the expanded survey area, but no observations were recorded during floristic field surveys in May and July 2023. This species has been documented within 5 miles of the expanded survey area. **Low Potential**
Antioch Dunes buckwheat	*Eriogonum nudum* var. *psychicola*	1B.1	This species occurs in Interior dunes at elevations between 0 to 65 feet.	July to October	Perennial herb	This species has been documented between 1 and 5 miles from the expanded survey area and suitable habitat and conditions for this species are present within the expanded survey area; however, no observations were recorded during floristic field surveys in May and July 2023. **No Potential**

[4] Explanation of federal and state listing codes:

Federal listing code:

-FE: Federally listed as endangered

State listing code:

-SE: State-listed as endangered

CNPS CRPRs:

-1A: Presumed Extinct in California and rare/extinct elsewhere
-1B: Rare or endangered in California and elsewhere
-2B: Rare, threatened, or endangered in California, but more common elsewhere

CRPR Threat Code:

-0.1: Seriously threatened in California (over 80 percent of occurrences threatened, high degree and immediacy of threat)
-0.2: Moderately threatened in California (20 to 80 percent of occurrences threatened, moderate degree and immediacy of threat)

Common Name	Scientific Name	Listing Status[4]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Survey Area
Antioch Dunes evening-primrose	*Oenothera deltoides* ssp. *howellii*	FE, SE, 1B.1	This species occurs in Interior dunes at elevations between 0 to 100 feet.	March to September	Perennial herb	Suitable habitat and conditions for this species are not present within the expanded survey area, and no observations were recorded during floristic field surveys in May and July 2023. This species has been documented within 1 mile of the expanded survey area south of Suisun Bay, in the vicinity of PG&E's existing Pittsburgh Substation, but is otherwise found between 1 and 5 miles from the remainder of the expanded survey area. **Low Potential**
Bearded popcornflower	*Plagiobothrys hystriculus*	1B.1	This species occurs in Valley & foothill grassland, Vernal pool, Wetland at elevations between 0 to 900 feet.	April to May	Annual herb	This species has been documented between 1 and 5 miles from the expanded survey area and suitable habitat and conditions for this species are present within the expanded survey area; however, no observations were recorded during floristic field surveys in May and July 2023. **Low Potential**
Big tarplant	*Blepharizonia plumosa*	1B.1	This species occurs in Valley & foothill grassland at elevations between 100 to 1,655 feet.	July to October	Annual herb	Suitable habitat and conditions for this species are present within the expanded survey area, but no observations were recorded during floristic field surveys in May and July 2023. This species has been documented within 5 miles of the expanded survey area. **Low Potential**

Common Name	Scientific Name	Listing Status[4]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Survey Area
Bolander's water-hemlock	*Cicuta maculata* var. *bolanderi*	2B.1	This species occurs in Marsh & swamp, Salt marsh, Wetland at elevations between 0 to 655 feet.	July to September	Perennial herb	Suitable habitat and conditions for this species are present within the expanded survey area, but no observations were recorded during floristic field surveys in May and July 2023. This species has been documented within 0.25 mile of the expanded survey area. **High Potential**
Brittlescale	*Atriplex depressa*	1B.2	This species occurs in Alkali playa, Chenopod scrub, Meadow & seep, Valley & foothill grassland, Vernal pool, Wetland at elevations between 5 to 1,050 feet.	April to October	Annual herb	Suitable habitat and conditions for this species are present within the expanded survey area, but no observations were recorded during floristic field surveys in May and July 2023. This species has been documented within 5 miles of the expanded survey area. **Low Potential**
Carquinez goldenbush	*Isocoma arguta*	1B.1	This species occurs in Valley & foothill grassland at elevations between 5 to 65 feet.	August to December	Perennial shrub	Suitable habitat and conditions for this species are present within the expanded survey area, but no observations were recorded during floristic field surveys in May and July 2023. This species has been documented within 5 miles of the expanded survey area. **Low Potential**
Chaparral ragwort	*Senecio aphanactis*	2B.2	This species occurs in Chaparral, Cismontane woodland, Coastal scrub at elevations between 50 to 2,625 feet.	January to April	Annual herb	This species has been documented between 1 and 5 miles from the expanded survey area however suitable habitat and conditions for this species are not present within the expanded survey area; no observations were recorded during floristic field surveys in May and July 2023. **No Potential**

Common Name	Scientific Name	Listing Status[4]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Survey Area
Contra Costa goldfields	*Lasthenia conjugens*	FE, 1B.1	This species occurs in Alkali playa, Cismontane woodland, Valley & foothill grassland, Vernal pool, Wetland at elevations between 0 to 1,540 feet.	March to June	Annual herb	Suitable habitat and conditions for this species are present within the expanded survey area, but no observations were recorded during floristic field surveys in May and July 2023. This species has been documented within 5 miles of the expanded survey area. **Low Potential**
Contra Costa wallflower	*Erysimum capitatum* var. *angustatum*	FE, SE, 1B.1	This species occurs in Interior dunes at elevations between 10 to 65 feet.	March to July	Perennial herb	Suitable habitat and conditions for this species are present within the expanded survey area, but no observations were recorded during floristic field surveys in May and July 2023. This species has been documented within 5 miles of the expanded survey area. **Low Potential**
Welsh mudwort	*Limosella australis*	2B.1	This species occurs in Brackish marsh, Freshwater marsh, Marsh & swamp, Riparian scrub, Wetland at elevations between 0 to 10 feet.	May to August	Perennial stoloniferous herb	Suitable habitat is present within the expanded survey area. Multiple observations of this species were made during floristic field surveys. **Present**
Delta tule pea	*Lathyrus jepsonii* var. *jepsonii*	1B.2	This species occurs in Freshwater marsh, Marsh & swamp, Wetland at elevations between 0 to 15 feet.	May to July	Perennial herb	Suitable habitat is present within the expanded survey area. Multiple observations of this species were made during floristic field surveys. **Present**

Common Name	Scientific Name	Listing Status[4]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Survey Area
Diablo Helianthella	*Helianthella castanea*	1B.2	This species occurs in Broadleaved upland forest, Chaparral, Cismontane woodland, Coastal scrub, Valley & foothill grassland at elevations between 195 to 4,265 feet.	March to June	Perennial herb	Suitable habitat and conditions for this species are present within the expanded survey area, but no observations were recorded during floristic field surveys in May and July 2023. This species has been documented within 5 miles of the expanded survey area. **Low Potential**
Diamond-petaled California poppy	*Eschscholzia rhombipetala*	1B.1	This species occurs in Valley & foothill grassland at elevations between 0 to 3,200 feet.	March to April	Annual herb	Suitable habitat and conditions for this species are present within the expanded survey area, but no observations were recorded during floristic field surveys in May and July 2023. This species has been documented within 5 miles of the expanded survey area. **Low Potential**
Dwarf downingia	*Downingia pusilla*	2B.2	This species occurs in Valley & foothill grassland, Vernal pool, Wetland at elevations between 5 to 1,460 feet.	March to May	Annual herb	Suitable habitat and conditions for this species are present within the expanded survey area, but no observations were recorded during floristic field surveys in May and July 2023. This species has been documented within 5 miles of the expanded survey area. **Low Potential**
Fragrant fritillary	*Fritillaria liliacea*	1B.2	This species occurs in Cismontane woodland, Coastal prairie, Coastal scrub, Ultramafic, Valley & foothill grassland at elevations between 10 to 1,345 feet.	February to April	Perennial bulbiferous herb	Suitable habitat and conditions for this species are present within the expanded survey area, but no observations were recorded during floristic field surveys in May and July 2023. This species has been documented within 5 miles of the expanded survey area. **Low Potential**

Common Name	Scientific Name	Listing Status[4]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Survey Area
Hall's bush-mallow	*Malacothamnus hallii*	1B.2	This species occurs in Chaparral, Coastal scrub, Ultramafic at elevations between 35 to 2,495 feet.	May to September	Perennial deciduous shrub	This species has been documented between 1 and 5 miles from the expanded survey area; however, suitable habitat and conditions for this species are not present within the expanded survey area. In addition, this species was not observed during floristic field surveys in May and July 2023. **No Potential**
Heartscale	*Atriplex cordulata* var. *cordulata*	1B.2	This species occurs in Chenopod scrub, Meadow & seep, Valley & foothill grassland at elevations between 0 to 1,835 feet.	April to October	Annual herb	Suitable habitat and conditions for this species are present within the expanded survey area, but no observations were recorded during floristic field surveys in May and July 2023. This species has been documented between 1 and 5 miles from the expanded survey area. **Low Potential**
Hoover's cryptantha	*Cryptantha hooveri*	1A	This species occurs in Interior dunes, Valley & foothill grassland at elevations between 30 to 490 feet.	April to May	Annual herb	Suitable habitat and conditions for this species are present within the expanded survey area, but no observations were recorded during floristic field surveys in May and July 2023. This species has been documented between 1 and 5 miles from the expanded survey area. **Low Potential**
Keck's checkerbloom	*Sidalcea keckii*	FE, 1B.1	This species occurs in Cismontane woodland, Ultramafic, Valley & foothill grassland at elevations between 245 to 2,135 feet.	April to June	Annual herb	Suitable habitat and conditions for this species are present within the expanded survey area, but no observations were recorded during floristic field surveys in May and July 2023. This species has been documented between 1 and 5 miles from the expanded survey area. **Low Potential**

Common Name	Scientific Name	Listing Status[4]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Survey Area
Mason's lilaeopsis	*Lilaeopsis masonii*	1B.1	This species occurs in Freshwater marsh, Marsh & swamp, Riparian scrub, Wetland at elevations between 0 to 35 feet.	April to November	Perennial rhizomatous herb	Suitable habitat is present within the Project area. Multiple observations of this species were made during floristic field surveys. **Present**
Mt. Diablo buckwheat	*Eriogonum truncatum*	1B.1	This species occurs in Chaparral, Coastal scrub, Valley & foothill grassland at elevations between 10 to 1,150 feet.	April to September	Annual herb	Suitable habitat and conditions for this species are present within the expanded survey area, but no observations were recorded during floristic field surveys in May and July 2023. This species has been documented between 1 and 5 miles from the expanded survey area. **Low Potential**
Papoose tarplant	*Centromadia parryi* ssp. *parryi*	1B.2	This species occurs in Chaparral, Coastal prairie, Meadow & seep, Marsh & swamp, Valley & foothill grassland at elevations between 0 to 1,380 feet.	May to November	Annual herb	Suitable habitat and conditions for this species are present within the expanded survey area, but no observations were recorded during floristic field surveys in May and July 2023. This species has been documented between 1 and 5 miles from the expanded survey area. **Low Potential**
San Joaquin spearscale	*Extriplex joaquinana*	1B.2	This species occurs in Alkali playa, Chenopod scrub, Meadow & seep, Valley & foothill grassland at elevations between 5 to 2,740 feet.	April to October	Annual herb	Suitable habitat and conditions for this species are present within the expanded survey area, but no observations were recorded during floristic field surveys in May and July 2023. This species has been documented between 1 and 5 miles from the expanded survey area. **Low Potential**

Common Name	Scientific Name	Listing Status[4]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Survey Area
Showy golden madia	*Madia radiata*	1B.1	This species occurs in Cismontane woodland, Valley & foothill grassland at elevations between 80 to 3,985 feet.	March to May	Annual herb	This species has been documented between 1 and 5 miles from the expanded survey area and suitable habitat and conditions for this species are present within the expanded survey area; however, no observations were recorded during floristic field surveys in May and July 2023. **No Potential**
Soft salty bird's-beak	*Chloropyron molle* ssp. *molle*	FE, 1B.2	This species occurs in Marsh & swamp, Salt marsh, Wetland at elevations between 0 to 10 feet.	June to November	Annual herb (hemiparasitic)	Suitable habitat and conditions for this species are not present within the expanded survey area, and no observations were recorded during floristic field surveys in May and July 2023. This species has been documented between 1 and 5 miles from the expanded survey area. **Low Potential**
Suisun Marsh aster	*Symphyotrichum lentum*	1B.2	This species occurs in Brackish marsh, Freshwater marsh, Marsh & swamp, Wetland at elevations between 0 to 10 feet.	April to November	Perennial rhizomatous herb	Suitable habitat and conditions for this species are present within the expanded survey area, but no observations were recorded during floristic field surveys in May and July 2023. This species has been documented within 0.25 mile of the expanded survey area. **High Potential**

Three special-status plant species were observed during field surveys of the original survey area: Delta tule pea (*Lathyrus jepsonii* var. *jepsonii*), Mason's lilaeopsis (*Lilaeopsis masonii*), and Welsh mudwort (*Limosella australis*). The locations of these plants and the boundaries of the original survey area are shown in Attachment E: Biological Resources Map. All observed occurrences of special-status plants were along the northern shore of the Sacramento River within potentially jurisdictional wetland habitat.

Four special-status plants with the potential to occur within the survey area have bloom periods that were not captured during this botanical survey. These include:

- Carquinez goldenbush (*Isocoma arguta*)
- Chaparral ragwort (*Senecio aphanactis*)
- Diamond-petaled California poppy (*Eschscholzia rhombipetala*)
- Fragrant fritillary (*Fritillaria liliacea*)

Two of these species (Carquinez goldenbush and fragrant fritillary) are perennial species and would be observable within the survey area year-round. However, the remaining two species (Diamond-petaled California poppy and chaparral ragwort) are annual herbs and, if present within the survey areas, may not have been readily identifiable during the survey periods of May and July. Chaparral ragwort was confirmed to be in bloom on March 3, 2023 in surrounding areas (H. Bartosh 2023), however as described in Table 2: Special-Status Plant Species with the Potential to Occur, no suitable habitat for this species is found within the original survey area. The results of these surveys are detailed further in Attachment C: Collinsville 500/230 Kilovolt Substation Project Botanical Survey Report.

Supplemental targeted surveys were conducted within the original survey area in 2024 during the bloom period for diamond-petaled California poppy (March to April). Additionally, floristic surveys were conducted in 2024 within the expanded survey area. The findings pertaining to those surveys are detailed in Attachment D: Collinsville 500/230 Kilovolt Substation Project Botanical Survey Report Addendum and supplement the results of this report.

6.3.0 Species Present within the Survey Area

Welsh Mudwort

Welsh mudwort (*Limosella australis*) can be observed on large patches of tidal mudflats with brackish or tidal freshwater, as well as alkali playa, cismontane woodland, valley and foothill grasslands, vernal pools, and wetlands. The plant will generally grow grass-like leaves in clumps of 5-10, with short, white flowers about an inch tall. This species was observed during the survey several times along the northern intertidal margins of the Sacramento River.

Delta Tule Pea

The Delta Tule Pea (*Lathyrus jepsonii* var. *jepsonii*) can be found in wetlands and dunes, among other suitable habitats. The plant can be identified via its pink to purple inflorescence or based on characteristics of its family (Fabaceae) such as branched tendrils, lance-shaped leaflets, or legume pods. Multiple observations of this species were made during the survey, usually closely associated with *Rosa californica* in close proximity to the northern shore of the Sacramento

River. Several additional observations of this species were made on the southern shore of the Sacramento River along a metal fence within rip rap.

Mason's Lilaeopsis

Mason's Lilaeopsis (*Lilaeopsis masonii*), endemic to California, is found in freshwater and brackish marshes and other estuary habitats. The species spreads laterally by rhizomatous growth and grows linear leaves averaging around 2-7 centimeters long. It has small, white or greenish flowers in numbers of 3-8 per umbel. Multiple observations of this species were made along the northern intertidal margins of the Sacramento River.

6.3.1 Species with a High Potential to Occur

Bolander's water-hemlock

Bolander's Water hemlock (*Circuta maculata* var. *bolanderi*) will often be associated with ditches, stream banks, pond margins, and marshes among other suitable habitats like valley and foothill grasslands, vernal pools, and other wetlands. Water birds often consume the round fruits of the plant. The small white flowers of this species comprise an umbel atop tall stems, which are accompanied by fern-like leaves. There is suitable habitat within the survey area in wetlands immediately adjacent to the northern shore of the Sacramento River and recent CNDDB observations for this plant have been recorded within 0.25 mile of the survey area, thus making it highly likely that this species will occur within the survey area.

Suisun Marsh Aster

The Suisun Marsh Aster (*Symphyotrichum lentum*), an endemic species to Suisun Marsh, is a spreading herb that can grow up to 4 feet tall. Like other members of Asteraceae, this species features an inflorescence with yellow flowers in the middle, surrounded by white flowers on the outside. It can be found in brackish or freshwater marshes and alongside the backs of sloughs and watercourses. This species prefers soils with higher clay and loam contents and attracts butterflies. Suitable wetland habitat for the species was observed within the survey area in wetlands immediately adjacent to the northern shore of the Sacramento River. Observations within 0.25 of a mile of the survey area have been recently documented. This species has a high potential to occur within the survey area.

6.4 SPECIAL-STATUS WILDLIFE SPECIES

Based on the literature and database review, 32 special-status wildlife species were identified that have the potential to occur within the survey area. The species name, listing status, life history, known locations, and a brief assessment of the potential to occur within the survey area are provided for each species in Table 3: Special-Status Wildlife Species with the Potential to Occur. CNDDB occurrences of special-status wildlife are presented in Attachment H: CNDDB Occurrences of Special-Status Wildlife Species. The approximate nest location is shown in Attachment E: Biological Resources Map.

Table 3: Special-Status Wildlife Species with the Potential to Occur

Common Name	Scientific Name	Listing Status[5]	Habitat and Life History	Potential to Occur in the Survey Area
Amphibians				
California red-legged frog	*Rana draytonii*	FT, SSC	This highly aquatic species typically inhabits quiet pools of streams, marshes and ponds, preferring habitat with extensive shoreline vegetation. Its diet is highly variable and may include various invertebrates, amphibians, and small mammals. In Northern California, breeding usually takes place between March and July.	Suitable wetland habitat is not present within the survey area. This species has been recently documented between 1 and 5 miles from the survey area. This species was not observed during the field survey. **Low Potential**
California tiger salamander – central California Distinct Population Segment (DPS)	*Ambystoma californiense* pop. 1	FT, ST, WL	This species occupies grassland, savanna, or open woodland habitats and spends much of the year in underground refuges, especially ground squirrel (*Ammospermopholis beechyi*) burrows. Vernal pools or other seasonal water sources are required for breeding and egg laying. Adults may travel hundreds of meters across upland habitat to reach breeding ponds following seasonal rains during November to February. Its diet is highly variable and may include invertebrates, amphibians, or small mammals.	Annual grassland habitat is present within the survey area; however, no suitable refuge burrows were observed during field surveys. Further, no suitable vernal pools were observed within the survey area. These findings are consistent with previous habitat assessments for this species within the survey area. These protocol-level assessments concluded that the survey area lacks suitable aquatic habitat (Jennings 2010), contains multiple barriers to movement/dispersal (Area West Environmental [AWE] 2017), has land use practices that inhibit dispersal (AECOM 2018b), and has a scarcity of suitable burrows refugia. This species has been recently documented between 1 and 5 miles from the survey area. This species was not observed during the field survey. **Low Potential**

[5] Explanation of federal and state listing codes:

Federal listing codes:

-FE: Federally listed as endangered
-FT: Federally listed as threatened
-BCC: USFWS Bird of Conservation Concern

State listing codes:

-SE: State-listed as endangered
-ST: State-listed as threatened
-FP: Fully protected species
-SSC: Species of special concern
-WL: Watch list species
-WBWG-H: Western Bat Working Group high designation

Common Name	Scientific Name	Listing Status[5]	Habitat and Life History	Potential to Occur in the Survey Area
Birds				
American peregrine falcon	*Falco peregrinus anatum*	FP	This species can be found occupying several biomes throughout California year-round. Breeding takes place from April to June. A majority of nests are constructed on ledges on relatively tall cliffs in remote areas with minimal human disturbance and are often reused from year to year. Foraging occurs in a variety of habitat types, and its diet consists almost exclusively of other birds.	Suitable nesting habitat does not occur in or near the survey area. Foraging and migrating individuals may occur in or near the survey area; however, because this species is highly mobile, any potential Proposed Project-related encounters are not likely to impact this species. This species was not observed during the field survey. **No Potential (Nesting)** **Low Potential (Foraging/Migration)**
Burrowing owl	*Athene cunicularia hypugaea*	SSC, BCC	This species can be found in a variety of open habitat types, including grassland, savanna, desert scrub, agricultural, and urban areas. Breeding occurs from March through October, and nesting takes place within abandoned burrows dug by burrowing mammals. This species preys on large insects and small mammals.	Grassland habitat suitable for foraging is found in the survey area north of the Sacramento River; however, burrows suitable for species occupation and breeding were not observed during the field surveys. Migrating individuals have been reported to occur within the survey area during winter months (AECOM 2018a), and all CNDDB occurrences north of the Sacramento River were recorded during the non-breeding season. Nesting habitat is limited and marginal given the ongoing agricultural activity north of the Sacramento River, but ground squirrels may recolonize and provide suitable burrow habitat if the fields are left fallow or grazed (AECOM 2018a). This species was not observed during the field surveys. **Moderate Potential (Nesting)** **High Potential (Foraging/Migration)**

Common Name	Scientific Name	Listing Status[5]	Habitat and Life History	Potential to Occur in the Survey Area
California black rail	*Laterallus jamaicensis coturniculus*	ST, FP	This species is found in tidal emergent wetlands dominated by pickleweed (*Salicornia* spp.) or in brackish marshes supporting bulrushes in association with pickleweed. Breeding occurs from March to June, and nests are concealed in dense vegetation (often pickleweed) near the upper limits of tidal flooding.	Suitable habitat capable of supporting foraging individuals is present in the survey area adjacent to the Sacramento River. Wetland habitats within the survey area lack large stands of pickleweed and tidal flux preferred by the species for breeding sites. This species has been recently documented within 1 mile of the survey area, but was not observed during the field survey. **Moderate Potential (Nesting)** **High Potential (Foraging)**
California least tern	*Sternula antillarum browni*	FE, SE, FP	This species is found throughout California and requires undisturbed stretches of beach and coastline. Adults forage in bays and estuaries for a variety of fish species. The California least tern nests in colonies on relatively open beaches where vegetation is limited by natural scouring from tidal action. However, to avoid humans, tern colonies have been known to move to inland mud flats and dredge fill sites. The breeding season typically begins in early to mid-May, and nests are constructed directly on the ground.	Suitable foraging habitat for this species is found adjacent to the survey area within the Sacramento River and Suisun Bay. However, no suitable breeding habitat is found within the survey area. This species has been documented between 1 and 5 miles from the survey area; however, all records are more than 30 years old. This species was not observed during the field survey. **No Potential (Nesting)** **Moderate Potential (Foraging/Migration)**

Common Name	Scientific Name	Listing Status[5]	Habitat and Life History	Potential to Occur in the Survey Area
Northern harrier	*Circus cyaneus*	SSC, BCC	This species is found in a variety of open grassland, wetland, and agricultural habitats. Open wetland habitats used for breeding include marshy meadows, wet and lightly grazed pastures, and freshwater and brackish marshes. Breeding habitat also includes dry upland habitats, such as grassland, cropland, drained marshland, and shrub-steppe in cold deserts. Wintering habitat includes open areas dominated by herbaceous vegetation, such as grassland, pastures, cropland, coastal sand dunes, brackish and freshwater marshes, and estuaries.	Suitable foraging and nesting habitat are present in the survey area, and two individuals were observed foraging within the survey area in wetland habitat adjacent to the northern shore of the Sacramento River. This species has been documented between 1 and 5 miles from the survey area. **High Potential (Nesting)** **Present (Foraging)**
Saltmarsh common yellowthroat	*Geothlypis trichas sinuosa*	SSC, BCC	This species occurs in freshwater and saltwater marshes. It requires thick, continuous cover down to the water surface for foraging, and tall grasses, tule patches, and willows for nesting.	Suitable habitat for this species is present within the portion of the survey area located on the northern shore of the Sacramento River. This species has been documented within 1 mile of the survey area, but was not observed during the field survey. **High Potential (Nesting)** **High Potential (Foraging)**
Short-eared owl	*Asio flammeus*	SSC, BCC	This species occurs in agricultural fields, grazed and ungrazed grasslands, and freshwater and saltwater marshes. This species requires open country that supports concentrations of microtine rodents and herbaceous cover sufficient to conceal its nest from predators. Its nests are built on the ground. This species' diet consists of small mammals and is particularly affected by the 3- to 4-year cycle of the California vole (*Microtus californicus*). Its breeding season occurs from April through July.	Suitable foraging and breeding habitat is present in the survey area. This species has been documented between 1 and 5 miles from the survey area; however, all records are more than 30 years old. This species was not observed during the field survey period. **Low Potential (Nesting)** **Low Potential (Foraging)**

Common Name	Scientific Name	Listing Status[5]	Habitat and Life History	Potential to Occur in the Survey Area
Song sparrow ("Modesto" population)	*Melospiza melodia* pop. 1	SSC	This species inhabits freshwater marshes, riparian thickets, sparsely vegetated irrigation canals, and valley oak restoration sites. It seeks cover and nests in willow and nettle thickets, growths of tules and cattails, and riparian oak forests with a sufficient understory of blackberry.	Suitable breeding and foraging habitat for this species is within the portion of the survey area located on the northern shore of the Sacramento River. This species has been documented between 1 and 5 miles from the survey area; however, all records are over 30 years old. This species was not observed during the field survey. **Low Potential (Nesting)** **Low Potential (Foraging)**
Suisun song sparrow	*Melospiza melodia maxillaris*	SSC	This species occurs throughout California, primarily in saltwater and brackish marshes. The species requires dense vegetation as protection from predators and high tide, for perching, and for nesting habitat. Breeding season is from early March through July.	Suitable breeding and foraging habitat for this species can be found within the portion of the survey area located on the northern shore of the Sacramento River. This species has been documented within 1 mile of the survey area south of Suisun Bay, in the vicinity of PG&E's existing Pittsburgh Substation and within 5 miles of the survey area along the northern shore of the Sacramento River, but was not observed during the field survey. **High Potential (Nesting)** **High Potential (Foraging)**
Swainson's hawk	*Buteo swainsoni*	ST	This species occurs in open grasslands, prairies, and farmlands that have nearby trees for nesting. It nests in bushes and in several tree species, including oaks (*Quercus* spp.), willow, and eucalyptus, and usually nests in trees in riparian areas near open fields. This species primarily hunts small rodents, rabbits, birds, and reptiles during the breeding season. It largely lives off insects, such as grasshoppers and beetles, during the non-breeding season. It reproduces from March through April, incubates for 34 to 35 days, and fledges 6 weeks later.	An adult male hawk was observed flying overhead during field surveys. Suitable foraging and breeding habitat is present, and multiple occurrences of the species have been documented between 1 and 5 miles from the survey area. **High Potential (Nesting)** **Present (Foraging/Migration)**

Common Name	Scientific Name	Listing Status[5]	Habitat and Life History	Potential to Occur in the Survey Area
Tricolored blackbird	*Agelaius tricolor*	ST, SSC, BCC	This highly colonial species requires open water, protected nesting substrate, and foraging areas adjacent to the colony with insect prey. Breeding occurs near fresh water, often in emergent wetlands with tall, dense cattails or tules, but also in thickets of willow; blackberry; wild rose; or tall, dense forbs. Seeds and cultivated grains, such as rice and oats, compose most of its fall and winter diet. Tricolored blackbird forages on the ground in croplands, grassy fields, flooded land, and along edges of ponds. The breeding season usually occurs from mid-April to late July.	Some marginal willow thicket and wild rose habitat is present within the survey area; however, fresh waterbodies suitable for nesting are not present. Suitable foraging habitat is present in the northern portion of the survey area. This species has been documented between 1 and 5 miles from the survey area; however, all records are over 30 years old. This species was not observed during the field survey. **Low Potential (Nesting)** **Moderate Potential (Foraging)**
White-tailed kite	*Elanus leucurus*	FP	This species nests in riparian or oak woodland adjacent to undisturbed, open fields and grasslands, meadows, farmlands, and emergent wetlands, where it hunts rodents. Breeding generally occurs from February through October. White-tailed kite lays three to five eggs, which it incubates for 30 to 32 days, after which fledging occurs at 5 to 6 weeks of age.	Suitable foraging habitat for the species is present in the survey area; however, oak woodland suitable for nesting is not present. This species has been documented between 1 and 5 miles from the survey area, but was not observed during the field survey. **Low Potential (Nesting)** **Moderate Potential (Foraging)**
Yellow rail	*Coturnicops noveboracensis*	SSC	This species breeds in densely vegetated, shallow freshwater marshes and wet meadows. Breeding occurs from May through September. Wintering birds frequent mature salt marshes well above the water line.	Marginal breeding habitat and suitable wintering habitat are present within the survey area. This species has been documented between 1 and 5 miles from the survey area, but was not observed during the field survey. **Low Potential (Nesting)** **Moderate Potential (Foraging/Wintering)**

Common Name	Scientific Name	Listing Status[5]	Habitat and Life History	Potential to Occur in the Survey Area
Fish				
Delta smelt	*Hypomesus transpacificus*	FT, SE	Delta smelt are a euryhaline species (i.e., a species adapted to living in fresh and brackish water) that occupies estuarine areas with salinities below 2 parts per thousand. This species is found only from the San Pablo Bay upstream through the Sacramento-San Joaquin River Delta in Contra Costa, Sacramento, San Joaquin, Solano, and Yolo counties. Delta smelt spawn in shallow, fresh, or slightly brackish water upstream from the brackish water habitat associated with the mixing zone.	Critical habitat and documented occurrences of this species can be found within the waters adjacent to the survey area. However, no suitable aquatic/estuarine habitat for this species was present within the survey area. **No Potential**
Green sturgeon - southern DPS	*Acipenser medirostris* pop. 1	FT	This species is found in a variety of estuarine and freshwater habitats within the San Francisco Bay, San Pablo Bay, and Sacramento-San Joaquin River Delta. Spawning occurs in the Sacramento, Feather, and Yuba rivers in cool (11 to 15 degrees Celsius) sections of mainstem rivers in deep pools (i.e., 8 to 9 meters) with substrate containing small- to medium-sized sand, gravel, cobble, or boulders.	Suitable habitat and documented occurrences of this species can be found within the waters adjacent to the survey area. However, suitable aquatic/estuarine habitat for this species is not present within the survey area. **No Potential**

Common Name	Scientific Name	Listing Status[5]	Habitat and Life History	Potential to Occur in the Survey Area
Longfin smelt	*Spirinchus thaleichthys*	ST	The known range of this species extends from the San Francisco Bay Estuary and Sacramento-San Joaquin Delta (Bay-Delta) in California northward to the Cook Inlet in Alaska. In the Bay-Delta, longfin smelt spawn primarily in freshwater in the lower reaches of the Sacramento and San Joaquin rivers. Juvenile and adult longfin smelt have been found throughout the year in salinities ranging from pure freshwater to pure seawater. Once past the juvenile stage, they are typically collected in waters with salinities ranging from 14 to 28 parts per thousand. The life cycle of most longfin smelt generally requires estuarine conditions. Longfin smelt occur in the Bay-Delta typically from January to April.	Suitable habitat and documented occurrences of this species can be found within the waters adjacent to the survey area. However, suitable aquatic/estuarine habitat for this species is not present within the survey area. **No Potential**
Sacramento perch	*Archoplites interruptus*	SSC	This freshwater fish species is endemic to California's Central Valley. It inhabits a range of aquatic habitats, including rivers, streams, lakes, reservoirs, and ponds. This species shows a preference for habitats with vegetated banks that provide both food sources and protective cover. Breeding typically occurs during the spring and early summer in shallow areas with gravel or sandy substrate. This species feeds primarily on small invertebrates but will opportunistically feed on small fish or fish eggs.	Suitable habitat and documented occurrences of this species can be found within the waters adjacent to the survey area. However, suitable aquatic/estuarine habitat for this species is not present within the survey area. **No Potential**

Common Name	Scientific Name	Listing Status[5]	Habitat and Life History	Potential to Occur in the Survey Area
Steelhead - Central Valley DPS	*Oncorhynchus mykiss irideus* pop. 11	FT	This DPS of steelhead represents a population that spawns in freshwater habitats located in California's Central Valley. This species is anadromous, meaning they are born in freshwater, migrate to the ocean to grow and mature, and return to their natal streams to spawn. Suitable freshwater breeding habitats include rivers, streams, and tributaries with clean, cold water and gravel substrate. After hatching, the young steelhead spend several years in fresh water before migrating to the ocean, where they feed on a variety of prey, including small fish, invertebrates, and plankton.	Suitable habitat and documented occurrences of this species can be found within the waters adjacent to the survey area. However, suitable aquatic/estuarine habitat for this species is not present within the survey area. **No Potential**
Invertebrates				
Conservancy fairy shrimp	*Branchinecta conservatio*	FE	This species occurs within vernal pool habitats in California's Central Valley. It mostly lives in relatively large, turbid freshwater vernal pools called playa pools. This species can be found at elevations ranging from 16 to 5,577 feet in grassland, rural, and wetland habitats. This species opportunistically filter-feeds on various planktonic food sources including algae and protozoa.	No suitable vernal pool habitat was observed during the field survey. It is possible that suitable vernal pool habitat for this species may develop during the rainy season and outside of this report's survey window. This species has been documented between 1 and 5 miles from the survey area, but was not observed during the field survey. **Low Potential**

Common Name	Scientific Name	Listing Status[5]	Habitat and Life History	Potential to Occur in the Survey Area
Lange's metalmark butterfly	*Apodemia mormo langei*	FE	This species is associated with the Antioch Dunes, a riverbank dune system along the San Joaquin River. Currently, this species can only be found in the Antioch Dunes National Wildlife Refuge, the last remnants of the Antioch Dunes. All life stages are closely associated with naked-stemmed buckwheat (*Eriogonum nudum* var. *psychicola*), which is the primary nectar source for adults, is used to lay eggs, and is a larval food plant. The leaves of the larval host plant provide both food and shelter throughout the larval instar phases.	Suitable habitat for this species is not present within the survey area. Further, while there are documented occurrences within 0.25 mile of the survey area, there were no observations of this species or its obligate host plant during field surveys. This species may occur incidentally within the survey area given the proximity of suitable habitat, but the lack of suitable foraging and breeding habitat within the survey area makes this unlikely. **Low Potential**
Vernal pool fairy shrimp	*Branchinecta lynchi*	FT	This species occurs within vernal pool habitats throughout California. Female vernal pool fairy shrimp carry fertilized eggs in a sac on the underside of their body. The eggs are either dropped to the pool bottom or remain in the brood sac until the mother dies and sinks to the bottom of the pool. This species opportunistically filter-feeds on various planktonic food sources, including algae and protozoa.	No suitable vernal pool habitat was observed during the field survey. It is possible that suitable vernal pool habitat for this species may develop during the rainy season and outside of this report's survey window. This species has been documented between 1 and 5 miles from the survey area, but was not observed during the field survey. **Low Potential**

Common Name	Scientific Name	Listing Status[5]	Habitat and Life History	Potential to Occur in the Survey Area
Vernal pool tadpole shrimp	*Lepidurus packardi*	FE	This species occurs within vernal pool habitats with a patchy distribution within California's Central Valley. Female vernal pool tadpole shrimp produce up to six clutches of eggs containing 32 to 61 eggs per clutch during each wet season. They carry fertilized eggs in a sac on the underside of their body. The eggs are either dropped to the pool bottom or remain in the brood sac until the mother dies and sinks to the bottom of the pool. This species opportunistically filter-feeds on other fairy shrimp (*Branchinecta* spp.), invertebrates, and waste from other vernal pool species.	No suitable vernal pool habitat was observed during the field survey. It is possible that suitable vernal pool habitat for this species may develop during the rainy season and outside of this report's survey window. This species has been documented between 1 and 5 miles from the survey area, but was not observed during the field survey. **Low Potential**
Mammals				
Salt marsh harvest mouse	*Reithrodontomys raviventris*	FE, SE, FP	This species inhabits salt marshes in California and is adapted to live in marsh vegetation, including pickleweed and cordgrass, which provide cover, food sources, and breeding habitats. Breeding typically occurs between March and October. Its diet consists of marsh vegetation, including seeds, stems, and leaves.	Suitable salt marsh habitat for this species is present within the survey area in salt marshes north of the Sacramento River. This species has been documented within 0.25 mile of the survey area on both the north shore of the Sacramento River and south shore of the Suisun Bay, but was not observed during field surveys. **High Potential**
San Joaquin kit fox	*Vulpes macrotis mutica*	FE, ST	This species inhabits a variety of open habitats, including grasslands, chenopod scrublands, and semi-arid regions. Breeding occurs from January to March, with a gestation period of 49 to 55 days. The female constructs a den in the ground, often utilizing existing burrows dug by other animals. Its diet primarily consists of small mammals, such as rodents, rabbits, and ground squirrels.	Grassland habitat suitable for foraging is present within the survey area; however, no suitable breeding burrows/dens were encountered during the survey. This species has been documented between 1 and 5 miles from the survey area, but these records are more than 30 years old. **Low Potential**

Common Name	Scientific Name	Listing Status[5]	Habitat and Life History	Potential to Occur in the Survey Area
Western red bat	*Lasiurus blossevillii*	SSC, WBWG-H	This species occurs a variety of habitats, including forests, woodlands, and riparian areas. It roosts and forages among trees and vegetation and exhibits a preference for mixed coniferous and deciduous forests. Breeding occurs in the spring and early summer. This species typically seeks out tree foliage, such as leaves or branches, to create roosting sites. The diet consists mainly of insects, such as moths, beetles, and flies.	Marginally suitable roosting habitat is present in the survey area within the limited stands of trees, and suitable foraging habitat is present. This species has been documented between 1 and 5 miles from the survey area, but was not observed during field surveys. **Moderate Potential (Roosting)** **Moderate Potential (Foraging)**
Reptiles				
Alameda whipsnake	*Masticophis lateralis euryxanthus*	FT, ST	This species inhabits grasslands, chaparral, and oak woodlands within Alameda and Contra Costa counties. It is primarily diurnal, being active during the day and seeking shelter in vegetation or underground burrows at night. Breeding typically occurs in the spring and summer months. The diet consists of small vertebrates, including lizards, rodents, and birds.	Suitable grassland habitat is present; however, the survey area is outside of the geographic range for this species. The species has been documented between 1 and 5 miles from the survey area. **No Potential**
California glossy snake	*Arizona elegans occidentalis*	SSC	This species is typically found in desert scrub, grasslands, and rocky areas. It is primarily nocturnal, being active during the night and seeking shelter in burrows, crevices, or under rocks during the day. Breeding occurs in the spring and early summer. Females lay eggs in sandy soil or loose substrate, where they are left to incubate. Its diet consists mainly of small mammals, including rodents, lizards, and occasionally birds or eggs.	Suitable grassland habitat is present; however, the survey area is outside of the geographic range for this species. The species has been documented between 1 and 5 miles from the survey area, but all occurrences are more than 30 years old. **No Potential**

Common Name	Scientific Name	Listing Status[5]	Habitat and Life History	Potential to Occur in the Survey Area
Giant gartersnake	*Thamnophis gigas*	FT, ST	This semi-aquatic species inhabits marshes, wetlands, and slow-moving bodies of water. It is often closely associated with water sources, which serve as its hunting grounds. Breeding typically occurs in the spring and early summer. After mating, females give birth to live young. The diet primarily consists of small fish, amphibians, and aquatic invertebrates.	Suitable wetland habitat is not present within the survey area. Although species has been documented between 1 and 5 miles from the survey area, these observations were made in habitats upstream of the survey area with far less salt-water intrusion. Further, extensive grazing and land modification over much of the project has greatly diminished potential upland refugia. The species was not observed during field surveys. **Low Potential**
Northern California legless lizard	*Anniella pulchra*	SSC	This species is found in grasslands, chaparral, and open woodlands and requires loose, friable soils for burrowing. Breeding typically occurs in the spring or early summer. Females lay small clutches of eggs in underground burrows or hidden areas. The diet primarily consists of small invertebrates, such as insects, spiders, and other arthropods.	Marginal grassland habitat for this species is present within the survey area. This species has been documented between 1 and 5 miles from the survey area, but was not observed during field surveys. **Low Potential**
Western pond turtle	*Emys marmorata*	SSC	This freshwater turtle species primarily inhabits ponds, lakes, and slow-moving streams with suitable basking sites. It spends a significant amount of time basking on logs or rocks. Breeding typically occurs in the spring and early summer. Females dig nests in sandy or gravelly areas near water, where they lay their eggs. The hatchlings emerge several months later and make their way to the water. The diet is omnivorous and consists of various aquatic plants, insects, small fish, and amphibians.	Suitable wetland habitat is present within the survey area; however, suitable nesting habitat is not present. This species has been documented within 1 mile of the survey area, but was not observed during field surveys. **High Potential**

6.4.0 Species Present within the Survey Area

Avian Species

Northern Harrier

The Northern Harrier (*Circus cyaneus*) utilizes a wide variety of open habitats with herbaceous cover, including saltwater and freshwater wetlands, grasslands, idlefields, agricultural pasturelands, deserts, and cropland. This species will forage on small rodents and birds within open fields with dense vegetation. Ideal breeding and nesting grounds include wetland or upland habitats with tall, dense grasses, forbs, or low shrubs for concealment of nests. Northern Harriers will construct nests on the ground or over water on platforms of vegetation.

The survey area has attracted nesting Northern Harriers; an active northern harrier nest was observed within the survey area with two parents tending to nestlings and delivering food. The nest is situated on the ground within dense marsh vegetation in wetlands adjacent to the northern shore of the Sacramento River. The approximate nest location is shown in Attachment E: Biological Resources Map. This species was also observed foraging within clearings surrounded by dense vegetation during the field survey.

Swainson's Hawk

The Swainson's hawk (*Buteo swainsoni*) feeds almost exclusively on insects, the majority being grasshoppers. Young will occasionally be fed rodents, rabbits, and reptiles. Suitable habitat for this species requires riparian areas, shrub-steppe areas with scattered trees, as well as large shrubs. Swainson's hawk nests are typically located in small, shrubby trees. This species can be found throughout North America from southern Canada to northern Mexico.

This species may nest within the survey area within the limited tree nesting sites available. An individual was observed during the field survey foraging in upland grassland and cropland and CNDDB (CDFW 2023a) documentation has been recorded near the survey area. Foraging Swainson's hawks may be present all throughout the survey area.

6.4.1 Species with a High Potential to Occur

Avian Species

Burrowing Owl

The burrowing owl (*Athene cunicularia hypugaea*) occupies wide-open, sparsely vegetated areas like prairies, deserts, grasslands, and agricultural fields. Males are generally territorial and chase or attack other individuals of the same species, except for their breeding partner. Burrowing owls often use burrows dug by other animals like ground squirrels. Although insects and small mammals are the primary source of food for this species, the burrowing owl is an opportunistic predator and eats anything it can physically handle. Unlike other owl species, the burrowing owl nests in the ground and actively hunts in the daytime.

Suitable grassland habitat for foraging is present, particularly in the survey area north of the Sacramento River. Several CNDDB occurrences for this species have been documented within 5 miles of the survey area; however, all occurrences north of the Sacramento River were recorded during the non-breeding season (CDFW 2023). Further, anecdotal reports of overwintering

burrowing owls within the survey area have been reported along Talbert Lane (AECOM 2018a). The survey area contains marginal and limited nesting habitat for owls; suitably sized small mammal burrows were largely absent given the large-scale disking within the majority of grassland habitats. However, if agricultural lands are left fallow or unmaintained, small mammals, such as California ground squirrels, may reestablish burrow networks and provide suitable overwintering or breeding habitat for burrowing owls. This species was not observed or detected during field surveys. This species has a moderate potential to occur for nesting and high potential for foraging within grassland habitats of the survey area.

Saltmarsh Common Yellowthroat

The saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*) prefers freshwater and salt marshes with nearby willow thickets. This species forages on or near the ground, looking for insects and spiders in low vegetation. Females of this species will nest in higher marsh ground to avoid flooding and conceal their young with a loose, bulky outer cup of grasses and sedges, sometimes with a roof over the nest. The saltmarsh common yellowthroat is endemic and a resident to the greater San Francisco Bay Area year-round with some individuals wintering in San Diego County.

Suitable grassland habitat for nesting and foraging is present within the survey area. This species was not observed during the field surveys but has documented CNDDB (CDFW 2023) occurrences within 1 mile of the survey area south of Suisun Bay, in the vicinity of PG&E's existing Pittsburgh Substation and within 5 miles of suitable habitats within the portion of the survey area north of the Sacramento River. For these reasons, this species has a high potential to nest and forage within the survey area.

Suisun Song Sparrow

The Suisun song sparrow (*Melospiza melodia maxillaris*), an endemic species to Suisun Marsh, has been associated with tidal channels, particularly in marshes with dominant species of pickleweed and gumplant (*Grindelia sp.*). The diet of this species mainly consists of vegetables and some animal matter. The nests of the Suisun song sparrow can be found in an array of different substrates and dense vegetation. These include gumplant, sedges (*Scirpus sp.*), rushes (*Juncus sp.*), perennial pepperweed (*Lepidium latifolium*), pickleweed, saltgrass (*Distichlis spicata*), and arrowgrass (*Triglochin maritima*).

The portion of the survey area located on the northern shore of the Sacramento River provides suitable marsh habitat for foraging. This species has CNDDB (CDFW 2023a) occurrences in nearby marsh habitats within 0.25 mile of the survey area in the vicinity of PG&E's existing Pittsburgh Substation within 1 to 5 miles of the survey area north of the Sacramento River. Although this species was not detected during field surveys, it has a high potential to occur for both nesting and foraging.

Mammal Species

Salt Marsh Harvest Mouse

The Salt Marsh Harvest Mouse (*Reithrodontomys raviventris*) is generally restricted to salt or brackish marshes in the general San Francisco Bay Area. This species is highly associated with

pickleweed in saline soil. This is due to the plant's ability to provide year-round cover from predators, a source of food, and refugia from flooding. Salt Marsh Harvest mice will build nests from dry grasses and sedges on the ground and within dense vegetation.

This species has a high potential to occur within survey area due to the abundance of suitable habitat within marshlands north of the Sacramento River. This species was not observed during the field survey but has recent CNDDB occurrences near and within the survey area. Further, there have been recent confirmations of salt marsh harvest mouse presence within 1 mile of the survey area based on trapping detections from San Francisco Estuary Institute's (SFEI) salt marsh harvest mouse database.

Reptile Species

Western Pond Turtle

The western pond turtle (*Actinemys marmorata*) can be found in Puget Sound, Washington ranging down to Northwestern Baja California. They will utilize both terrestrial and aquatic habitats, including permanent and seasonal aquatic habitats like rivers, sloughs, lakes, reservoirs, ponds, and irrigation canals. This species will nest, winter, disperse, and aestivate within 100 feet of a water source onto land. Western pond turtles will consume various aquatic plants, insects, small fish, and amphibians.

Suitable wetland habitat is present within the survey area; however, conditions suitable for nesting were not observed during surveys. Although no observations were made during field surveys, multiple observations have been recorded through CNDDB (2023a) within 1 mile of the survey area north of the Sacramento River. This species has a high potential to occur within the survey area.

6.4.2 Species with a Moderate Potential to Occur

Avian Species

California Black Rail

The California black rail (*Lateralis jamaicensis coturniculus*) inhabits saltwater and brackish marshes with Pickleweed (*Salicornia sp.*), sedges (*Carex sp.*), saltgrass (*Distichlis sp.*), and bulrush (*Scirpus sp.*). They favor high marsh habitat for breeding but are frequently faced with high and moderate tides in the San Francisco Bay Area. California black rails prefer low-growing forms of vegetation with abundant insects. Their diet consists of small invertebrates and seeds of aquatic plants.

Suitable habitat capable of supporting foraging individuals is present in the survey area north of the Sacramento River. Wetland habitats within the survey area lack large stands of pickleweed and tidal flux preferred by the species for breeding sites. This species has been recently documented within 1 mile of the survey area near PG&E's existing Pittsburgh Substation and within 5 miles of the survey area north of the Sacramento River, but was not observed during the field survey. This species has a moderate potential to occur within the survey area.

California Least Tern

The California least tern (*Strernula antillarum browni*) is typically found in colonies of 25 pairs that nest on relatively open beaches free of vegetation. Breeding season usually begins in May and nests are constructed on bare ground. Roosting individuals will forage within 2 miles of their nest location. Adults will forage for fish primarily in near shore ocean waters and in shallow estuaries and lagoons. This species has been known to move further inland to avoid humans and onto mudflats and dredge fill sites.

Suitable nesting habitat for the species does not occur within the survey area; however, suitable foraging habitat is present. CNDDB occurrences of this species have been documented within 5 miles of the survey area (CDFW 2023a). This species was not observed during the field survey, but there is moderate potential California least tern occur within the survey area.

Tricolored Blackbird

The tricolored blackbird (*Agelaius tricolor*) will be found in colonies near a water source and natural grasslands, woodlands, or agricultural croplands. This species has historically been associated with emergent marshes, but they may be found in non-native vegetation and active agricultural areas. Breeding colonies may consist of thousands of birds and may be found in the Central Valley of California and surrounding foothills. The tricolor blackbird diet may include local, abundant food sources, ranging from invertebrates to grains. They can be seen foraging in deep dense grasses and other vegetation.

Although there is limited nesting habitat, suitable foraging habitat can be found the grasslands and croplands along the northern portions of the survey area. No occurrences have been documented near the survey area in over 30 years and tricolored blackbirds were not observed during field surveys. This species has moderate potential to occur in foraging habitat provided by croplands and grasslands.

White-Tailed Kite

The white-tailed kite (*Elanus leucurus*) feeds mostly on voles and other small, diurnal mammals. For habitat to be considered suitable to the species, it must include undisturbed open grasslands, meadows, farmlands, and emergent wetlands to find prey in and dense canopies for roosting. This species is a resident of coastal and valley lowlands.

Grassland and marsh habitat suitable for foraging is present within the survey area; however, nesting habitat is limited given the lack of suitable trees. This species has been recently documented (CNDDB 2023a) near the survey area, but was not observed during field surveys. Therefore, there is moderate potential for this species to occur within the survey area for the purposes of foraging.

Yellow Rail

The yellow rail (*Corturnicops noveboracensis*) will eat small snails, aquatic insects, and seeds found in shallow marshes and wet meadows. Wintering habitat will include freshwater and brackish marshes with dense grass. This species breeds mostly in Canada and northern US states, often having two nests with one to incubate eggs and the other to brood young. Like other rails, this species is highly secretive.

Freshwater marshland habitat required for nesting is not present within the survey area. However, salt marsh habitat, suitable for wintering and foraging birds, is present within the survey area. This species has recent CNDDB occurrences within 5 miles of the survey area (CDFW 2023a), but was not observed during the field survey. For these reasons, this species has a moderate potential to occur within the survey area north of the Sacramento River.

Mammal Species

Western Red Bat

The western red bat (*Lasiurus blossevillii*) prefers riparian woodlands but is found in a variety of other forest habitats. This bat forages in and around vegetation and in open areas near roosting sites on cicadas, beetles, wasps, flies, and moths. Roosting sites are primarily located in trees and rock crevices along forest edges adjacent to streams or open fields, but day roosts will sometimes be located in orchard trees and buildings. This species makes relatively short migrations within California to summer and winter ranges in the north and south of the state. As this species prefers riparian woodlands, threats include loss of riparian zones, primarily due to agricultural conversion and creation of water storage reservoirs.

Limited suitable tree roosting habitat is present within the survey area; however, suitable foraging habitat is present throughout the grassland and marsh habitats north of the Sacramento River. This species has CNDDB occurrences within 1 to 5 miles of the survey area, but was not observed during field surveys. There is a moderate potential for this species to occur within the survey area for the purposes of foraging.

6.5 GENERAL WILDLIFE SPECIES

Thirty-five wildlife species were incidentally identified during the surveys; these included one reptile, four mammals, and 30 birds. Noted wildlife species were identified by direct observation, vocalizations, or the observance of scat and tracks. The wildlife identified are not necessarily comprehensive accounts of all species that utilize the survey area, because species that are nocturnal, secretive, or seasonally absent may not have been observed.

Although substantial portions of the survey area are dominated by non-native grassland that is frequently utilized for agriculture purposes, the portion of the survey area located on the northern shore of the Sacramento River contains tidally influenced estuarine marshes and sloughs that provide important habitat for a variety of species. Sloughs and marshes in the survey area were generally undisturbed, containing thick and continuous stands of hardstem and giant bulrush that provide ample nesting habitat for riparian birds. Several avian species were incidentally observed nesting within stands of bulrush, including marsh wren (*Cistothorus palustris*), northern harrier, and red-winged blackbird (*Agelaius phoeniceus*).

Observed occurrences of wildlife species are shown in Table 4: Wildlife Species Observed within the Survey Area.

Table 4: Wildlife Species Observed within the Survey Area

Common Name	Scientific Name
American coot	*Fulica americana*
American bittern	Botaurus lentiginosus
American goldfinch	*Spinus tristis*
Barn swallow	*Hirundo rustica*
Black phoebe	*Sayornis nigricans*
Black-tailed jackrabbit	*Lepus californicus*
Brown-headed cowbird	*Molothrus ater*
Brewer's blackbird	*Euphagus cyanocephalus*
California gull	*Larus californicus*
California scrub jay	*Aphelocoma californica*
Cliff swallow	*Petrochelidon pyrrhonota*
Cottontail	*Sylvilagus audubonii*
European starling	*Sturnus vulgaris*
Gopher snake	*Pituophis catenifer*
Great blue heron	*Ardea herodias*
Great egret	*Ardea alba*
Horned lark	*Eremophila alpestris*
House finch	*Haemorhous mexicanus*
Killdeer	*Charadrius vociferus*
Mallard	*Anas platyrhynchos*
Marsh wren	*Cistothorus palustris*
Mourning dove	*Zenaida macroura*
Mute swan	*Cygnus olor*
Northern harrier	*Circus hudsonius*
Northern mockingbird	*Mimus polyglottos*
Red-winged blackbird	*Agelaius phoeniceus*
Ring-necked pheasant	*Phasianus colchicus*
River otter	*Lontra canadensis*
Savanah sparrow	*Passerculus sandwichensis*
Snowy egret	*Egretta thula*
Song sparrow	*Melospiza melodia*

Common Name	Scientific Name
Swainson's hawk	*Buteo swainsoni*
Tule elk	*Cervus canadensis nannodes*
Turkey vulture	*Cathartes aura*
Western meadowlark	*Sturnella neglecta*

6.6 CRITICAL HABITAT

No critical habitat is found within the survey area. However, the estuarine, open water habitat within the submarine cable alignment and surrounding Sacramento River is designated as critical habitat for delta smelt (*Hypomesus transpacificus*).

6.7 NATIVE WILDLIFE CORRIDORS AND NURSERY SITES

Wildlife migration corridors are areas that connect suitable wildlife habitats in a region that would otherwise be fragmented by rugged terrain, changes in vegetation, or human disturbance. Natural features (e.g., canyon drainages, ridgelines, or areas with vegetation cover) provide corridors for wildlife travel. Wildlife corridors are important because they provide access to mates, food, and water; allow the dispersal of individuals away from high-population or high-density areas; and facilitate genetic diversity. CEQA guidelines require that project proponents disclose and mitigate for significant impacts on wildlife corridors. Impacts to wildlife corridors, such as human disturbance and development, can cause harm to migrating species, cause species to exceed population thresholds in fragmented patches, or prevent healthy gene flow between populations. The California Essential Habitat Connectivity Project (CEHC) maintains a statewide Essential Habitat Connectivity Map, which broadly depicts large, relatively natural habitat blocks that support native biodiversity (Natural Landscape Blocks) and areas essential for ecological connectivity between them (Essential Connectivity Areas) (Spencer et al., 2010). The Survey Area region lies outside of any of these Natural Landscape Blocks and Essential Connectivity Areas (CDFW, 2021d).

The Proposed Project lies within the Pacific Flyway—an important north-south migration corridor that runs along the Pacific coast of the Americas from Alaska to Patagonia, including all of North America lying west of the Rocky Mountains. The Pacific Flyway links breeding grounds to the north with wintering areas to the south and is used by many different species of birds during migration. Many birds (especially waterfowl) use locations in California's Sacramento Valley as a stopover point or wintering area. One of those major locations is Suisun Marsh, which is less than 10 miles from the Survey Area. At the Proposed Project's latitude, the Pacific Flyway extends inland from the Pacific Ocean for approximately 700 miles. As a result, the Proposed Project's aboveground components would be placed in less than 0.3 percent of the width of the Pacific Flyway. The Proposed Project site does not occur in any nursery sites.

6.8 AQUATIC RESOURCES

Insignia biologists identified one linear water feature within the survey area that is potentially under the jurisdiction of the USACE, RWQCB, and CDFW. Further, seven potentially jurisdictional wetland features were observed within the survey area. Attachment E: Biological Resources Map depicts the locations of the potentially jurisdictional water features within the survey area. Attachment I: Linear Water Feature Photographs presents upstream and downstream photographs of the mapped ephemeral linear water feature. Attachment J: Wetland Feature Photographs presents representative photographs of each wetland feature. Attachment K: Potentially Jurisdictional Water Features Table lists the unique feature identification number, feature type, length, OHWM width and depth, TOB width and depth, Cowardin classification (for wetlands), and the approximate extent of USACE, RWQCB, and CDFW jurisdictions.

Wetland features W-3, W-4, W-7, and portions of W-2 lacked standing water or observable hydrology and were identified by the presence of wetland vegetation (i.e., *Distichilis* sp., *Salicornia* sp., *Frankenia* sp., and *Juncus* sp.).

A formal wetland delineation was conducted in 2024. The findings pertaining to hydrologic features presented in this report are superseded by those documented in Attachment B: Collinsville 500/230 Kilovolt Substation Project Aquatic Resources Delineation Report.

7 – RECOMMENDATIONS

Proposed Project-specific avoidance and minimization measures will need to be developed to reduce the potential for impacts to all special-status species with moderate or high potential to occur within the project area as well as species that are present within the survey area.

Prior to initiating Project activities, the following pre-construction surveys will be required:

- Pre-construction nesting bird surveys conducted within 48 hours prior to work occurring between February 1 and September 30 each year. Surveys will be conducted within 500 feet of all Proposed Project work areas.

- Pre-construction roosting bat survey in areas within and adjacent to the Proposed Project where construction activities have the potential to directly impact active roosts or disrupt bat breeding activities.

- Pre-construction burrowing owl surveys conducted in all areas that may provide suitable nesting habitat according to the CDFW (CDFW 2012) guidelines. The take avoidance surveys, consisting of up to four visits, will be initiated within 30 days of and completed at least 14 days before construction is initiated at a given location. In areas with burrows or refuge that could potentially support burrowing owls, a clearance visit will be conducted within 24 hours of construction.

- A supplemental and floristic botanical survey conducted in 2024 during the appropriate bloom periods for special-status plants with the potential to occur within the expanded survey area north of the Sacramento River, as well as the survey area south of Suisun Bay, in the vicinity of PG&E's existing Pittsburgh Substation. This supplemental effort will provide full survey coverage of the survey area. Floristic surveys are recommended in April and July to capture the bloom periods of all non-perennial plant species with the potential to occur. A supplemental targeted survey will be conducted within the original survey area in 2024 during the bloom period for diamond-petaled California poppy (March to April). These surveys will also serve to confirm the population boundaries of previously observed Welsh's mudwort, Mason's lilaeopsis, and Delta tule pea.[6]

- A formal wetland delineation will be required once further engineering is complete and prior to work commencing within the survey area. Once complete, a preliminary

[6]Surveys within the expanded survey area were completed in 2024 and are detailed in Attachment D: Collinsville 500/230 Kilovolt Substation Project Botanical Survey Report Addendum.

jurisdictional determination will be presented to the USACE that includes all data sheets including National Wetlands Inventory maps (as shown in Attachment L: National Wetlands Inventory Map that show all proposed facilities.[7]

Given the high potential for salt marsh harvest mouse within the survey area and corroborating observation records in CNDDB and SFEI, surveys for this species should not be required, as presence for this species can be assumed within suitable habitats.

For all federally listed species with moderate- or high-potential to occur, if the Proposed Project has the potential to adversely affect the species or its habitat, consultation under Section 7 of the federal ESA will be necessary.

All of the state-listed species identified during the background research have low- or no potential to occur. However, if state-listed species are observed in the Proposed Project area and the Proposed Project has the potential to adversely affect the species, an incidental take permit (ITP) issued by the CDFW may be required to mitigate for potential impacts to those species.

Although the 28 bird species identified in Table 4: Wildlife Species Observed within the Survey Area do not carry listing statuses under the federal ESA or CESA, they are protected under the MBTA, California Fish and Game Code, and CCR. With the exception of the one northern harrier nest described in Section 6.4 Species Present within the Survey Area, no other nests were observed within the survey area.

Several regulatory approvals, authorizations, or permits are required for the Proposed Project, as provided in Table 5: Anticipated Biological Resource Permits and Authorizations. These approvals may include conditions that afford additional protection to species and/or their habitat. LSPGC will comply with all mitigation measures and permit conditions that result from these regulatory reviews and approvals.

As described in Section 5.2 Biological Resource Survey Method, due to access constraints imposed by the property owner, the survey area south of Suisun Bay, in the vicinity of PG&E's existing Pittsburgh Substation was not included in biological resource surveys. While this area was included in the records search and preliminary research for this report, formal field surveys and jurisdictional waters assessments will be required to identify any existing or potentially sensitive biological resources (e.g., vegetation communities, hydrologic features, and special-status plant and animal species and their associated habitats) that may be present within or adjacent to this portion of the survey area.

[7]Formal wetland delineations of all wetland features identified in this report were conducted in 2024. The results of these delineations are detailed in Attachment B: Collinsville 500/230 Kilovolt Substation Project Aquatic Resources Delineation Report.

Table 5: Anticipated Biological Resource Permits and Authorizations

Agency	Permit/Approval/Consultation	Jurisdiction/Purpose of Permit
Federal Agencies		
USACE	CWA Section 404 Nationwide Permit	Permanent and temporary fill of waters of the U.S.
USFWS	FESA Section 7 Consultation	Construction activities such as vegetation clearing or removal that may affect federally listed species or their habitats, including salt marsh harvest mouse
State Agencies		
CDFW	California Fish and Game Code Section 1600 Streambed Alteration Agreement	Activities that will disturb the bed or bank of a jurisdictional waterbody
RWQCB	CWA Section 401 Water Quality Certification	Activities authorized by federal agencies that may affect state water quality

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ATTACHMENT A: COLLINSVILLE TERRESTRIAL BIOLOGICAL RESOURCES TECHNICAL REPORT ADDENDUM

INSIGNIA ENVIRONMENTAL

LS POWER GRID CALIFORNIA, LLC

COLLINSVILLE 500/230 KILOVOLT SUBSTATION PROJECT

TERRESTRIAL BIOLOGICAL RESOURCES TECHNICAL REPORT ADDENDUM

MAY 2025

PREPARED FOR:

LS POWER GRID CALIFORNIA

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1 – INTRODUCTION

LS Power Grid California, LLC (LSPGC) retained Insignia Environmental (Insignia) to conduct a pre-project survey for the Collinsville 500/230 Kilovolt (kV) Substation Project (Proposed Project). The Proposed Project would involve the construction of a new 500/230 kV substation (Collinsville Substation), the construction of two new 500 kV single-circuit transmission line segments that will loop Pacific Gas and Electric Company's (PG&E's) existing Vaca Dixon-Tesla 500 kV Transmission Line into the proposed LSPGC Collinsville Substation, and the construction of one new 230 kV double-circuit transmission line that would connect the proposed LSPGC Collinsville Substation to PG&E's existing Pittsburg Substation. The Proposed Project's general location is depicted in Figure 1: Project Overview Map, and the Proposed Project components located within the survey area associated with this Terrestrial Biological Resources Technical Report Addendum (Addendum) are depicted in Figure 2: Project Components Map. A Biological Resources Technical Report (Original Report) (Insignia 2024) was prepared for the Proposed Project in July 2024 to identify any existing or potentially sensitive biological resources (e.g., vegetation communities, hydrologic features, and special-status plant and animal species and their associated habitats) that may be present within or adjacent to the vicinity of the Proposed Project.

Since the completion of the Original Report, the project design for the Proposed Project has undergone changes, including the addition of three new transposition structures, the removal of two existing transposition lattice steel poles (LSPs), and the replacement of two existing lattice steel towers (LSTs) with two new three-pole dead-end tubular steel poles (TSPs) at four distinct locations along PG&E's existing Vaca Dixon-Tesla 500 kV Transmission Line. These four new structure sites (hereafter referred to as Tower A, Tower B, Tower C, Tower D, or "Towers" collectively) are located outside of the survey area[1] evaluated in the Original Report. To accommodate supplemental habitat assessment and preliminary waters surveys for the Towers, the Proposed Project survey area has since been expanded by approximately 526 acres. This Addendum was prepared to supplement the Original Report and details the findings of habitat assessments and preliminary waters surveys conducted within the approximately 526-acre survey area that was added (Tower survey area).

2 – PROJECT DESCRIPTION

2.0 PROJECT LOCATION

As depicted in Figure 1: Project Overview Map, the Towers would be located at four separate sites spread along approximately 33 miles of PG&E's existing Vaca Dixon-Tesla 500 kV Transmission Line. The approximately 526-acre Tower survey area is divided among the four discrete transposition structure locations. The survey areas associated with each transposition structure location are separate and do not overlap.

[1] The survey area primarily consists of all terrestrial areas of the Proposed Project area north of the Sacramento River, as well as an approximately 10-acre buffer. Terrestrial areas south of Suisun Bay, in the vicinity of PG&E's existing Pittsburgh Substation, compose a small portion of the survey area.

Tower A, the northernmost transposition structure location, is located approximately 3 miles southeast of the City of Vacaville in Solano County. The Tower survey area associated with Tower A is approximately 214 acres.

Tower B is located approximately 7 miles southeast of Tower A and approximately 3 miles southeast of the community of Denverton in Solano County. The Tower survey area associated with Tower B is approximately 91 acres.

Tower C—the site of the removal of two existing LSPs and the replacement of two existing LSTs with two three-pole dead-end TSPs—is located approximately 5 miles southeast of Tower B and approximately 2 miles east of Birds Landing in Solano County. The Tower survey area associated with Tower C is approximately 146 acres.

Tower D, the southernmost transposition structure installation, is located approximately 21 miles southeast of Tower C within the census designated place of Byron in Contra Costa County. The Tower survey area associated with Tower D is approximately 75 acres.

2.1 PROJECT COMPONENTS

With the exception of the addition of the Towers, the main components of the Proposed Project remain largely unchanged from the Original Report. The main components are depicted on Figure 2: Project Components Map and include the following:

- Constructing a new 500/230 kV substation (the proposed LSPGC Collinsville Substation).
- Constructing two new approximately 1.2-mile-long, single-circuit 500 kV transmission line segments extending to interconnect (or "loop") PG&E's existing Vaca Dixon-Tesla 500 kV Transmission Line into the proposed LSPGC Collinsville Substation.
- Constructing a new approximately 6-mile-long, double-circuit 230 kV transmission line to connect the proposed LSPGC Collinsville Substation to PG&E's existing Pittsburg Substation.
- Extending and connecting PG&E's existing 12 kV Peabody 2107 Circuit distribution line to the proposed LSPGC Collinsville Substation.
- Constructing two new telecommunications paths to the proposed LSPGC Collinsville Substation—a new microwave tower would be constructed and owned by PG&E at the substation—and a new fiber optic path consisting of two fiber optic cables for redundancy would be installed between existing fiber in the City of Pittsburg and the proposed substation.
- Construction of three new PG&E 500 kV transposition structures, the removal of two existing LSPs, and the replacement of two existing LSTs with two new three-pole dead-end TSPs along PG&E's existing Vaca Dixon-Tesla 500 kV Transmission Line.

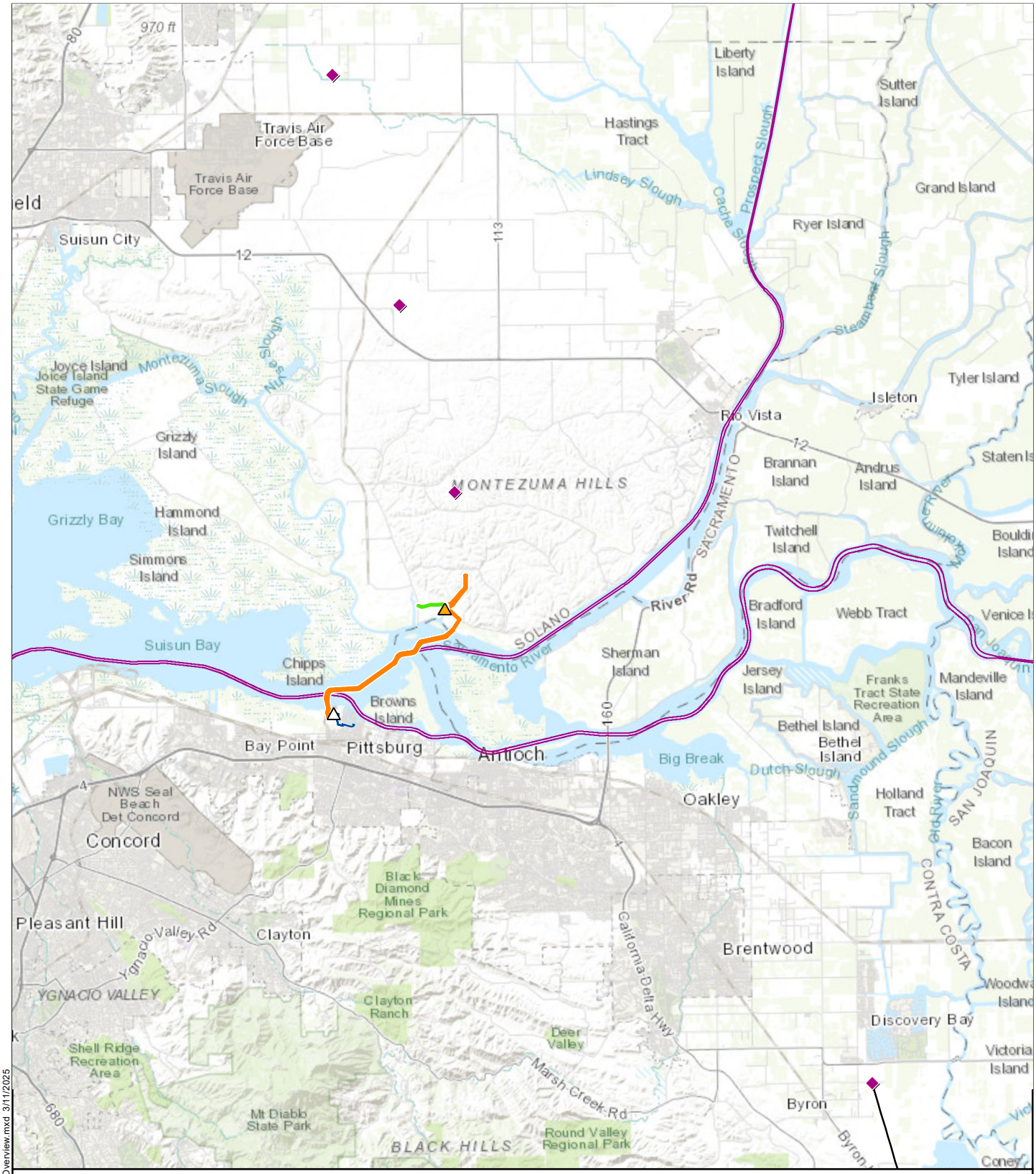

Figure 1: Project Overview Map — **Collinsville 500/230 Kilovolt Substation Project**

- Proposed LSPGC Collinsville Substation
- Existing PG&E Pittsburg Substation
- Proposed PG&E 500 kV Transposition Structure
- Proposed Project Transmission Lines
- Proposed PG&E 12 kV Distribution Line
- Proposed LSPGC Telecommunications Line
- Existing PG&E Vaca Dixon-Tesla Transmission Line
- Navigational Channel

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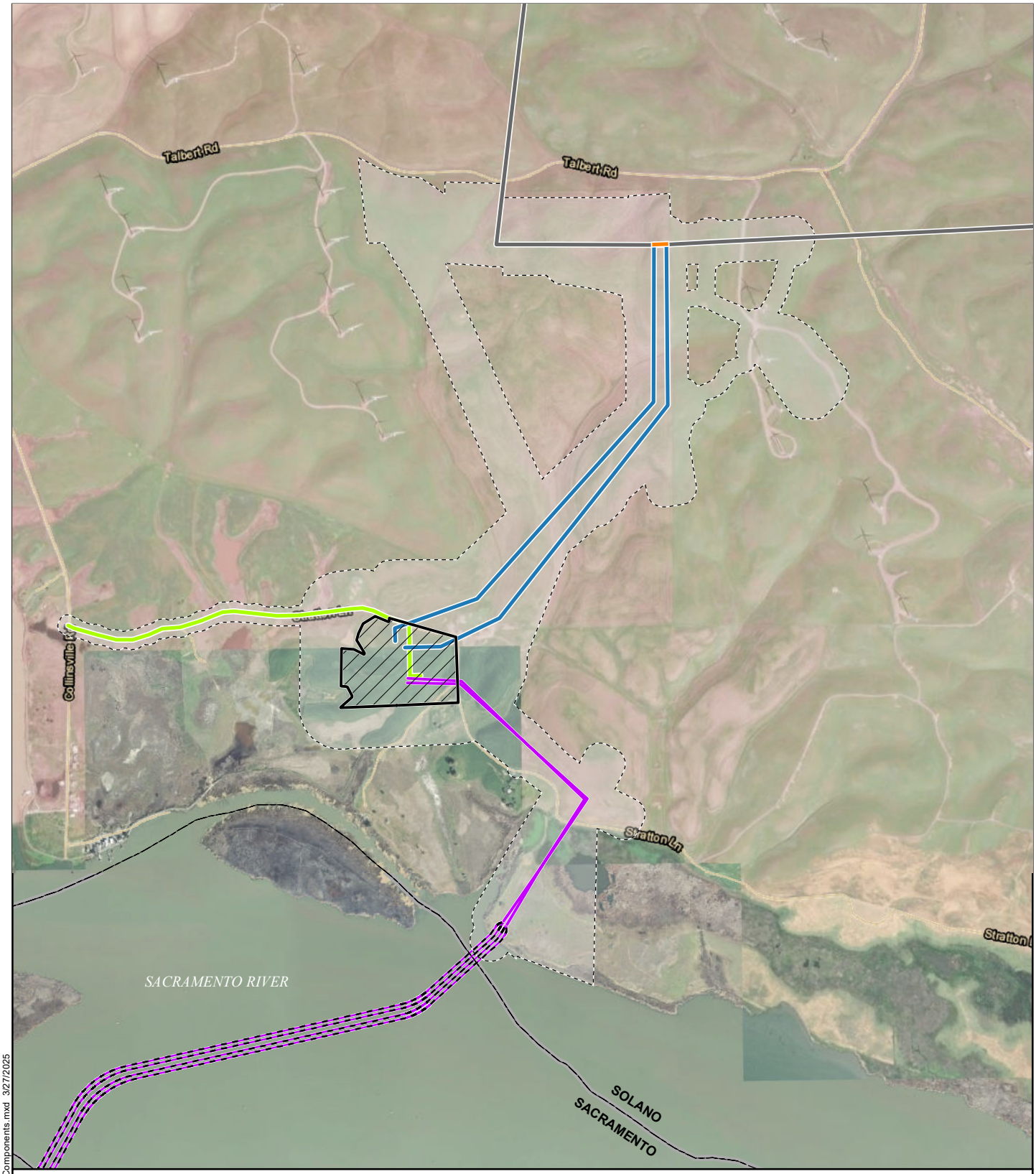

Figure 2: Project Components Map 1 of 6 **Collinsville 500/230 Kilovolt Substation Project**

- Existing PG&E 500 kV Overhead Transmission Line
- Proposed LSPGC 230 kV Overhead Segment
- Proposed LSPGC 230 kV Submarine Segment
- Proposed PG&E 12 kV Distribution Line
- Proposed PG&E 500 kV Interconnection
- Existing PG&E 500 kV Overhead Transmission Line to be Removed
- County Boundary
- Survey Area
- Proposed Collinsville Substation

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Figure 2: Project Components Map 2 of 6 **Collinsville 500/230 Kilovolt Substation Project**

- Proposed LSPGC 230 kV Submarine Segment
- Proposed LSPGC 230 kV Underground Segment
- Proposed LSPGC Telecommunications Line
- Survey Area
- Existing PG&E Pittsburg Substation
- Proposed Riser
- Proposed Utility Vault

1:8,000

0 500 1,000 Feet

LS POWER GRID CALIFORNIA INSIGNIA ENVIRONMENTAL

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Figure 2: Project Components Map 3 of 6 **Collinsville 500/230 Kilovolt Substation Project**

- Proposed PG&E 500 kV Transposition Structure
- Existing PG&E 500 kV Overhead Transmission Line
- Survey Area

1:10,000

0 500 1,000 Feet

LS POWER GRID CALIFORNIA INSIGNIA ENVIRONMENTAL

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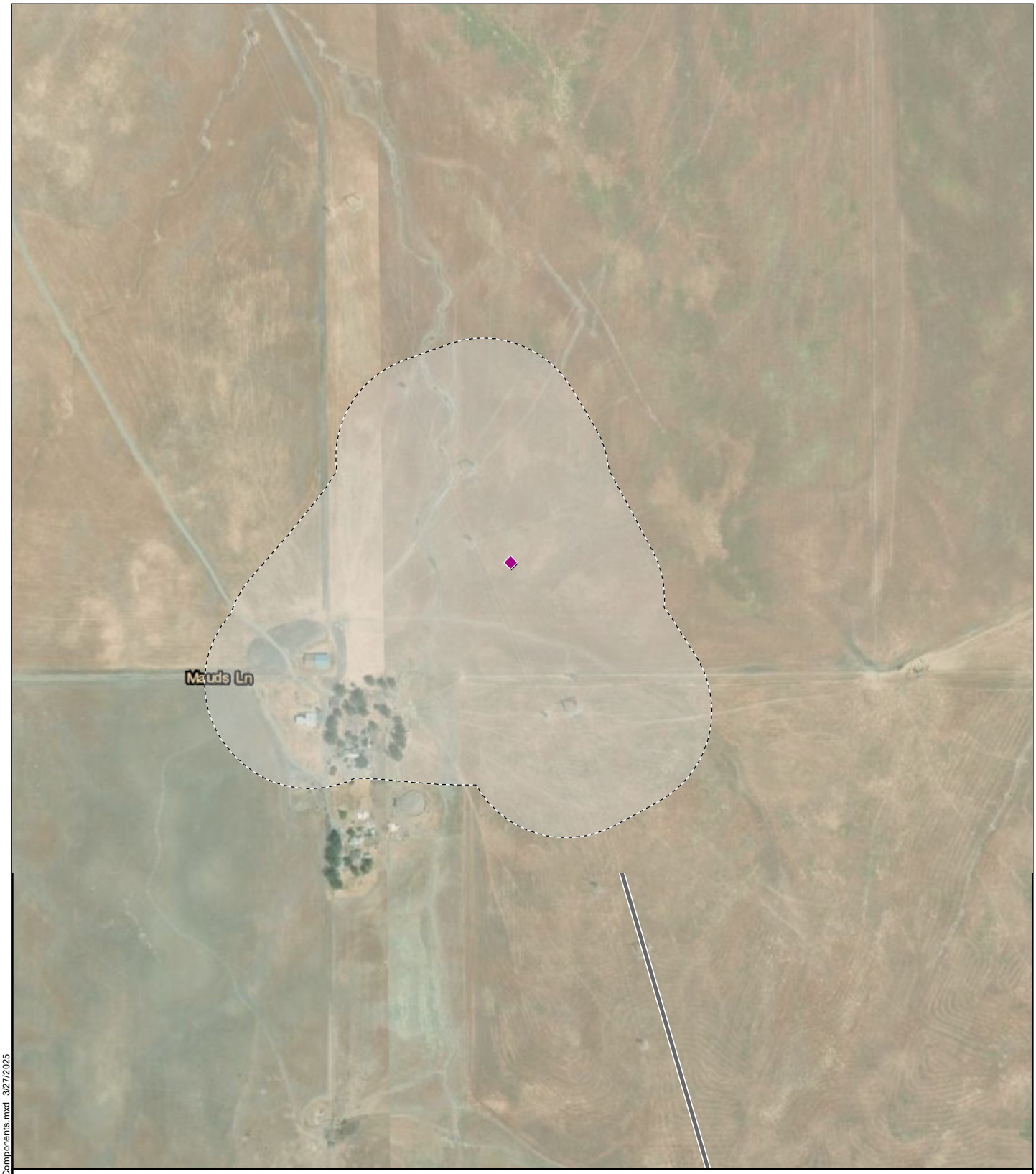

Figure 2: Project Components Map 4 of 6 **Collinsville 500/230 Kilovolt Substation Project**

Proposed PG&E 500 kV Transposition Structure

Existing PG&E 500 kV Overhead Transmission Line

Survey Area

1:8,000

0 500 1,000 Feet

LS POWER GRID CALIFORNIA INSIGNIA ENVIRONMENTAL

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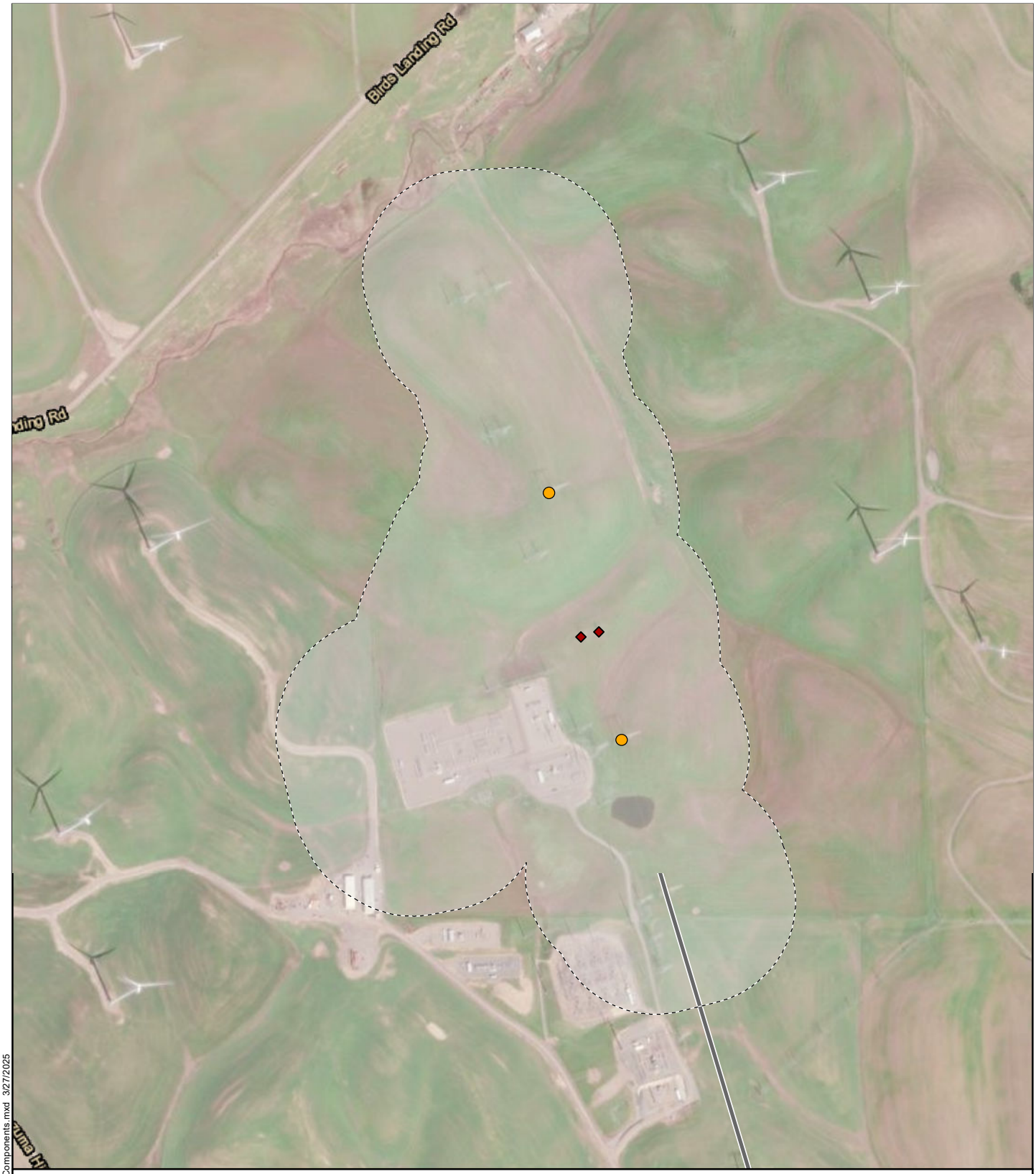

Figure 2: Project Components Map 5 of 6 **Collinsville 500/230 Kilovolt Substation Project**

- Proposed PG&E LSP Removal
- Proposed PG&E Three-Pole Dead-End TSP
- Existing PG&E 500 kV Overhead Transmission Line
- Survey Area

1:8,000

0 500 1,000 Feet

LS POWER GRID CALIFORNIA INSIGNIA ENVIRONMENTAL

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Figure 2: Project Components Map 6 of 6 **Collinsville 500/230 Kilovolt Substation Project**

- Proposed PG&E 500 kV Transposition Structure
- Existing PG&E 500 kV Overhead Transmission Line
- Survey Area

1:8,000

0 500 1,000 Feet

LS POWER GRID CALIFORNIA INSIGNIA ENVIRONMENTAL

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3 – REGULATORY FRAMEWORK

The regulatory framework applicable to the Tower survey area is consistent with the framework established in the Original Report. The following federal, state, and local regulations apply to the Tower survey area:

- Federal
  - Federal Endangered Species Act (FESA)
  - Migratory Bird Treaty Act (MBTA)
  - Bald and Golden Eagle Protection Act (BGEPA)
  - Clean Water Act (CWA) Sections 404, 402, and 401
  - Plant Protection Act of 2000
- California
  - California Fish and Game Code Sections 3511, 4700, 5050, and 5515
  - California Fish and Game Code Sections 3503, 3503.5, and 3513
  - Porter-Cologne Water Quality Control Act
  - Native Plant Protection Act
  - California Code of Regulations (CCR)
- Local
  - Solano County General Plan
  - Solano County Water Agency (SCWA) Solano Multispecies Habitat Conservation Plan
  - East Contra Costa Habitat and Natural Community Conservation Plan
  - PG&E Bay Area Operations and Maintenance Habitat Conservation Plan

4 – PRELIMINARY AGENCY CONSULTATION

No pre-survey contact with applicable wildlife agencies was conducted regarding this Addendum. No agency approvals were required for biologists conducting surveys. Agency protocols and best practices applied to the survey effort are detailed in Section 5.2 Biological Resource Survey Method of the Original Report.

5 – METHODS

Consistent with the methods and definitions outlined in the Original Report, Insignia performed a records search, a habitat assessment, and a preliminary jurisdictional delineation within the Tower survey area.

Surveys within the Tower survey area were conducted on February 20 and 21, 2025. Insignia biologists searched for areas of potential habitat by walking meandering transects that covered 100 percent of the Tower survey area that was accessible. Approximately 82 acres that were inaccessible due to lack of landowner permission were surveyed through binoculars to the

greatest extent feasible from accessible rights-of-way. The Tower survey area and areas where surveyor access was limited are shown in Attachment A: Biological Resources Map.

Surveys were conducted during daylight hours with clear to partly cloudy skies and did not occur in inclement weather conditions or fog cover. Temperatures ranged from 45 to 70 degrees Fahrenheit with wind speeds between 5 and 20 miles per hour.

5.0 MODIFICATIONS FROM ORIGINAL REPORT

A fully floristic special-status plant survey was conducted in the survey area for the Original Report; however, this survey was not conducted within the Tower survey area for this Addendum. Therefore, the criteria for a special-status species' potential to occur in this Addendum differ from the Original Report and are as follows:

- Present: The species was incidentally observed during the habitat assessment surveys.
- High Potential: Suitable habitat for the species is present within the Tower survey area, and recent (i.e., within 30 years) occurrences have been reported within 1 mile of the Tower survey area; or marginal habitat is present, and recent occurrences have been recorded within 0.25 mile of the Tower survey area.
- Moderate Potential: Suitable habitat for the species is present, and the Tower survey area is located within the species' known range, but no recent (i.e., within 30 years) occurrences have been recorded between 1 and 5 miles from the Tower survey area; or marginal habitat is present, the Tower survey area is located within the species' known range, and multiple recent occurrences have been recorded between 1 and 5 miles from the Tower survey area.
- Low Potential: Poor or marginal habitat for the species exists, and no more than one recent occurrence has been recorded between 1 and 5 miles from the Tower survey area; barriers to migration/dispersal may be present; or suitable habitat for the species is present within the Tower survey area, but either no recent occurrences have been recorded between 1 and 5 miles from the Tower survey area or the Tower survey area is located outside of the species' known range.
- No Potential: No habitat exists for the species; no occurrences have been recorded between 1 and 5 miles from the Tower survey area, or the Tower survey area is outside of the species' known geographic or elevation range; and/or the species has been confirmed to be extirpated from the area.

6 – RESULTS

6.0 GEOGRAPHY, CLIMATE, AND HYDROLOGY

Precipitation, average air temperatures, and elevation data at each transposition tower location within the Tower survey area are detailed in Table 1: Geography, Climate, and Hydrology within the Tower Survey Area.

Table 1: Geography, Climate, and Hydrology within the Tower Survey Area

Metric	Tower			
	A*	B*	C*	D**
Average Rainfall (inches)	24.0	24.0	24.0	13.7
Period of Highest Rainfall	Dec-Mar	Dec-Mar	Dec-Mar	Dec-Feb
Average Annual Temperature Range (degrees Fahrenheit)	26-108	26-108	26-108	26-106
Elevation Range (feet)***	42-79	72-140	170-281	5-14

(*National Oceanic and Atmospheric Administration [NOAA] 2025a)
(**NOAA 2025b)
(***Google Earth Pro 2025)

6.1 RECORDS SEARCH

Results of the initial desktop analysis indicated that the areas surrounding the Tower survey area are primarily grassland habitat and agricultural areas, followed by some developed areas for farming or residential purposes. Grassland habitats, in general, may provide suitable habitat for special-status plants.

From this records search, Insignia compiled a list of 44 special-status plant species and 46 special-status wildlife species that have the potential to occur within the Tower survey area associated with each of the Towers, as well as 18 potential jurisdictional water features from a United States (U.S.) Geological Survey (USGS) National Wetlands Inventory (NWI) database review. Special-status species and water features found during the records search are broken down by transposition towers and are detailed in Table 2: Special-Status Plant and Wildlife Species Identified During Records Search and Table 3: Aquatic Resources Identified During Records Search of Water Features .

Table 2: Special-Status Plant and Wildlife Species Identified During Records Search within 5 Miles of the Tower Survey Area

Tower	Special Status Occurrences	
	Plants	Wildlife
A	33	20
B	36	28
C	33	31
D	28	30
All Towers*	**44**	**46**

Note: The totals represent the cumulative special-status species count for the Towers. The total will not sum as the transposition tower records search either overlapped and captured the same occurrence data or independently recorded the same species within their respective search areas.

Table 3: Aquatic Resources Identified During Records Search of Water Features within the Tower Survey Area

Tower	Water Features
A	8
B	2
C	2
D	6
Total	**18**

6.2 VEGETATION COMMUNITIES

Ten vegetation community alliances and land cover types were identified in the Tower survey area, as presented in Table 4: Vegetation Community Alliances and Land Cover Types and depicted in Attachment A: Biological Resources Map. The vegetation community and land cover locations are also documented in Attachment A: Biological Resources Map, and photographs are provided in Attachment B: Habitat Assessment Photographs. The natural communities observed in the Tower survey area are ranked S3, S4, and semi-natural alliance (SNA) (semi-natural stands dominated by non-native species). Two of the 10 natural communities observed are considered sensitive. The following subsections describe each vegetation community identified within the survey area.

Approximately 162 acres of the Tower survey area were not accessible to the field survey team on foot. However, these areas were assessed for habitat from adjacent accessible areas through a combination of binocular-assisted evaluation and desktop analysis. Although vegetation communities and land cover types were identified for portions of the inaccessible terrain, a preliminary jurisdictional delineation for waters was not feasible in areas with limited foot access.

6.2.0 *Allenrolfea occidentalis* Shrubland Alliance (S3)

This community is associated with dry lakebed margins, hummocks, playas perched above current drainages, and seeps. Iodine bush (*Allenrolfea occidentalis*) typically has a greater than 2-percent absolute cover in the shrub canopy and is dominant or co-dominant in the shrub and herbaceous layers with fourwing saltbush (*Atriplex canescens*), saltgrass (*Distichlis spicata*), and alkali heath (*Frankenia salina*). This community was observed within the Tower survey area associated with Tower D, along either side of Kellog Creek Road adjacent to roadside drainages.

6.2.1 *Avena* spp. – *Bromus* spp. Herbaceous Semi-Natural Alliance

This community is found in foothills, waste places, rangelands, and opening in woodlands. The dominant species include oats (*Avena* spp.) and bromes (*Bromus* spp.) in the herbaceous layer with at least 50-percent relative cover. Co-dominant species in the herbaceous layer may include Australian saltbush (*Atriplex semibaccata*) and barley (*Hordeum* spp.). This alliance is widespread across the Tower survey area associated with Tower B, Tower C, and Tower D. Areas where this community occurs are being used for active cattle grazing or agriculture.

Table 4: Vegetation Community Alliances and Land Cover Types

Vegetation Community or Land Cover Type	Area Identified (acres)			
	A	B	C	D
Agriculture	22.4	--*	--	31.4
Allenrolfea occidentalis Shrubland Alliance**	--	--	--	0.6
Avena spp. – *Bromus* spp. Herbaceous SNA	--	84.6	132.5	34.0
Brassica nigra – *Centaurea* (*solstitialis*, *melitensis*) Herbaceous SNA	3.3	--	--	1.6
Developed	2.0	1.1	12.2	1.0
Disturbed	15.3	0.9	1.6	1.4
Lolium perenne Herbaceous SNA	165.9	--	--	--
Open water	1.1	--	--	--
Ornamental Vegetation	4.2	3.9	--	2.7
Schoenoplectus (*acutus, californicus*) Herbaceous Alliance**	--	--	--	2.0
Total* **	**214.3**	**90.5**	**146.2**	**74.7**

*This vegetation community or land cover type was not observed within the Tower survey area.
** This is a California Department of Fish and Wildlife- (CDFW-) designated sensitive natural community (State Rarity Rank S1-S3).
*** Due to rounding, the total may not sum.

6.2.2 *Brassica nigra - Centaurea* (*solstitialis, melitensis*) Herbaceous Semi-Natural Alliance

This community is typically associated with disturbed areas where black mustard (*Brassica nigra*) and short-pod mustard (*Hirshfeldia incana*) achieve 80-percent relative cover in the herbaceous layer. Similar ruderal forbs, including tocolote (*Centaurea melitensis*) and yellow star thistle (*Centaurea solstitialis*), may achieve dominance or co-dominance. This community was observed within the Tower survey area associated with Tower A where active cattle grazing occurs and at Tower D along either side of agricultural canals.

6.2.3 *Lolium perenne* Herbaceous Semi-Natural Alliance

This community contains Italian rye grass (*Festuca perennis*) that is dominant or co-dominant with other non-natives in the herbaceous layer, including rip-gut brome (*Bromus diandrus*), sea barley (*Hordeum marinum*), and wild oat (*Avena fatua*). Typically, the herbaceous layer is continuous and often forms monocultures, which contributes to a poorly developed shrub layer. This alliance is widespread across the Tower survey area associated with Tower A, where the land is used for active cattle grazing and agriculture.

6.2.4 *Schoenoplectus* (*acutus, californicus*) Herbaceous Alliance (S3S4)

This community is found in a variety of wetland habitats, including brackish marshes, freshwater ponds, sloughs, swamps, and roadside ditches. The herbaceous layer is intermittent to continuous, forming thick stands that often result in a poorly developed shrub layer. Hardstem

bulrush (*Schoenoplectus acutus*) or giant bulrush (*Schoenoplectus californicus*) typically contain greater than 50-percent relative cover in the herbaceous layer. This community was observed within the Tower survey area associated with Tower D, in the middle of several agricultural canals that run between fallow and active agriculture fields.

6.3 SPECIAL-STATUS PLANT SPECIES

Background research conducted for the Tower survey area generated a list of 41 special-status plant species that have the potential to occur in the Tower survey area. This list was generated by comparing the species' ranges and habitat requirements with the location of the Tower survey area and habitat types within it. These species are presented in Table 5: Special-Status Plant Species with the Potential to Occur, which provides the listing status, life history, and bloom period for each species. California Natural Diversity Database (CNDDB) occurrences of special-status plants are presented in Attachment C: CNDDB Occurrences of Special-Status Plant Species.

As documented in Table 5: Special-Status Plant Species with the Potential to Occur, seven species have a high potential to occur and 28 species have a moderate potential to occur.

6.4 SPECIAL-STATUS WILDLIFE SPECIES

Based on the literature and database review, 46 special-status wildlife species were identified that have the potential to occur within the Tower survey area. The species name, listing status, life history, known locations, and a brief assessment of the potential to occur within the Tower survey area are provided for each species in Table 6: Special-Status Wildlife Species with the Potential to Occur. CNDDB occurrences of special-status wildlife are presented in Attachment D: CNDDB Occurrences of Special-Status Wildlife Species.

As documented in Table 6: Special-Status Wildlife Species with the Potential to Occur, two species (golden eagle [*Aquila chrysaetos*] and northern harrier [*Circus cyaneus*]) were incidentally observed during the habitat assessment surveys, eight species have a high potential to occur, and 19 species have a moderate potential to occur.

6.5 GENERAL WILDLIFE SPECIES

Nineteen wildlife species were incidentally identified during the surveys, which includes two mammals and 17 birds. Noted wildlife species were identified by direct observation, vocalizations, or the observance of scat and tracks. The wildlife identified are not necessarily comprehensive accounts of all species that utilize the Tower survey area, because species that are nocturnal, secretive, or seasonally absent may not have been observed. Observed occurrences of wildlife species are shown in Table 7: Wildlife Species Observed within the Tower Survey Area.

Table 5: Special-Status Plant Species with the Potential to Occur

Common Name (*Scientific Name*)	Listing Status[2]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Survey Area			
					Tower A	Tower B	Tower C	Tower D
alkali-sink goldfields (*Lasthenia chrysantha*)	1B.2	This species occurs in vernal pools at elevations between 0 and 656 feet. (CNPS 2025b)	Feb-Apr	annual herb	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles of the survey area. **No Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**
alkali milk-vetch (*Astragalus tener var. tener*)	1B.2	This species occurs in alkali playas, valley and foothill grasslands, and vernal pools at elevations between 5 and 195 feet. (CNPS 2025b)	Mar-Jun	annual herb	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has been documented within 0.25 mile of the survey area. **High Potential**
Antioch Dunes evening-primrose (*Oenothera deltoides* ssp. *howellii*)	FE; SE; 1B.1	This species occurs in inland dunes at elevations between 0 to 100 feet. (CNPS 2025b)	Mar-Sep	perennial herb	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles of the survey area. **No Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles of the survey area. **No Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles of the survey area. **No Potential**
Baker's navarretia (*Navarretia leucocephala ssp. bakeri*)	1B.1	This species occurs in a variety of habitats including cismontane woodland, lower montane coniferous forest, meadows and seeps. It may also be seen in valley or foothill grasslands and vernal pools at elevations between 16 and 5,709 feet. (CNPS 2025b)	Apr-Jul	annual herb	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 0.25 and 1 mile of the survey area. **High Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 0.25 and 1 mile of the survey area. **High Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**

[2] Explanation of federal and state listing codes:

Federal listing code:
-FE: Federally listed as endangered

State listing code:
-SE: State-listed as endangered

California Native Plant Society (CNPS) California Rare Plant Ranks (CRPRs):
-1A: Presumed extinct in California and rare/extinct elsewhere
-1B: Rare or endangered in California and elsewhere
-2B: Rare, threatened, or endangered in California, but more common elsewhere

CRPR Threat Codes:
-0.1: Seriously threatened in California (over 80 percent of occurrences threatened, high degree and immediacy of threat)
-0.2: Moderate Potentially threatened in California (20 to 80 percent of occurrences threatened, Moderate Potential degree and immediacy of threat)

Common Name (*Scientific Name*)	Listing Status[2]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Survey Area			
					Tower A	Tower B	Tower C	Tower D
bearded popcornflower (*Plagiobothrys hystriculus*)	1B.2	This species occurs in valley & foothill grassland and vernal pool at elevations between 0 to 900 feet. (CNPS 2025b)	Apr-May	annual herb	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has been documented within 0.25 mile of the survey area. **High Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has been documented within 0.25 mile of the survey area. **High Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**
Big tarplant (*Blepharizonia plumosa*)	1B.1	This species occurs within valley and foothill grasslands at elevations between 98 and 1,657 feet. (CNPS 2025b)	Jul-Oct	annual herb	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**
Boggs Lake hedge-hyssop (*Gratiola heterosepala*)	2B.2	This species occurs within marshes, swamps, and vernal pools at elevations between 33 and 7,792 feet. (CNPS 2025b)	Apr-Aug	annual herb	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles of the survey area. **No Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within the 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**
Bolander's water-hemlock (*Cicuta maculata var. bolanderi*)	2B.2	This species occurs in marsh & swamp and salt marsh at elevations between 0 to 655 feet. (CNPS 2025b)	Jul-Sep	perennial herb	Suitable marsh habitat and conditions for this species are not present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **No Potential**	Suitable marsh habitat and conditions for this species are not present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **N Potential**	Suitable marsh habitat and conditions for this species are not present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **No Potential**	Suitable marsh habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles of the survey area. **No Potential**
Brittlescale (*Atriplex depressa*)	2B.2	This species occurs in a variety of habitats including alkali playa, chenopod scrub, meadows and seep. It may also be observed in valley or foothill grasslands and vernal pools at elevations between 5 to 1,050 feet. (CNPS 2025b)	Apr-Oct	annual herb	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**

Common Name (*Scientific Name*)	Listing Status[2]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Survey Area			
					Tower A	Tower B	Tower C	Tower D
California alkali grass (*Puccinellia simplex*)	2B.2	This species occurs in a variety of habitats including chenopod scrub, meadows and seeps. It may also be observed in valley or foothill grasslands and vernal pools at elevations between 7 and 3,051 feet. (CNPS 2025b)	Mar-May	annual herb	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**
Caper-fruited tropidocarpum (*Tropidocarpum capparideum*)	1B.1	This species occurs in valley and foothill grasslands at elevations between 3 and1,493 feet. (CNPS 2025b)	Mar-Apr	annual herb	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 0.25 and 1 mile of the survey area. **High Potential**
Carquinez goldenbush (*Isocoma arguta*)	1B.2	This species occurs in valley & foothill grassland at elevations between 5 to 65 feet. (CNPS 2025b)	Aug-Dec	perennial shrub	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **No Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **No Potential**	Suitable habitat and conditions are present within the survey area. This species has not been documented within 5 miles of the survey area. **Moderate Potential**
chapparal ragwort (*Senecio aphanactis*)	2B.2	This species occurs in chaparral, cismontane woodland, and coastal scrub at elevations between 50 to 2,625 feet. (CNPS 2025b)	January to April	annual herb	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles from the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles from the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles from the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **No Potential**
Colusa grass (*Neostapfia colusana*)	SE; 1B.2	This species occurs in vernal pools at elevations between 15 and 655 feet. (CNPS 2025b)	May-Aug	annual herb	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area. **No Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented 5 miles of the survey area. **No Potential**

Common Name (*Scientific Name*)	Listing Status[2]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Survey Area			
					Tower A	Tower B	Tower C	Tower D
Contra Costa goldfields (*Lasthenia conjugens*)	FE; 1B.2	This species occurs in a variety of habitats such as alkali playa, cismontane woodland, and valley or foothill grasslands. It may also be found in vernal pools at elevations between 0 to 1,540 feet. (CNPS 2025b)	Mar-Jun	annual herb	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area. **Moderate Potential**
Contra Costa wallflower (*Erysimum capitatum* var. *angustatum*)	FE; SE; 1B.1	This species occurs in inland dunes at elevations between 10 and 65 feet. (CNPS 2025b)	Mar-Jul	perennial herb	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles of the survey. **No Potential**
Coulter's goldfields (*Lasthenia glabrata ssp. coulteri*)	1B.1	This species occurs within marshes and seeps, playas, and vernal pools at elevations between 5 and 4,005 feet. (CNPS 2025b)	Feb-Jun	annual herb	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**
Crampton's tuctoria or Solano grass (*Tuctoria mucronata*)	1B.1	This species occurs in valley or foothill grasslands and vernal pools at elevations between 15 and 35 feet. (CNPS 2025b)	Apr-Aug	annual herb	Suitable grasslands are present within the survey area; however, the survey area is not within the known elevation range for this species. Therefore, marginally suitable habitat is present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Low Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Not Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles of the survey area. **No Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area. **Moderate Potential**
Delta button-celery (*Eryngium racemosum*)	SE; 1B.1	This species occurs in riparian scrub at elevations between 10 and 100 feet. (CNPS 2025b)	Jun-Oct	annual/ perennial herb	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has been documented between 1 and 5 miles of the survey area; however, this species' known range does not overlap with the survey area. **No Potential**

Common Name (*Scientific Name*)	Listing Status[2]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Survey Area			
					Tower A	Tower B	Tower C	Tower D
Delta mudwort (*Limosella australis*)	2B.1	This species occurs in a variety of habitats such as brackish marsh, freshwater marsh, marsh or swamp. It may also be observed within riparian scrub at elevations between 0 to 10 feet. (CNPS 2025b)	May to August	perennial stoloniferous herb	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles of the survey area. **No Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **No Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **No Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **No Potential**
Delta tule pea (*Lathyrus jepsoniil* var. *jepsonii*)	1B.2	This species occurs in marshes or swamps at elevations between 0 to 15 feet. (CNPS 2025b)	May to July	perennial herb	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles of the survey area. **No Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **No Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **No Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles of the survey area. **No Potential**
diamond-petaled California poppy (*Eschscholzia rhombipetala*)	1B.1	This species occurs in valley or foothill grassland at elevations between 0 to 3,200 feet. (CNPS 2025b)	March to April	annual herb	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**
dwarf downingia (*Downingia pusilla*)	FE; 1B.1	This species occurs in valley or foothill grassland and vernal pool at elevations between 5 to 1,460 feet. (CNPS 2025b)	Mar-May	annual herb	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**
fragrant fritillary (*Fritillaria liliacea*)	1B.1	This species occurs in a variety of habitats, such as cismontane woodland and coastal prairie or scrub. It may also be observed in valley & foothill grassland at elevations between 10 to 1,345 feet often found in ultramafic soils. (CNPS 2025b)	Feb-Apr	perennial bulbiferous herb	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**

Common Name (*Scientific Name*)	Listing Status[2]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Survey Area			
					Tower A	Tower B	Tower C	Tower D
heartscale (*Atriplex cordulata var. cordulata*)	1B.1	This species occurs in chenopod scrub, meadow or seep, and valley or foothill grassland at elevations between 0 to 1,835 feet. (CNPS 2025b)	Apr-Oct	annual herb	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 0.25 and 1 mile of the survey area. **High Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**
Heckard's pepper-grass (*Lepidium latipes var. heckardii*)	FT; SE; 1B.1	This species occurs in valley and foothill grasslands at elevations between 5 and 655 feet. (CNPS 2025b)	Mar-May	annual herb	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area; however, this species' known range overlaps with the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**
hispid salty bird's-beak (*Chloropyron molle ssp. hispidum*)	FT; SE; 1B.1	This species occurs in meadows and seeps, playas, and valley or foothill grasslands at elevations between 5 and 510 feet. (CNPS 2025b)	Jun-Sep	annual herb (hemiparasitic)	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**
Keck's checkerbloom (*Sidalcea keckii*)	FE, 1B.1	This species occurs in cismontane woodlands and valley or foothill grasslands at elevations between 245 to 2,135 feet, often found in ultramafic soils. (CNPS 2025b)	Apr-Jun	annual herb	Suitable grasslands for this species are present within the survey area; however, the survey area is outside the species' known elevation range. Therefore, marginally suitable habitat is present within the survey area. This species has not been documented within 5 miles of the survey area. **No Potential**	Suitable grasslands for this species are present within the survey area; however, the survey area is outside the species' known elevation range. Therefore, marginally suitable habitat is present within the survey area. This species has been documented within 0.25 mile of the survey area. **High Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 0.25 and 1 mile of the survey area. **High Potential**	Suitable grasslands for this species are present within the survey area; however, the survey area is outside the species' known elevation range. Therefore, marginally suitable habitat is present within the survey area. This species has not been documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**
large flowered fiddleneck (*Amsinkia grandiflora*)	FE;1B.1	This species occurs in foothill woodlands and valley grasslands at elevations between 0 and 1,000 feet. (CNPS 2025b)	Apr-May	annual herb	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area. **Moderate Potential**

Common Name (*Scientific Name*)	Listing Status[2]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Survey Area			
					Tower A	Tower B	Tower C	Tower D
Legenere (*Legenere limosa*)	1B.1	This species occurs in vernal pools at elevations between 5 and 2,885 feet. (CNPS 2025b)	Apr-Jun	annual herb	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles of the survey area. **No Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**
Long-styled sand-spurrey (*Spergularia macrotheca* var. *longistyla*)	1B.2	This species occurs in marshes, swamps, meadows, and seeps at elevations between 0 and 835 feet. (CNPS 2025b)	Feb-May	perennial herb	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **No Potential**
Mason's lilaeopsis (*Lilaeopsis masonii*)	1B.1	This species occurs in freshwater marsh, marsh or swamp, and riparian scrub at elevations between 0 to 35 feet. (CNPS 2025b)	Apr-Nov	perennial rhizomatous herb	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles of the survey area. **No Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **No Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **No Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **No Potential**
pappose tarplant *(Centromadia parryi ssp. parryi)*	1B.1	This species occurs in a variety of habitats such as chaparral, coastal prairie, meadow and seep. It may also be observed within marsh, swamp, and valley or foothill grasslands at elevations between 0 to 1,380 feet. (CNPS 2025b)	May-Nov	annual herb	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area. **Moderate Potential**
Recurved larkspur (*Delphinium recurvatum*)	1B.2	This species occurs in chenopod scrub, cismontane woodland, and valley or foothill grasslands at elevations between 10 and 2,590 feet. (CNPS 2025b)	Mar-Jun	perennial herb	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**

Common Name (*Scientific Name*)	Listing Status[2]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Survey Area			
					Tower A	Tower B	Tower C	Tower D
saline clover (*Trifolium hydrophilum*)	1B.1	This species occurs in marshes and swamps, valley or foothill grasslands, and vernal pools at elevations between 0 and 985 feet. (CNPS 2025b)	Apr-Jun	annual herb	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area. **Moderate Potential**
San Joaquin spearscale (*Extriplex joaquinana*)	1B.2	This species occurs in alkali playa, chenopod scrub, meadows and seeps. It may also be observed in valley or foothill grasslands at elevations between 5 to 2,740 feet. (CNPS 2025b)	Apr-Oct	annual herb	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has been documented within 0.25 mile of the survey area. **High Potential**
San Joaquin Valley Orcutt grass (*Orcuttia inaequalis*)	FE; 1B.1	This species occurs in vernal pools at elevations between 35 and 2475 feet. (CNPS 2025b)	Apr-Sep	annual herb	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles of the survey area. **No Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**
soft salty bird's-beak (*Chloropyron molle* ssp. *molle*)	FE; 1B.2	This species occurs in marshes and swamps at elevations between 0 and 10 feet. (CNPS 2025b)	Jun-Nov	annual herb (hemiparasitic)	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles of the survey area. **No Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has been documented between 1 and 5 miles of the survey area and this species' known range does not overlap with the survey area **No Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has been documented between 1 and 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles of the survey area and this species known range does not overlap with the survey area. **No Potential**
spiny-sepaled button-celery (*Eryngium spinosepalum*)	1B.2	This species occurs in valley or foothill grasslands and vernal pools at elevations between 260 and 3,200 feet. (CNPS 2025b)	Apr-Jun	annual/ perennial herb	Suitable grasslands for this species are present within the survey area; however, the survey area is outside the species' known elevation range. Therefore, marginally suitable habitat is present within the survey area. This species has not been documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable grasslands for this species are present within the survey area; however, the survey area is outside the species' known elevation range. Therefore, marginally suitable habitat is present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Low Potential**

Common Name (*Scientific Name*)	Listing Status[2]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Survey Area			
					Tower A	Tower B	Tower C	Tower D
Suisun Marsh aster (*Symphyotrichum lentum*)	FE; 1B.1	This species occurs in marshes and swamps at elevations between 0 to 10 feet. (CNPS 2025b)	(Apr)May-Nov	perennial rhizomatous herb	Suitable grasslands for this species is present within the survey area; however, the survey area is outside the species' known elevation range. Therefore, marginally suitable habitat is present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Low Potential**	Suitable grasslands for this species is present within the survey area; however, the survey area is outside the species' known elevation range. Therefore, marginally suitable habitat is present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Low Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **No Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles of the survey area. **No Potential**
Suisun thistle (*Circium hydrophilum* var. *hydrophilum*)	1B.1; FE	This species occurs in marshes and swamps at elevations between 0 to 5 feet. (CNPS 2025b)	Jun-Sept	perennial herb	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles of the survey area. **No Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles of the survey area. **No Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles of the survey area. **No Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area and the species' known range does not overlap with the survey area. **No Potential**
two-fork clover (*Trifolium amoenum*)	1B.2; FE	This species occurs in coastal bluff scrub and valley or foothill grasslands at elevations between 15 and 1360 feet. (CNPS 2025b)	Apr-Jun	annual herb	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has not been documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**
vernal pool smallscale (*Atriplex persistens*)	FE; SE; 1B.1	This species occurs in vernal pools at elevations between 35 and 275 feet. (CNPS 2025b)	Jun-Oct	annual herb	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles of the survey area. **No Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**
Wooly rose-mallow (*Hibiscus lasiocarpos* var. *occidentalis*)	1B.2	This species occurs in marshes and swamps at elevations between 0 and 395 feet. (CNPS 2025b)	Jun-Sep	perennial/ rhizomatous herb	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles of the survey area. **No Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles of the survey area. **No Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has not been documented within 5 miles of the survey area. **No Potential**	Suitable habitat and conditions for this species are not present within the survey area. This species has been documented between 1 and 5 miles of the survey area. **No Potential**

Table 6: Special-Status Wildlife Species with the Potential to Occur

Common Name (*Scientific Name*)	Listing Status[3]	Habitat and Life History	Potential to Occur within the Survey Area[4]			
			Tower A	Tower B	Tower C	Tower D
Amphibians						
California red-legged frog (*Rana draytonii*)	FT; SSC	This highly aquatic species typically inhabits quiet pools of streams, marshes and ponds, preferring habitat with extensive shoreline vegetation. Its diet is highly variable and may include various invertebrates, amphibians, and small mammals. In Northern California, breeding usually takes place between March and July. (USFWS 2025)	Marginal stream habitat that lacks the preferred shoreline vegetation for the species is present within the survey area. This species has not been recently (within 30 years) documented within 5 miles of the survey area; however, this species' known range overlaps with the survey area. **Low Potential**	Although the species' known range overlaps with the survey area, suitable stream habitat is not present within the survey area. Additionally, this species has not been recently documented within 5 miles of the survey area. **No Potential**	Suitable stream habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area; however, this species' known range overlaps with the survey area. **No Potential**	Suitable stream habitat is present within the survey area. This species has been recently documented between 0.25 and 1 mile of the survey area. **High Potential**
California tiger salamander - central California DPS (*Ambystoma californiense pop. 1*)	FT; ST; WL	This species occupies grassland, savanna, or open woodland habitats and spends much of the year in underground refuges, especially ground squirrel (*Ammospermopholis beechyi*) burrows. Vernal pools or other seasonal water sources are required for breeding and egg laying. Adults may travel hundreds of meters across upland habitat to reach breeding ponds following seasonal rains during November to February. Its diet is highly variable and may include invertebrates, amphibians, or small mammals. (USFWS 2025)	Suitable grassland with ground squirrel burrows and seasonally ponded wetland habitat are present within the survey area. This species has been recently documented between 0.25 and 1 mile of the survey area. **High Potential**	Suitable grassland and seasonally ponded wetland habitat are present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable grassland habitat is present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable grasslands are present within the survey area; however, small mammal burrows suitable for occupancy and seasonal wetlands were not observed. This species has been recently documented between 0.25 and 1 mile of the survey area. **High Potential**
western spadefoot (*Spea hammondii*)	SSC; FPT	This species occurs predominantly in grasslands, but may also occur in valley-foothill hardwood woodlands. The western spadefoot consumes worms, insects, and other invertebrates and requires shallow, temporary pools of water from heavy winter rains for reproduction. (USFWS 2025)	Suitable grassland habitat is present within the survey area. This species has not been recently documented within 5 miles of the survey area; however, this species' known range overlaps with the survey area. **Moderate Potential**	Suitable grassland habitat is present within the survey area. This species has not been recently documented within 5 miles of the survey area; however, this species' known range overlaps with the survey area **Moderate Potential**	Suitable grassland habitat is present within the survey area. This species has not been recently documented within 5 miles of the survey area; however, this species' known range overlaps with the survey area. **Moderate Potential**	Suitable grassland habitat is present within the survey area. This species has not been recently documented within 5 miles of the survey area; however, this species' known range overlaps with the survey area. **Moderate Potential**

[3] Explanation of federal and state listing codes:

Federal listing codes:
-FE: Federally listed as endangered
-FT: Federally listed as threatened
-FPT: Proposed to be federally listed as threatened
-BCC: United States (U.S.) Fish and Wildlife Service (USFWS) Bird of Conservation Concern
-BGEPA: Bald and Golden Eagle Protection Act

State listing codes:
-SE: State-listed as endangered
-ST: State-listed as threatened
-SCE: State candidate for listing as endangered
-SSC: Species of Special Concern
-FP: Fully protected species
-WL: Watch List species
-WBWG-H: Western Bat Working Group high designation

[4] Unless otherwise specified, all documented occurrences of special-status species were observed in the last 30 years

Common Name (*Scientific Name*)	Listing Status[3]	Habitat and Life History	Potential to Occur within the Survey Area[4]			
			Tower A	Tower B	Tower C	Tower D
Birds						
burrowing owl (*Athene cunicularia* ssp. *hypugaea*)	SCE; SSC	This species can be found in a variety of open habitat types, including grassland, savanna, desert scrub, agricultural, and urban areas. Breeding occurs from March through October, and nesting takes place within abandoned burrows dug by burrowing mammals. This species preys on large insects and small mammals. (USFWS 2025)	Suitable grassland and agricultural habitat is present within the survey area. This species has been recently documented between 0.25 and 1 mile of the survey area. **High Potential (Nesting)** **High Potential (Foraging)**	Suitable grassland habitat is present within the survey area. This species has been recently documented between 0.25 and 1 mile of the survey area. **Moderate Potential (Nesting)** **High Potential (Foraging)**	Suitable grassland habitat is present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **Moderate Potential (Nesting)** **High Potential (Foraging)**	Suitable grassland and agricultural habitat is present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **Moderate Potential (Nesting)** **High Potential (Foraging)**
California black rail (*Laterallus jamaicensis coturniculus*)	ST; FP	This species is found in tidal emergent wetlands dominated by pickleweed (*Salicornia* spp.) or in brackish marshes supporting bulrushes in association with pickleweed. Breeding occurs from March to June, and nests are concealed in dense vegetation (often pickleweed) near the upper limits of tidal flooding. (CDFW 2025a)	Suitable tidal marsh habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area. **No Potential (Nesting)** **No Potential (Foraging)**	Although this species has been recently documented between 1 and 5 miles of the survey area, suitable tidal marsh habitat is not present within the survey area. **No Potential (Nesting)** **No Potential (Foraging)**	Suitable tidal marsh habitat is not present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **No Potential (Nesting)** **No Potential (Foraging)**	Suitable tidal marsh habitat is not present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **No Potential (Nesting)** **No Potential (Foraging)**
California condor (*Gymnogyps californianus*)	FE; SE; FP	This species uses extensive territories in open grasslands, oak savannah foothills, and beaches adjacent to coastal mountains for foraging, roosting, and nesting. Nests are built in caves and ledges in steep, rocky terrain. This species may also use cavities and broken tops of conifers for nesting locations. Juveniles remain dependent on their parents for 1 to 2 years while they learn to forage on their own. The species will consume carrion and carcasses. (USFWS 2025)	Suitable open grassland habitat is present within the survey area; however, steep, rocky terrain is not. This species has not been recently documented within 5 miles of the survey area, and this species' known range does not overlap with the survey area. **No Potential (Nesting)** **No Potential (Foraging)**	Suitable open grassland habitat is present within the survey area; however, steep, rocky terrain is not. This species has not been recently documented within 5 miles of the survey area, and this species' known range does not overlap with the survey area. **No Potential (Nesting)** **No Potential (Foraging)**	Suitable open grassland habitat is present within the survey area; however, steep, rocky terrain is not. This species has not been recently documented within 5 miles of the survey area, and this species' known range does not overlap with the survey area. **No Potential (Nesting)** **No Potential (Foraging)**	Suitable open grassland habitat is present within the survey area; however, steep, rocky terrain is not. This species has not been recently documented within 5 miles of the survey area. **No Potential (Nesting)** **Moderate Potential (Foraging)**
California least tern (*Sternula antillarum browni*)	FE; SE; FP	This species is found throughout California and requires undisturbed stretches of beach and coastline. Adults forage in bays and estuaries for a variety of fish species. The California least tern nests in colonies on relatively open beaches where vegetation is limited by natural scouring from tidal action. However, to avoid humans, tern colonies have been known to move to inland mud flats and dredge fill sites. The breeding season typically begins in early to mid-May, and nests are constructed directly on the ground. (USFWS 2025)	Suitable mudflat, beach, or coastline is not present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' range does not overlap with the survey area. **No Potential (Nesting)** **No Potential (Foraging)**	Suitable mudflat, beach, or coastline is not present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' range overlaps with the survey area. **No Potential (Nesting)** **No Potential (Foraging)**	Suitable mudflat, beach, or coastline is not present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **No Potential (Nesting)** **No Potential (Foraging)**	Suitable mudflat, beach, or coastline is not present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' range does not overlap with the survey area. **No Potential (Nesting)** **No Potential (Foraging)**
California Ridgeway's rail (*Rallus obsoletus)*	FE; SE; FP	This species occurs almost exclusively in tidal and brackish marshes with unrestricted daily tidal flow, adequate invertebrate prey food supply, well-developed tidal channel networks, and suitable nesting and escape cover to provide habitat during extreme high tides. (CDFW 2025a)	Suitable tidal marsh habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area. **No Potential (Nesting)** **No Potential (Foraging)**	Suitable tidal marsh habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area. **No Potential (Nesting)** **No Potential (Foraging)**	Suitable tidal marsh habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area. **No Potential (Nesting)** **No Potential (Foraging)**	Suitable tidal marsh habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area. **No Potential (Nesting)** **No Potential (Foraging)**

Common Name (*Scientific Name*)	Listing Status[3]	Habitat and Life History	Potential to Occur within the Survey Area[4]			
			Tower A	Tower B	Tower C	Tower D
golden eagle (*Aquila chrysaetos*)	FP; WL; BGEPA	This species is an uncommon resident and migrant in California, favoring rolling foothills, mountains, and open terrains for hunting lagomorphs and rodents. It nests on cliffs and large trees, requiring rugged habitats with cover. This bird exhibits year-round diurnal activity and may migrate seasonally. (CDFW 2025a)	Suitable open terrain habitat for hunting is present within the survey area; however, marginal nesting habitat within trees are present. This species has not been recently documented within 5 miles of the survey area; however, this species' range does overlap with the survey area. **Low Potential (Nesting)** **Moderate Potential (Foraging)**	Suitable open terrain habitat for hunting is present within the survey area; however, marginal nesting habitat within trees are present. This species has been recently documented between 1 and 5 miles of the survey area. **Low Potential (Nesting)** **Moderate Potential (Foraging)**	Suitable open terrain habitat for hunting is present within the survey area; however, marginal nesting habitat within trees are present. This species has been recently documented between 0.25 and 1 mile of the survey area. **Low Potential (Nesting)** **High Potential (Foraging)**	A pair of golden eagles was observed on during field surveys within the Tower survey area associated with Tower D. The pair was seen perching in a PG&E transmission tower, adjacent to a small stick nest whose approximate location is shown in Attachment A: Biological Resources Map. No nest building, or incubation was observed during the survey. During a subsequent site visit by PG&E staff on February 27, 2025, the pair of eagles was not observed at this location and no evidence of nest-tending by any species was observed. This species has been recently documented between 1 and 5 miles of the survey area. **Low Potential (Nesting)** **Present (Foraging)**
grasshopper sparrow (*Ammodramus savannarum*)	SSC	This species is a summer resident in California's dry, dense grasslands, particularly in foothills and lowlands. It requires thick cover of grasses and forbs for nesting and foraging. This secretive species primarily feeds on insects and may breed up to 1,500 meters elevation. (CDFW 2025a)	Marginally suitable dense grassland habitat is present within the survey area. This species has been recently documented between 0.25 and 1 mile of the survey area. **Low Potential (Nesting)** **Moderate Potential (Foraging)**	Marginally suitable dense grassland habitat is present within the survey area. This species has not been recently documented within 5 miles of the survey area; however, this species' known range overlaps with the survey area. **Low Potential (Nesting)** **Moderate Potential (Foraging)**	Marginally suitable dense grassland habitat is present within the survey area. This species has not been recently documented within 5 miles of the survey area; however, this species' known range overlaps with the survey area. **Low Potential (Nesting)** **Moderate Potential (Foraging)**	Marginally suitable dense grassland habitat is present within the survey area. This species has not been recently documented within 5 miles of the survey area; however, this species' known range overlaps with the survey area. **Low Potential (Nesting)** **Moderate Potential (Foraging)**
mountain plover (*Charadrius montanus*)	SSC	This species prefers open grasslands and plowed fields with low vegetation for feeding and roosting. It is a winter resident in California's Central Valley and foothill valleys, relying on short grasslands. The species is declining, with specific habitat needs for foraging and nesting. (USFWS 2025)	Suitable grassland and plowed fields are present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **No Potential (Nesting)** **Moderate Potential (Foraging)**	Suitable grassland and plowed field habitat are present within the survey area. This species has been recently documented between 0.25 and 1 mile of the survey area. **No Potential (Nesting)** **High Potential (Foraging)**	Suitable grassland and plowed fields are present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential (Nesting)** **No Potential (Foraging)**	Suitable grassland and plowed fields are present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential (Nesting)** **No Potential (Foraging)**

Common Name (*Scientific Name*)	Listing Status[3]	Habitat and Life History	Potential to Occur within the Survey Area[4]			
			Tower A	Tower B	Tower C	Tower D
northern harrier (*Circus hudsonius*)	SSC; BCC	This species is found in a variety of open grassland, wetland, and agricultural habitats. Open wetland habitats used for breeding include marshy meadows, wet and lightly grazed pastures, freshwater and brackish marshes. Breeding habitat also includes dry upland habitats, such as grassland, cropland, drained marshland, and shrub-steppe in cold deserts. Wintering habitat includes open areas dominated by herbaceous vegetation, such as grassland, pastures, cropland, coastal sand dunes, brackish and freshwater marshes, and estuaries. (CDFW 2025a)	Suitable open grassland and agricultural habitat is present within the survey area. This species was observed during field surveys and has been recently documented between 1 and 5 miles of the survey area **Moderate Potential (Nesting)** **Present (Foraging)**	Suitable open grassland habitat is present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area **Moderate Potential (Nesting)** **Moderate Potential (Foraging)**	Suitable open grassland habitat is present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **Moderate Potential (Nesting)** **Moderate Potential (Foraging)**	Suitable open grassland habitat is present within the survey area. This species has not been recently documented within 5 miles of the survey area; however, this species' known range overlaps with the survey area. **Low Potential (Nesting)** **Low Potential (Foraging)**
prairie falcon (*Falco mexicanus*)	WL	This species is an uncommon permanent resident found in California's grasslands, savannahs, rangelands, and desert scrub. It requires open areas for foraging and sheltered cliff ledges for nesting. This species primarily feeds on small mammals and exhibits diurnal activity patterns. (USFWS 2025)	Suitable grassland habitat is present within the survey area; however, no suitable nesting habitat is present. This species has not been recently documented within 5 miles of the survey area. **No Potential (Nesting)** **Moderate Potential (Foraging)**	Suitable grassland habitat is present within the survey area; however, no suitable nesting habitat is present. This species has not been recently documented within 5 miles of the survey area. **No Potential (Nesting)** **Moderate Potential (Foraging)**	Suitable grassland habitat is present within the survey area; however, no suitable nesting habitat is present. This species has not been recently documented within 5 miles of the survey area. **No Potential (Nesting)** **Moderate Potential (Foraging)**	Suitable grassland habitat is present within the survey area; however, no suitable nesting habitat is present. This species has been recently documented between 0.25 and 1 mile of the survey area. **No Potential (Nesting)** **High Potential (Foraging)**
saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*)	SSC; BCC	This species occurs in freshwater and saltwater marshes. It requires thick, continuous cover down to the water surface for foraging, and tall grasses, tule patches, and willows for nesting. (CDFW 2025a)	Suitable marsh habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential (Nesting)** **No Potential (Foraging)**	Suitable marsh habitat is not present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area **No Potential (Nesting)** **No Potential (Foraging)**	Suitable marsh habitat is not present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **No Potential (Nesting)** **No Potential (Foraging)**	Marginal tule habitat is present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential (Nesting)** **No Potential (Foraging)**
short-eared owl (*Asio flammeus*)	SSC; BCC	This species occurs in agricultural fields, grazed and ungrazed grasslands, and freshwater and saltwater marshes. This species requires open country that supports concentrations of microtine rodents and herbaceous cover sufficient to conceal its nest from predators. Its nests are built on the ground. This species' diet consists of small mammals and is particularly affected by the 3- to 4-year cycle of the California vole (*Microtus californicus*). Its breeding season occurs from April through July. (USFWS 2025)	Suitable grassland habitat is present within the survey area. This species has not been recently documented within 5 miles of the survey area. **Low Potential (Nesting)** **Low Potential (Foraging)**	Suitable grassland habitat is present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **Moderate Potential (Nesting)** **Moderate Potential (Foraging)**	Suitable grassland habitat is present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **Moderate Potential (Nesting)** **Moderate Potential (Foraging)**	Suitable grassland habitat is present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential (Nesting)** **No Potential (Foraging)**

Common Name (*Scientific Name*)	Listing Status[3]	Habitat and Life History	Potential to Occur within the Survey Area[4]			
			Tower A	Tower B	Tower C	Tower D
song sparrow ("Modesto" population) (*Melospiza melodia* pop. 1)	SSC	This species inhabits freshwater marshes, riparian thickets, sparsely vegetated irrigation canals, and valley oak restoration sites. It seeks cover and nests in willow and nettle thickets, growths of tules and cattails, and riparian oak forests with a sufficient understory of blackberry. (CDFW 2025a)	Suitable riparian and irrigation canal habitat is present within the survey area. This species has not been recently documented within 5 miles of the survey area; however, this species' known range overlaps with the survey area. **Low Potential (Nesting)** **Moderate Potential (Foraging)**	Suitable habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area; however, this species' known range overlaps with the survey area. **Low Potential (Nesting)** **Moderate Potential (Foraging)**	Suitable riparian and irrigation canal habitat is present within the survey area. This species has not been recently documented within 5 miles of the survey area; however, this species' known range overlaps with the survey area. **Low Potential (Nesting)** **Moderate Potential (Foraging)**	Suitable riparian and irrigation canal habitat is present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **Low Potential (Nesting)** **Moderate Potential (Foraging)**
Suisun song sparrow (*Melospiza melodia maxillaris*)	SSC	This species occurs throughout California, primarily in saltwater and brackish marshes. The species requires dense vegetation as protection from predators and high tide, for perching, and for nesting habitat. Breeding season is from early March through July. (CDFW 2025a)	Suitable marsh habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential (Nesting)** **No Potential (Foraging)**	Suitable marsh habitat is not present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area **Low Potential (Nesting)** **Low Potential (Foraging)**	Suitable marsh habitat is not present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area **Low Potential (Nesting)** **Low Potential (Foraging)**	Suitable marsh habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential (Nesting)** **No Potential (Foraging)**
Swainson's hawk (*Buteo swainsoni*)	ST	This species occurs in open grasslands, prairies, and farmlands that have nearby trees for nesting. It nests in bushes and in several tree species, including oaks (*Quercus* spp.), willow, and eucalyptus, and usually nests in trees in riparian areas near open fields. This species primarily hunts small rodents, rabbits, birds, and reptiles during the breeding season. It largely lives off insects, such as grasshoppers and beetles, during the non-breeding season. It reproduces from March through April, incubates for 34 to 35 days, and fledges 6 weeks later. (CDFW 2025a)	Suitable grassland and farmland habitat are present within the survey area. This species has been recently documented between 0.25 and 1 mile of the survey area. **High Potential (Nesting)** **High Potential (Foraging)**	Suitable grassland habitat is present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **Moderate Potential (Nesting)** **Moderate Potential (Foraging)**	Suitable grassland habitat is present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **Moderate Potential (Nesting)** **Moderate Potential (Foraging)**	Suitable grassland habitat is present within the survey area; however, there is marginally suitable tree habitat. This species has been recently documented between 0.25 and 1 mile of the survey area. **Low Potential (Nesting)** **High Potential (Foraging)**
tricolored blackbird (*Agelaius tricolor*)	ST; SSC; BCC	This highly colonial species requires open water, protected nesting substrate, and foraging areas adjacent to the colony with insect prey. Breeding occurs near fresh water, often in emergent wetlands with tall, dense cattails or tules, but also in thickets of willow; blackberry; wild rose; or tall, dense forbs. Seeds and cultivated grains, such as rice and oats, compose most of its fall and winter diet. Tricolored blackbird forages on the ground in croplands, grassy fields, flooded land, and along edges of ponds. The breeding season usually occurs from mid-April to late July. (USFWS 2025)	Suitable wetland habitat is not present within the survey area; however, grassy fields are. This species has been recently documented between 1 and 5 miles of the survey area. **Low Potential (Nesting)** **Moderate Potential (Foraging)**	Suitable wetland habitat is not present within the survey area; however, grassy fields are. This species has been recently documented between 1 and 5 miles of the survey area. **Low Potential (Nesting)** **Moderate Potential (Foraging)**	Suitable wetland habitat is not present within the survey area; however, grassy fields are. This species has been recently documented between 1 and 5 miles of the survey area. **Low Potential (Nesting)** **Moderate Potential (Foraging)**	Suitable wetland habitat and grassy fields are present within the survey area, This species has been recently documented between 1 and 5 miles of the survey area. **Low Potential (Nesting)** **Moderate Potential (Foraging)**

Common Name (*Scientific Name*)	Listing Status[3]	Habitat and Life History	Potential to Occur within the Survey Area[4]			
			Tower A	Tower B	Tower C	Tower D
western snowy plover (*Charadrius nivosus nivosus*)	FT; SSC	This species thrives on sandy marine and estuarine shores, nesting from April to August in shallow depressions on sandy or gravelly substrates. Key habitats include coastal beaches, salt ponds, and alkali lakes, where it feeds on insects and relies on camouflage for cover. (USFWS 2025)	Suitable shore and sandy habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential (Nesting)** **No Potential (Foraging)**	Suitable shore and sandy habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential (Nesting)** **No Potential (Foraging)**	Suitable shore and sandy habitat is not present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **No Potential (Nesting)** **No Potential (Foraging)**	Suitable shore and sandy habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential (Nesting)** **No Potential (Foraging)**
white-tailed kite (*Elanus leucurus*)	FP	This species nests in riparian or oak woodland adjacent to undisturbed, open fields and grasslands, meadows, farmlands, and emergent wetlands, where it hunts rodents. Breeding generally occurs from February through October. White-tailed kite lays three to five eggs, which it incubates for 30 to 32 days, after which fledging occurs at 5 to 6 weeks of age. (CDFW 2025a)	Suitable riparian or oak woodland habitat adjacent to open fields and grasslands is not present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **No Potential (Nesting)** **No Potential (Foraging)**	Suitable riparian or oak woodland habitat adjacent to open fields are not present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area **No Potential (Nesting)** **No Potential (Foraging)**	Suitable riparian or oak woodland habitat adjacent to open fields are not present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area **No Potential (Nesting)** **No Potential (Foraging)**	Suitable riparian or oak woodland habitat adjacent to open fields and grasslands is not present within the survey area. This species has not been recently documented within 5 miles of the survey area; however, this species' known range overlaps with the survey area. **No Potential (Nesting)** **No Potential (Foraging)**
yellow rail (*Coturnicops noveboracensis*)	SSC	This species breeds in densely vegetated, shallow freshwater marshes and wet meadows. Breeding occurs from May through September. Wintering birds frequent mature salt marshes well above the water line. (Green 1992)	Suitable marsh and wet meadow habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential (Nesting)** **No Potential (Foraging)**	Suitable marsh and wet meadow habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential (Nesting)** **No Potential (Foraging)**	Suitable marsh and wet meadow habitat is not present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area **No Potential (Nesting)** **No Potential (Foraging)**	Suitable marsh and wet meadow habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential (Nesting)** **No Potential (Foraging)**
Fish						
Delta smelt (*Hypomesus transpacificus*)	FT; SE	Delta smelt are an euryhaline species (i.e., a species adapted to living in fresh and brackish water) that occupies estuarine areas with salinities below 2 parts per thousand. This species is found only from the San Pablo Bay upstream through the Sacramento-San Joaquin River Delta in Contra Costa, Sacramento, San Joaquin, Solano, and Yolo counties. Delta smelt spawn in shallow, fresh, or slightly brackish water upstream from the brackish water habitat associated with the mixing zone. (USFWS 2025)	Suitable aquatic habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable aquatic habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable aquatic habitat is not present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **No Potential**	Marginal aquatic habitat is present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **Low Potential**

Common Name (*Scientific Name*)	Listing Status[3]	Habitat and Life History	Potential to Occur within the Survey Area[4]			
			Tower A	Tower B	Tower C	Tower D
eulachon (*Thaleichthys pacificus*)	FT; SSC	Eulachon require clean, cold freshwater rivers for spawning and coastal marine environments for growth; they migrate upstream to spawn in late winter to early spring, exhibiting a semelparous life cycle. (McCaughran and Heggenes 2010)	Suitable aquatic habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable aquatic habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable aquatic habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable aquatic habitat is not present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **Low Potential**
green sturgeon - southern DPS (*Acipenser medirostris pop. 1*)	FT; SSC	This species is found in a variety of estuarine and freshwater habitats within the San Francisco Bay, San Pablo Bay, and Sacramento-San Joaquin River Delta. Spawning occurs in the Sacramento, Feather, and Yuba rivers in cool (11 to 15 degrees Celsius) sections of mainstem rivers in deep pools (i.e., 8 to 9 meters) with substrate containing small- to medium-sized sand, gravel, cobble, or boulders. (USFWS 2025)	Suitable aquatic habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Although this species has been recently documented between 1 and 5 miles of the survey area, suitable aquatic habitat is not present within the survey area. **No Potential**	Although this species has been recently documented between 1 and 5 miles of the survey area, suitable aquatic habitat is not present within the survey area. **No Potential**	Although this species has been recently documented between 1 and 5 miles of the survey area, suitable aquatic habitat is not present within the survey area. **No Potential**
longfin smelt – San Francisco Bay-Delta DPS (*Spirinchus thaleichthys* pop. 2)	FE; ST	The known range of this species extends from the San Francisco Bay Estuary and Sacramento-San Joaquin Delta (Bay-Delta) in California northward to the Cook Inlet in Alaska. In the Bay-Delta, longfin smelt spawn primarily in freshwater in the lower reaches of the Sacramento and San Joaquin rivers. Juvenile and adult longfin smelt have been found throughout the year in salinities ranging from pure freshwater to pure seawater. Once past the juvenile stage, they are typically collected in waters with salinities ranging from 14 to 28 parts per thousand. The life cycle of most longfin smelt generally requires estuarine conditions. Longfin smelt occur in the Bay-Delta typically from January to April. (Moyle and Baltz 1985)	Suitable aquatic habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable aquatic habitat is not present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **No Potential**	Suitable aquatic habitat is not present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **No Potential**	Marginal aquatic habitat is present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **Low Potential**
Sacramento splittail (*Pogonichthys macrolepidotus*)	SSC	The Sacramento splittail requires shallow, slow-moving waters with abundant vegetation for spawning and rearing, primarily inhabiting the Sacramento-San Joaquin Delta. They migrate for spawning in floodplain habitats. (USFWS 2025)	Suitable aquatic habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable aquatic habitat is not present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **No Potential**	Suitable aquatic habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Marginal aquatic habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**

Common Name (*Scientific Name*)	Listing Status[3]	Habitat and Life History	Potential to Occur within the Survey Area[4]			
			Tower A	Tower B	Tower C	Tower D
steelhead - Central Valley DPS (*Oncorhynchus mykiss irideus pop. 11*)	FT; SSC	This DPS of steelhead represents a population that spawns in freshwater habitats located in California's Central Valley. This species is anadromous, meaning they are born in freshwater, migrate to the ocean to grow and mature, and return to their natal streams to spawn. Suitable freshwater breeding habitats include rivers, streams, and tributaries with clean, cold water and gravel substrate. After hatching, the young steelhead spend several years in fresh water before migrating to the ocean, where they feed on a variety of prey, including small fish, invertebrates, and plankton. (CDFW 2025a)	Suitable aquatic habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable aquatic habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable aquatic habitat is not present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **No Potential**	Suitable aquatic habitat is not present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **No Potential**
Invertebrates						
Conservancy fairy shrimp (*Branchinecta conservatio*)	FE	This species occurs within vernal pool habitats in California's Central Valley. It mostly lives in relatively large, turbid freshwater vernal pools called playa pools. This species can be found at elevations ranging from 16 to 5,577 feet in grassland, rural, and wetland habitats. This species opportunistically filter-feeds on various planktonic food sources including algae and protozoa. (USFWS 2025)	Suitable seasonally ponded wetland habitat is present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable seasonally ponded wetland habitat is present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable seasonally ponded wetland habitat is not present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **No Potential**	Suitable seasonally ponded wetland habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**
Delta green ground beetle (*Elaphrus viridis*)	FT	This species is currently only known to live in the Jepson Prairie region of Solano County. The Delta green ground beetle requires moist, grassy habitats near wetlands, with a life history involving predation on other insects and a lifecycle that includes egg, larval, pupal, and adult stages. (USFWS 2025)	Suitable prairie habitat is not present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **No Potential**	Suitable prairie habitat is not present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **No Potential**	Suitable prairie habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable prairie habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**
Lange's metalmark butterfly (*Apodemia mormo langei*)	FE	This species is associated with the Antioch Dunes, a riverbank dune system along the San Joaquin River. Currently, this species can only be found in the Antioch Dunes National Wildlife Refuge, the last remnants of the Antioch Dunes. All life stages are closely associated with naked-stemmed buckwheat (*Eriogonum nudum* var. *psychicola*), which is the primary nectar source for adults, is used to lay eggs, and is a larval food plant. The leaves of the larval host plant provide both food and shelter throughout the larval instar phases. (Nature Serve)	Suitable riverbank dune habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable riverbank dune habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable riverbank dune habitat is not present within the survey area. This species has been recently documented within 0.25 mile of the survey area. **No Potential**	Suitable riverbank dune habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**

Common Name (*Scientific Name*)	Listing Status[3]	Habitat and Life History	Potential to Occur within the Survey Area[4]			
			Tower A	Tower B	Tower C	Tower D
longhorn fairy shrimp (*Branchinecta longiantenna*)	FE	Longhorn fairy shrimp require temporary freshwater pools for breeding, with a life cycle that includes a dormant egg stage, hatching in response to seasonal rainfall. They thrive in vernal pools. (USFWS 2025)	Suitable seasonally ponded wetland habitat is present within the survey area; however, this species' known range does not overlap with the survey area. This species has not been recently documented within 5 miles of the survey area. **No Potential**	Suitable seasonally ponded wetland habitat is present within the survey area; however, this species' known range does not overlap with the survey area. This species has not been recently documented within 5 miles of the survey area. **No Potential**	Suitable seasonally ponded wetland habitat is not present within the survey area; however, this species' known range does not overlap with the survey area. This species has not been recently documented within 5 miles of the survey area. **No Potential**	Suitable seasonally ponded wetland habitat is not present within the survey area; however, this species' known range overlaps with the survey area. This species has been recently documented between 0.25 and 1 mile of the survey area. **No Potential**
monarch butterfly (*Danaus plexippus*)	FPT	This species requires milkweed and flowering plants for suitable habitat. Although adults only need to feed on nectar from flowers, milkweed is the only place where they can lay eggs. Most individuals of this species live 2 to 5 weeks, but overwintering individuals may live 6 to 9 months. (USFWS 2025)	Suitable habitat with milkweed is not present within the survey area; however, other species flowering plants are present. Therefore, marginally suitable habitat is present within the survey area. This species has not been recently documented within 5 miles of the survey area. **Low Potential**	Suitable habitat with milkweed is not present within the survey area; however, other species flowering plants are present. Therefore, marginally suitable habitat is present within the survey area. This species has not been recently documented within 5 miles of the survey area. **Low Potential**	Suitable habitat with milkweed is not present within the survey area; however, other species flowering plants are present. Therefore, marginally suitable habitat is present within the survey area. This species has not been recently documented within 5 miles of the survey area. **Low Potential**	Suitable habitat with milkweed is not present within the survey area; however, other species flowering plants are present. Therefore, marginally suitable habitat is present within the survey area. This species has not been recently documented within 5 miles of the survey area. **Low Potential**
Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)	FT	This species is extremely dependent on the elderberry (*Sambucus nigra* ssp. *canadensis*), which is a shrub found in riparian areas and foothill oak woodlands. Adults and juveniles exclusively eat the stems, leaves, and flowers of the elderberry. Individuals are only found on the valley floor and low foothills. The typical lifespan of this species is 1 to 2 years. (USFWS 2025)	Suitable riparian habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area. **No Potential**	Suitable riparian habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area. **No Potential**	Suitable riparian habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area. **No Potential**	Marginally suitable riparian habitat is present within the survey area; however, no elderberry shrubs are present within these habitats. This species has not been recently documented within 5 miles of the survey area. **No Potential**
vernal pool fairy shrimp (*Branchinecta lynchi*)	FT	This species occurs within vernal pool habitats throughout California. Female vernal pool fairy shrimp carry fertilized eggs in a sac on the underside of their body. The eggs are either dropped to the pool bottom or remain in the brood sac until the mother dies and sinks to the bottom of the pool. This species opportunistically filter-feeds on various planktonic food sources, including algae and protozoa. (USFWS 2025)	Suitable seasonally ponded wetland habitat is present within the survey area. This species has been recently documented between 0.25 and 1 mile of the survey area. **High Potential**	Suitable seasonally ponded wetland habitat is present within the survey area. This species has been recently documented between 0.25 and 1 mile of the survey area. **High Potential**	Suitable seasonally ponded wetland habitat is not present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **No Potential**	Suitable seasonally ponded wetland habitat is not present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **No Potential**
vernal pool tadpole shrimp (*Lepidurus packardi*)	FE	This species occurs within vernal pool habitats with a patchy distribution within California's Central Valley. Female vernal pool tadpole shrimp produce up to six clutches of eggs containing 32 to 61 eggs per clutch during each wet season. They carry fertilized eggs in a sac on the underside of their body. The eggs are either dropped to the pool bottom or remain in the brood sac until the mother dies and sinks to the bottom of the pool. This species opportunistically filter-feeds on other fairy shrimp (*Branchinecta* spp.), invertebrates, and waste from other vernal pool species. (USFWS 2025)	Suitable seasonally ponded wetland habitat is present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable seasonally ponded wetland habitat is present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area **Moderate Potential**	Suitable seasonally ponded wetland habitat is not present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **No Potential**	Suitable seasonally ponded wetland habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area. **No Potential**

Common Name (*Scientific Name*)	Listing Status[3]	Habitat and Life History	Potential to Occur within the Survey Area[4]			
			Tower A	Tower B	Tower C	Tower D
western bumble bee (*Bombus occidentalis*)	SCE	This species can be found throughout the western United States and Canada and are not limited to any particular host plant. (Xerces Society)	Suitable habitat is present within the survey area. This species has been documented between 1 and 5 miles of the survey area; however, this occurrence is over 30 years old. **Moderate Potential**	Suitable habitat is present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **Moderate Potential**	Suitable habitat is present within the survey area. This species has not been recently documented within 5 miles of the survey area. **Low Potential**	Suitable habitat is present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **Moderate Potential**
Mammals						
American badger (*Taxidea taxus*)	SSC	This species is an uncommon, permanent resident in California, thriving in drier, open habitats with friable soils. It primarily feeds on fossorial rodents and digs burrows for cover and reproduction. This species plays a crucial role in controlling small mammal populations. (WDFW)	Suitable dry, open habitat with fossorial rodent burrows is present within the survey area; however, these burrows are not suitably large enough for this species. This species has not been recently documented within 5 miles of the survey area. **Low Potential**	Marginal grassland habitats lacking suitably sized rodent burrows are present within the survey area. This species has not been recently documented within 5 miles of the survey area. **Low Potential**	Marginal grassland habitats lacking suitably sized rodent burrows are present within the survey area. This species has not been recently documented within 5 miles of the survey area. **Low Potential**	Marginal grassland habitats lacking suitably sized rodent burrows are present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **Low Potential**
San Joaquin kit fox (*Vulpes macrotis mutica*)	FE; ST	This species inhabits a variety of open habitats, including grasslands, chenopod scrublands, and semi-arid regions. Breeding occurs from January to March, with a gestation period of 49 to 55 days. The female constructs a den in the ground, often utilizing existing burrows dug by other animals. Its diet primarily consists of small mammals, such as rodents, rabbits, and ground squirrels. (USFWSUSFWS 2025)	Suitable grassland habitat is present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable grassland habitat is present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable grassland habitat is present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable grassland habitat is present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **Moderate Potential**
salt-marsh harvest mouse (*Reithrodontomys raviventris*)	FE; SE; FP	This species inhabits salt marshes in California and is adapted to live in marsh vegetation, including pickleweed and cordgrass, which provide cover, food sources, and breeding habitats. Breeding typically occurs between March and October. Its diet consists of marsh vegetation, including seeds, stems, and leaves. (USFWS 2025)	Suitable marsh habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable marsh habitat is not present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area **No Potential**	Suitable marsh habitat is not present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area **No Potential**	Suitable marsh habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**
Western red bat (*Lasirurs blossevillii*)	SSC, WBWG-H	This species occurs in a variety of habits, including forests, woodlands, and riparian areas. It roosts and forages among trees and vegetation and exhibits a preference for mixed coniferous and deciduous forests. Breeding occurs in the spring and early summer. This species typically seeks out tree foliage, such as leaves or branches, to create roosting sites. The diet consists mainly of insects, such as moths, beetles, and flies. (CDFW 2025a)	Marginally suitable roosting habitat is present within the survey area within the limited stands of trees, and suitable foraging habitat is present. This species has not been recently documented between 1 and 5 miles from the survey area. **Low Potential (Roosting)** **Low Potential (Foraging)**	Marginally suitable roosting habitat is present within the survey area within the limited stands of trees, and suitable foraging habitat is present. This species has not been recently documented between 1 and 5 miles from the survey area. **Low Potential (Roosting)** **Low Potential (Foraging)**	Marginally suitable roosting habitat is present within the survey area within the limited stands of trees, and suitable foraging habitat is present. This species has not been recently documented between 1 and 5 miles from the survey area. **Low Potential (Roosting)** **Low Potential (Foraging)**	Marginally suitable roosting habitat is present within the survey area within the limited stands of trees, and suitable foraging habitat is present. This species has not been recently documented between 1 and 5 miles from the survey area. **Low Potential (Roosting)** **Low Potential (Foraging)**

Common Name (*Scientific Name*)	Listing Status[3]	Habitat and Life History	Potential to Occur within the Survey Area[4]			
			Tower A	Tower B	Tower C	Tower D
Reptiles						
Alameda whipsnake (*Masticophis lateralis euryxanthus*)	FT; ST	This species inhabits grasslands, chaparral, and oak woodlands within Alameda and Contra Costa counties. It is primarily diurnal, being active during the day and seeking shelter in vegetation or underground burrows at night. Breeding typically occurs in the spring and summer months. The diet consists of small vertebrates, including lizards, rodents, and birds. (USFWS 2025)	Suitable grassland habitat is present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable grassland habitat is present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable grassland habitat is present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' known range does not overlap with the survey area. **No Potential**	Suitable grassland habitat is present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **Moderate Potential**
coast horned lizard (*Phrynosoma blainvillii*)	SSC	Blainville's horned lizard (Phrynosoma blainvillii) thrives in open, sandy habitats with scattered shrubs, including valley-foothill hardwood, conifer, and grasslands across California. It forages primarily on the ground, consumes ants, and relies on camouflage for protection. This species is diurnal and hibernates in loose soil during winter. (Nature Serve)	Suitable sandy habitats with scattered shrubs are not present within the survey area. This species has not been recently documented within 5 miles of the survey area. **No Potential**	Suitable sandy habitats with scattered shrubs are not present within the survey area. This species has not been recently documented within 5 miles of the survey area. **No Potential**	Suitable sandy habitats with scattered shrubs are not present within the survey area. This species has not been recently documented within 5 miles of the survey area. **No Potential**	Marginally suitable sandy habitats with scattered shrubs are present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **No Potential**
giant gartersnake (*Thamnophis gigas*)	FT; ST	This semi-aquatic species inhabits marshes, wetlands, and slow-moving bodies of water. It is often closely associated with water sources, which serve as its hunting grounds. Breeding typically occurs in the spring and early summer. After mating, females give birth to live young. The diet primarily consists of small fish, amphibians, and aquatic invertebrates. (USFWS 2025)	Suitable marsh and wetland habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' range does not overlap with the survey area. **No Potential**	Suitable marsh and wetland habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' range does not overlap with the survey area. **No Potential**	Suitable marsh and wetland habitat is not present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **No Potential**	Marginal slow moving linear drainage habitat is present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' range does not overlap with the survey area. **No Potential**
Northern California legless lizard (*Anniella pulchra*)	SSC	This species is found in grasslands, chaparral, and open woodlands and requires loose, friable soils for burrowing. Breeding typically occurs in the spring or early summer. Females lay small clutches of eggs in underground burrows or hidden areas. The diet primarily consists of small invertebrates, such as insects, spiders, and other arthropods. (CDFW 2025a)	Suitable grassland habitat is present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' range does not overlap with the survey area. **No Potential**	Suitable grassland habitat is present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' range does not overlap with the survey area. **No Potential**	Suitable grassland habitat is present within the survey area. This species has not been recently documented within 5 miles of the survey area and this species' range does not overlap with the survey area. **No Potential**	Suitable grassland habitat is present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **Moderate Potential**
northwestern pond turtle (*Actinemys marmorata*)	FPT; SSC	This freshwater turtle species primarily inhabits ponds, lakes, and slow-moving streams with suitable basking sites. It spends a significant amount of time basking on logs or rocks. Breeding typically occurs in the spring and early summer. Females dig nests in sandy or gravelly areas near water, where they lay their eggs. The hatchlings emerge several months later and make their way to the water. The diet is omnivorous and consists of various aquatic plants, insects, small fish, and amphibians. (USFWS 2025)	Suitable aquatic habitat is not present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **No Potential**	Suitable aquatic habitat is not present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **No Potential**	Suitable aquatic habitat is not present within the survey area. This species has been recently documented between 1 and 5 miles of the survey area. **No Potential**	Marginal slow-moving aquatic habitat is present within the survey area; however, these areas lack suitable basking sites. This species has been recently documented between 1 and 5 miles of the survey area. **No Potential**

Table 7: Wildlife Species Observed within the Tower Survey Area

Common Name	Scientific Name
American crow	*Corvus brachyrhynchos*
Black phoebe	*Sayornis nigricans*
Black-tailed jackrabbit	*Lepus californicus*
European starling	*Sturnus vulgaris*
Golden eagle	*Aquila chrysaetos*
Horned lark	*Eremophila alpestris*
House finch	*Haemorhous mexicanus*
Loggerhead shrike	*Lanius ludovicianus*
Mourning dove	*Zenaida macroura*
Northern harrier	*Circus hudsonius*
Northern mockingbird	*Mimus polyglottos*
Raccoon	*Procyon lotor*
Red-tailed hawk	*Buteo jamaicensis*
Red-winged blackbird	*Agelaius phoeniceus*
Ring-necked pheasant	*Phasianus colchicus*
Song sparrow	*Melospiza melodia*
Tree swallow	*Tachycineta bicolor*
Western meadowlark	*Sturnella neglecta*
White-crowned sparrow	*Zonotrichia leucophrys*

6.6 CRITICAL HABITAT

Critical habitat for delta smelt (*Hypomesus transpacificus*) is present at the Tower survey area associated with Tower D. However, this area lacks several of the primary constituent elements (PCEs) for delta smelt, including physical habitat and river flow. Physical habitat requires proper substrate with water depth variation and channel morphology for spawning adults and potential foraging habitat for rearing juveniles along marsh edges. The agricultural canals within the Tower survey area associated with Tower D have been extensively manipulated and lack the variation in depth and morphology required by the species. Further, the canals within the Tower survey area associated with Tower D lack large-scale riverine flows that provide open water habitats preferred by the species.

However, the canals within the Tower survey area associated with Tower D may contain the requisite salinity necessary to satisfy the PCEs for critical habitat for this species, and the emergent vegetation along the shorelines of the canals may provide some physical habitat. However, the marginal suitability of the habitat within the Tower survey area associated with Tower D makes it unlikely that Delta smelt are present within these canals.

6.7 NATIVE WILDLIFE CORRIDORS AND NURSERY SITES

Wildlife migration corridors are areas that connect suitable wildlife habitats in a region that would otherwise be fragmented by rugged terrain, changes in vegetation, or human disturbance. Natural features (e.g., canyon drainages, ridgelines, or areas with vegetation cover) provide corridors for wildlife travel. Wildlife corridors are important because they provide access to mates, food, and water; allow the dispersal of individuals away from high-population or high-density areas; and facilitate genetic diversity. California Environmental Quality Act Guidelines require that project proponents disclose and mitigate for significant impacts on wildlife corridors. Impacts to wildlife corridors, such as human disturbance and development, can cause harm to migrating species, cause species to exceed population thresholds in fragmented patches, or prevent healthy gene flow between populations. The California Essential Habitat Connectivity Project (CEHC) maintains a statewide Essential Habitat Connectivity Map, which broadly depicts large, relatively natural habitat blocks that support native biodiversity (Natural Landscape Blocks) and areas essential for ecological connectivity between them (Essential Connectivity Areas) (Spencer et al. 2010). One Essential Connectivity Area lies within the Tower survey area associated with Tower C, as depicted in Attachment E: Essential Connectivity Areas (CDFW 2025c), and no Natural Landscape Blocks overlap with the Tower survey area (CDFW 2025d).

The Proposed Project lies within the Pacific Flyway, which is an important north-south migration corridor that runs along the Pacific coast of the Americas from Alaska to Patagonia, including all of North America west of the Rocky Mountains. The Pacific Flyway links breeding grounds to the north with wintering areas to the south and is used by many different species of birds during migration. Many birds (especially waterfowl) use locations in California's Sacramento Valley as a stopover point or wintering area. One of those major locations is Suisun Marsh, which is less than 10 miles from the Tower survey area. At the Tower survey area's latitude, the Pacific Flyway extends inland from the Pacific Ocean for approximately 700 miles. As a result, the

Tower survey area's components would be placed in less than 0.3 percent of the width of the Pacific Flyway. The Tower survey area does not occur in any nursery sites.

6.8 AQUATIC RESOURCES

Insignia biologists identified 13 linear drainages within the Tower survey area that are potentially under the jurisdiction of the Regional Water Quality Control Board (RWQCB) and CDFW. Three of these drainages may are potentially under the jurisdiction of the U.S. Army Corps of Engineers (USACE). Further, 19 potentially jurisdictional wetland features were observed within the Tower survey area. Attachment A: Biological Resources Map depicts the locations of the potentially jurisdictional water features within the Tower survey area. Attachment F: Linear Water Feature Photographs presents upstream and downstream photographs of the mapped ephemeral linear water feature. Attachment G: Wetland Feature Photographs presents representative photographs of each wetland feature. Attachment H: Potentially Jurisdictional Water Features Table lists the unique feature identification number, feature type, length, ordinary high water mark width and depth, top-of-bank width and depth, Cowardin classification (for wetlands), and the approximate extent of potential USACE, RWQCB, and/or CDFW jurisdictions.

7 – RECOMMENDATIONS

Proposed Project-specific avoidance and minimization measures would need to be developed to reduce the potential for impacts to all special-status species with moderate or high potential to occur within the Proposed Project area, as well as species that are present within the Tower survey area.

Prior to initiating Proposed Project activities, the following pre-construction surveys would be required as follows:

- Pre-construction nesting bird and raptor surveys would be conducted within 48 hours prior to work occurring between February 1 and September 30 each year. Surveys would be conducted within 500 feet of all Proposed Project work areas.

- A pre-construction California red-legged frog survey would be conducted between January 1 and February 28 within the Tower survey area associated with Tower D in accordance with the U.S. Fish and Wildlife Service's (USFWS's) Revised Guidance on Site Assessments and Field Surveys for the California Red-legged Frog guidelines (USFWS 2005).

- A pre-construction California tiger salamander survey would occur at all Towers within the Tower survey area in accordance with the USFWS's Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding on the California Tiger Salamander guidelines (USFWS 2003).

- A pre-construction golden eagle survey would occur within the Tower survey area associated with Tower D in accordance with the MBTA's Interim Golden Eagle Breeding

Survey Recommendations in Nevada: FWS R8 Migratory Birds June 13, 2023 guidelines (MBTA 2023).

- A pre-construction Swainson's hawk survey would occur at all Towers within the Tower survey area in accordance with the Swainson's Hawk Technical Advisory Committee's (SHTAC's) Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley guidelines (SHTAC 2000).

- A pre-construction survey for San Joaquin kit fox would occur in the Tower survey area associated with Tower D in accordance with the USFWS's Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance (USFWS 2011).

- Pre-construction burrowing owl surveys would be conducted in all Towers within the Tower survey area that may provide suitable nesting habitat in accordance with the CDFW's Staff Report on Burrowing Owl Mitigation (CDFW 2012). The take avoidance surveys, consisting of up to four visits, would be initiated within 30 days of and completed at least 14 days before construction is initiated at a given location. In areas with burrows or refuge that could potentially support burrowing owls, a clearance visit would be conducted within 24 hours of construction.

- A formal wetland delineation would be required once further engineering is complete and prior to work commencing within the Tower survey area. Once complete, a preliminary jurisdictional determination would be presented to the USACE that includes all data sheets, including NWI maps that show all proposed facilities (as shown in Attachment I: National Wetlands Inventory Map).

For all federally listed species with a moderate or high potential to occur, if the Proposed Project has the potential to adversely affect the species or its habitat, consultation under Section 7 of the FESA would be necessary.

If any state-listed species are observed in the Tower survey area and the Proposed Project has the potential to adversely affect them, an incidental take permit (ITP) issued by the CDFW may be required to mitigate for potential take of those species.

Although the 16 of the 17 bird species identified in Table 7: Wildlife Species Observed within the Tower Survey Area do not carry listing statuses under the FESA or California Endangered Species Act, they are protected under the MBTA, California Fish and Game Code, and CCR. One wildlife species observed, the golden eagle, is protected under the BGEPA.

Several regulatory approvals, authorizations, or permits are required for the Proposed Project, as provided in Table 8: Anticipated Biological Resource Permits and Authorizations. These approvals may include conditions that afford additional protection to species and/or their habitat.

Table 8: Anticipated Biological Resource Permits and Authorizations

Agency	Permit/Approval/Consultation	Jurisdiction/Purpose of Permit
Federal Agencies		
USACE	CWA Section 404 Nationwide Permit	Permanent and temporary fill of waters of the U.S.
USFWS	FESA Section 7 Consultation	Construction activities such as vegetation clearing or removal that may affect federally listed species or their habitats
State Agencies		
CDFW	California Fish and Game Code Section 1600 Streambed Alteration Agreement	Activities that will substantially disturb the bed or bank of a jurisdictional waterbody
RWQCB	CWA Section 401 Water Quality Certification	Activities authorized by federal agencies that may affect state water quality

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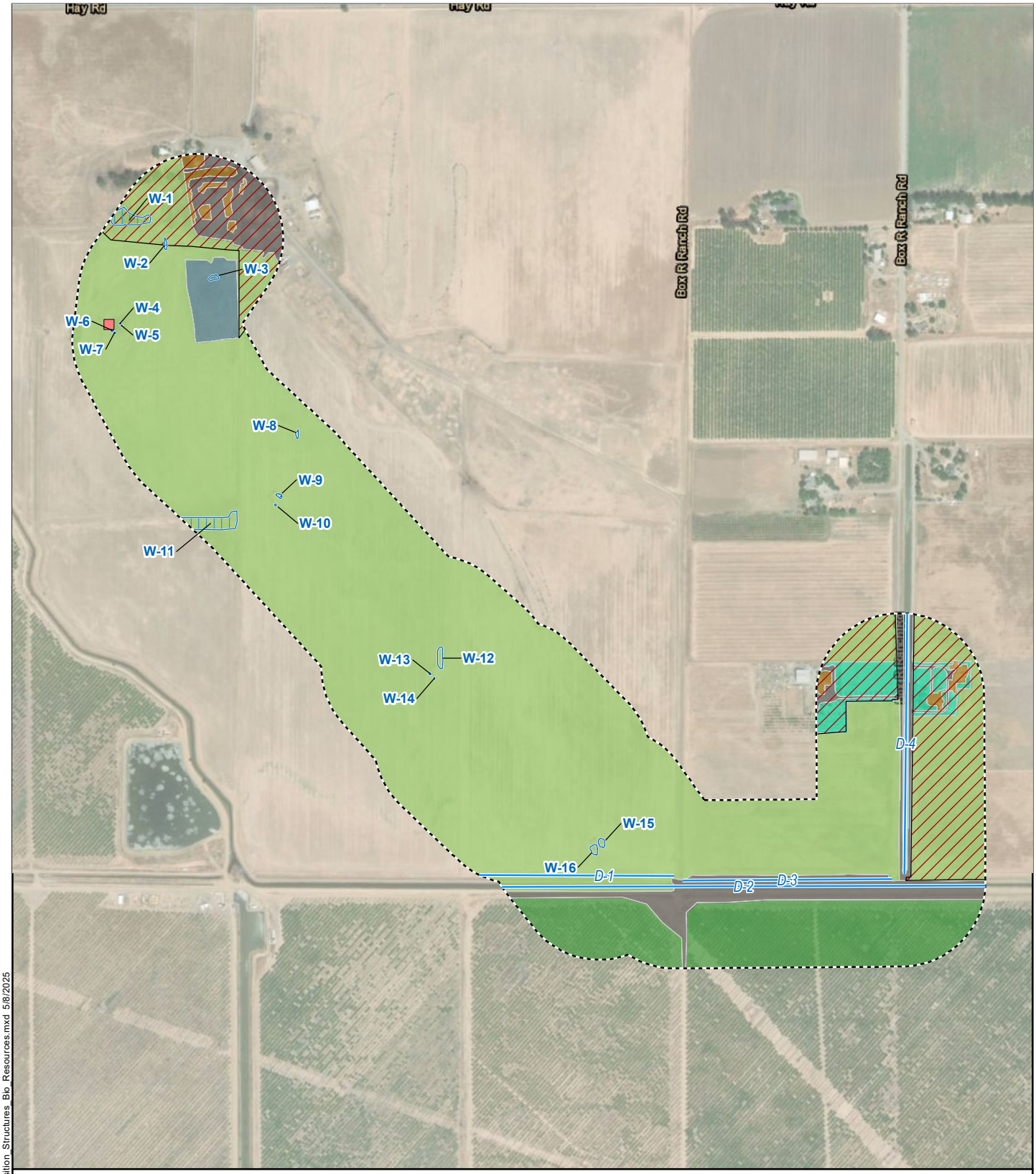
ATTACHMENT A: BIOLOGICAL RESOURCES MAP



Attachment A: Bio Resources Map Tower A

Collinsville 500/230 Kilovolt Substation Project

Vegetation Community

- Agriculture
- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- Developed
- Disturbed
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- Open Water
- Ornamental Vegetation
- Stick Nest
- Drainage
- Wetland
- Limited Access Area
- Survey

Note: Vegetation within Limited Access Areas were mapped using aerial imagery and visual observation

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LS POWER GRID CALIFORNIA

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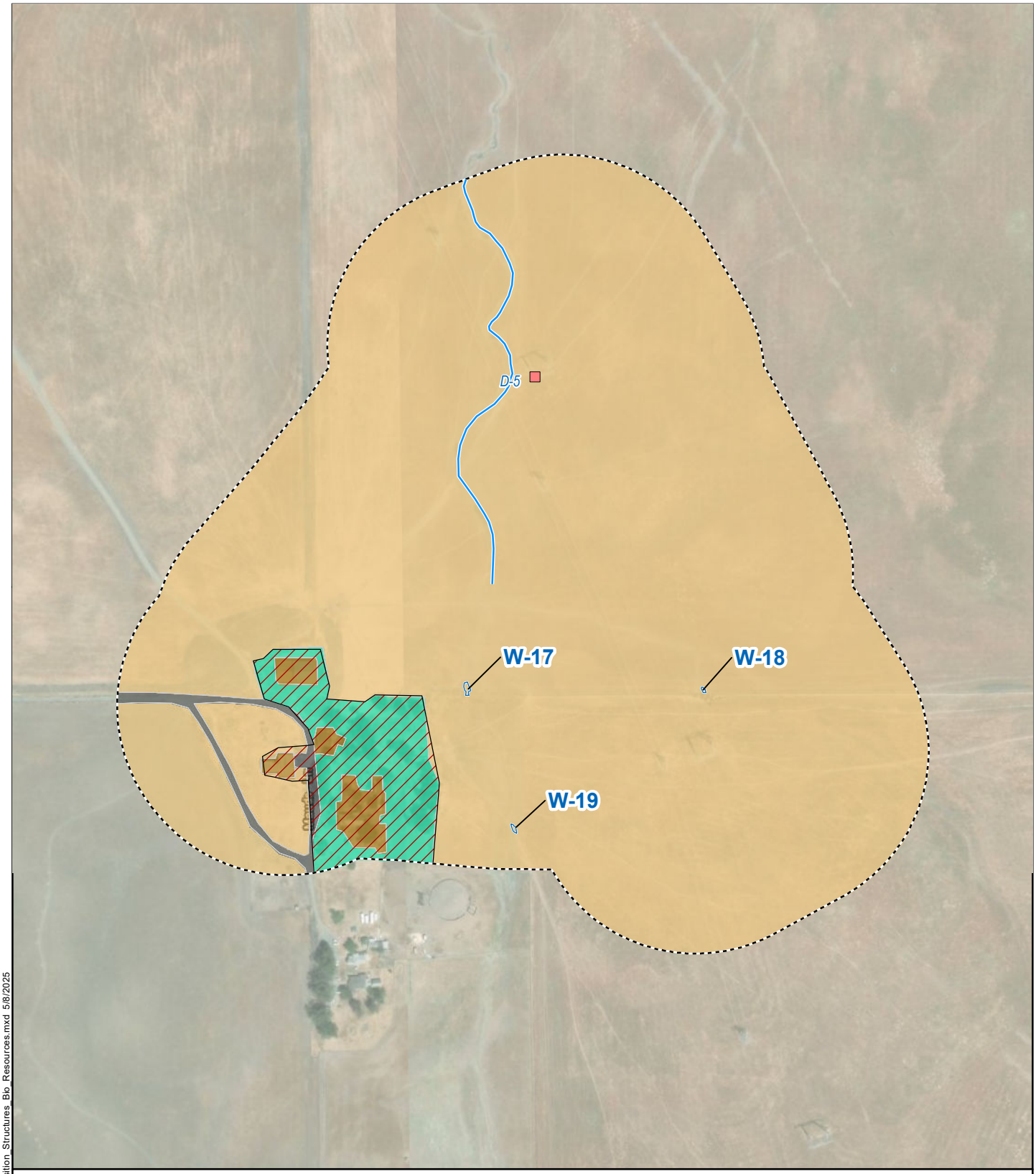

Attachment A: Bio Resources Map Tower B

Collinsville 500/230 Kilovolt Substation Project

Vegetation Community

- *Avena spp.* - *Bromus* spp. Herbaceous Semi-Natural Alliance
- Developed
- Disturbed
- Ornamental Vegetation

- Stick Nest
- Drainage
- Wetland
- Limited Access Area
- Survey Area

1:5,000

0 400 800 Feet

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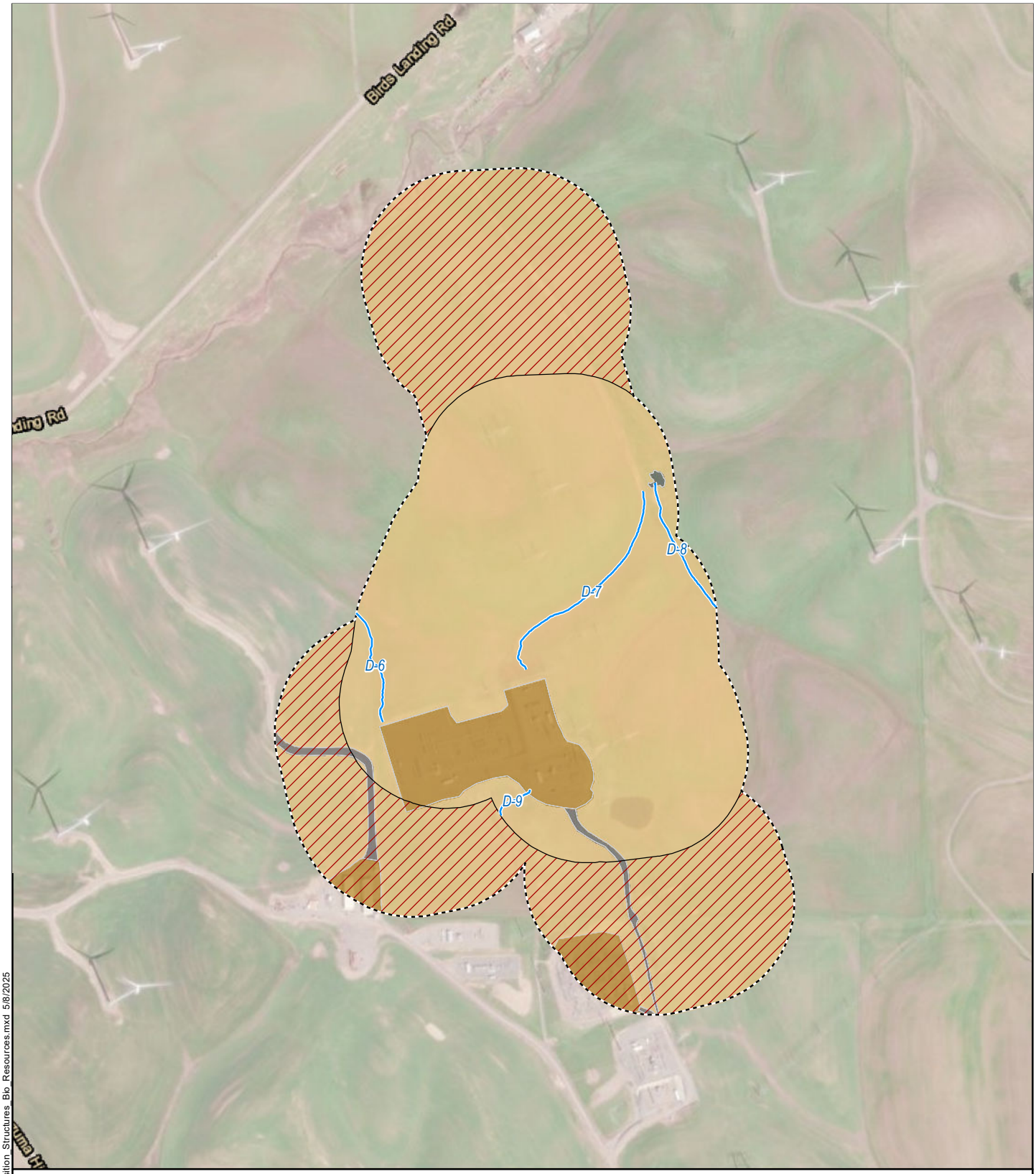

Attachment A: Bio Resources Map Tower C

Collinsville 500/230 Kilovolt Substation Project

Vegetation Community

- *Avena spp. - Bromus* spp. Herbaceous Semi-Natural Alliance
- Developed
- Disturbed

- Drainage
- Limited Access Area
- Survey Area

1:8,000

0 400 800 Feet

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Attachment A: Bio Resources Map Tower D

Collinsville 500/230 Kilovolt Substation Project

Vegetation Community

- Agriculture
- *Allenrolfea occidentalis* Shrubland Alliance
- *Avena spp. - Bromus* spp. Herbaceous Semi-Natural Alliance
- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- Developed
- Disturbed
- Ornamental Vegetation
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- Stick Nest
- Drainage
- Limited Access Area
- Survey Area

N

1:4,000

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ATTACHMENT B: HABITAT ASSESSMENT PHOTOGRAPHS

ATTACHMENT B: HABITAT ASSESSMENT PHOTOGRAPHS

Photograph 1: Agriculture land cover type, facing southwest.

Photograph 2: *Allenrolfea occidentalis* Shrubland Alliance, facing south.

Photograph 3: *Avena* spp. - *Bromus* spp. Herbaceous Semi-Natural Alliance (SNA), facing south.

Photograph 4: *Brassica nigra* - *Centaurea* (*solstitialis*, *melitensis*) Herbaceous SNA, facing east.

Photograph 5: Disturbed land cover type, facing north

Photograph 6: *Lolium perenne* Herbaceous SNA, facing southwest.

Photograph 7: *Schoenoplectus* (*acutus, californicus*) Herbaceous Alliance, facing north.

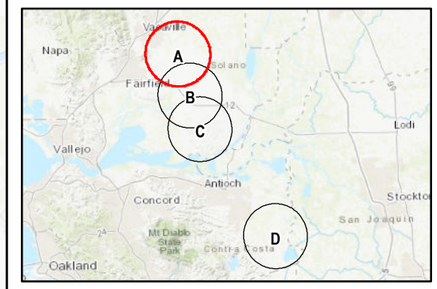
ATTACHMENT C: CNDDB OCCURRENCES OF SPECIAL-STATUS PLANT SPECIES

Attachment C:
CNDDB Occurrences of Special-Status Plant Species
Transposition Tower A

Collinsville 500/230 Kilovolt Substation Project

- Proposed Project Buffer
- Alkali Milk-Vetch
- Alkali-Sink Goldfields
- Baker's Navarretia
- Bearded Popcornflower
- Boggs Lake Hedge-Hyssop
- Bolander's Water-Hemlock
- Brittlescale
- California Alkali Grass
- Carquinez Goldenbush
- Colusa Grass
- Contra Costa Goldfields
- Coulter's Goldfields
- Crampton's Tuctoria (Solano Grass)
- Dwarf Downingia
- Fragrant Fritillary
- Heartscale
- Heckard's Pepper-Grass
- Hispid Salty Bird's-Beak
- Legenere
- Pappose Tarplant
- Saline Clover
- San Joaquin Spearscale
- San Joaquin Valley Orcutt Grass
- Suisun Marsh Aster
- Two-Fork Clover
- Vernal Pool Smallscale

5-Mile
1-Mile
0.25-Mile



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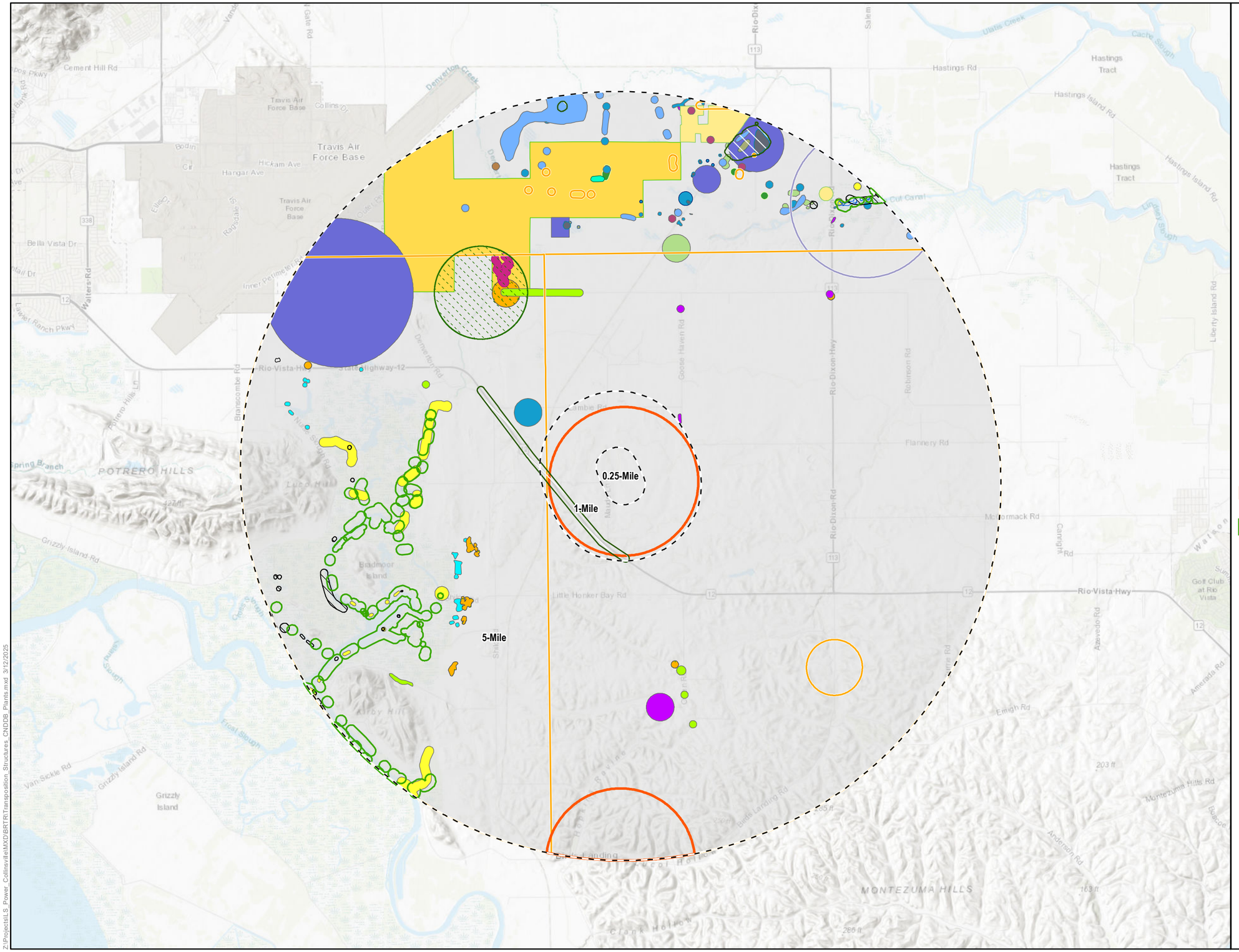
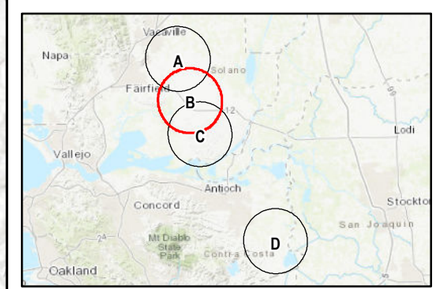


Attachment C:
CNDDB Occurrences of Special-Status Plant Species
Transposition Tower B

Collinsville 500/230 Kilovolt Substation Project

- Proposed Project Buffer
- Alkali Milk-Vetch
- Alkali-Sink Goldfields
- Baker's Navarretia
- Boggs Lake Hedge-Hyssop
- Bearded Popcornflower
- Bolander's Water-Hemlock
- Brittlescale
- California Alkali Grass
- Carquinez Goldenbush
- Colusa Grass
- Contra Costa Goldfields
- Coulter's Goldfields
- Crampton's Tuctoria (Solano Grass)
- Delta Mudwort
- Delta Tule Pea
- Dwarf Downingia
- Fragrant Fritillary
- Heartscale
- Heckard's Pepper-Grass
- Hispid Salty Bird's-Beak
- Keck's Checkerbloom
- Legenere
- Mason's Lilaeopsis
- Pappose Tarplant
- San Joaquin Valley Orcutt grass
- Soft Salty Bird's-Beak
- Suisun Marsh Aster
- Vernal Pool Smallscale



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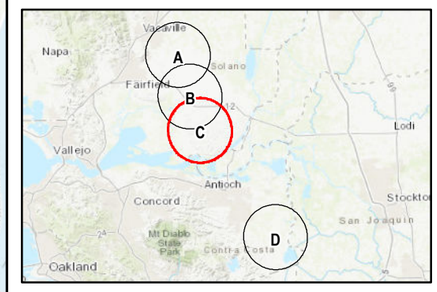
Attachment C:
CNDDB Occurrences of Special-Status Plant Species
Transposition Tower C

Collinsville 500/230 Kilovolt Substation Project

- Proposed Project Buffer
- Alkali Milk-Vetch
- Baker's Navarretia
- Bearded Popcornflower
- Bolander's Water-Hemlock
- Carquinez Goldenbush
- Brittlescale
- Delta Mudwort
- Delta Tule Pea
- Dwarf Downingia
- Fragrant Fritillary
- Heartscale
- Keck's Checkerbloom
- Mason's Lilaeopsis
- Pappose Tarplant
- San Joaquin Spearscale
- Soft Salty Bird's-Beak
- Suisun Marsh Aster



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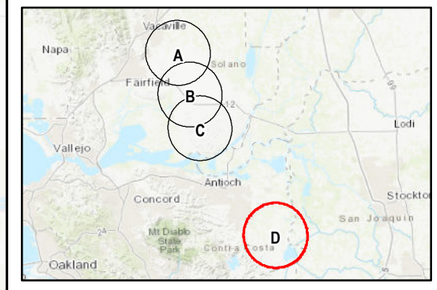
Attachment C:
CNDDB Occurrences of Special-Status Plant Species
Transposition Tower D

Collinsville 500/230 Kilovolt Substation Project

- Proposed Project Buffer
- Alkali Milk-Vetch
- Big Tarplant
- Brittlescale
- California Alkali Grass
- Caper-Fruited Tropidocarpum
- Chaparral Ragwort
- Delta Button-Celery
- Delta Mudwort
- Diamond-Petaled California Poppy
- Long-Styled Sand-Spurrey
- Mason's Lilaeopsis
- Recurved Larkspur
- San Joaquin Spearscale
- Spiny-Sepaled Button-Celery
- Woolly Rose-Mallow

0.25-Mile
1-Mile
5-Mile



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ATTACHMENT D: CNDDB OCCURRENCES OF SPECIAL-STATUS WILDLIFE SPECIES

Attachment D:
CNDDB Occurrences of
Special-Status Wildlife Species
Amphibians - Transposition Tower A

Collinsville 500/230 Kilovolt
Substation Project

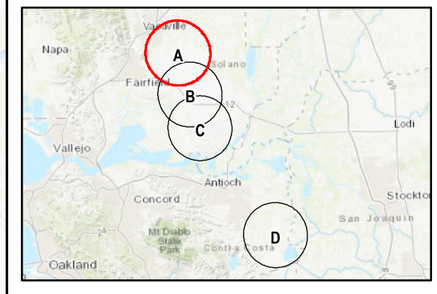
Proposed Project Buffer

California Tiger Salamander - Central California DPS

0.25-Mile

1-Mile

5-Mile



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Attachment D:
CNDDB Occurrences of Special-Status Wildlife Species
Birds - Transposition Tower A

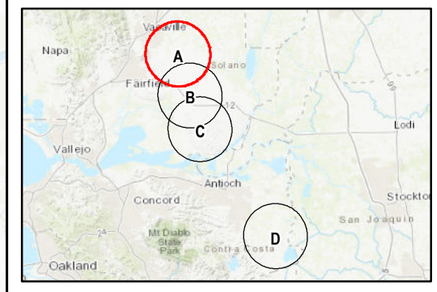
Collinsville 500/230 Kilovolt Substation Project

- Proposed Project Buffer
- Burrowing Owl
- Grasshopper Sparrow
- Mountain Plover
- Northern Harrier
- Swainson's Hawk
- Tricolored Blackbird
- White-Tailed Kite

0.25-Mile

1-Mile

5-Mile



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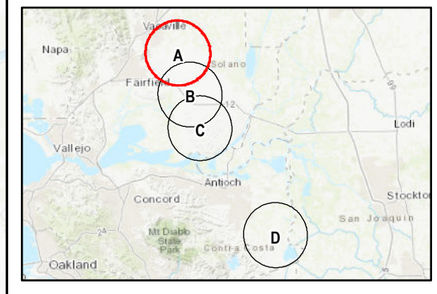
Attachment D:
CNDDB Occurrences of Special-Status Wildlife Species
Crustaceans/Insects - Transposition Tower A

Collinsville 500/230 Kilovolt Substation Project

- Proposed Project Buffer
- Conservancy Fairy Shrimp
- Delta Green Ground Beetle
- Vernal Pool Fairy Shrimp
- Vernal Pool Tadpole Shrimp
- Western Bumble Bee

0.25-Mile
1-Mile
5-Mile



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INSIGNIA ENVIRONMENTAL

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Attachment D:
CNDDB Occurrences of Special-Status Wildlife Species
Reptiles - Transposition Tower A

Collinsville 500/230 Kilovolt Substation Project

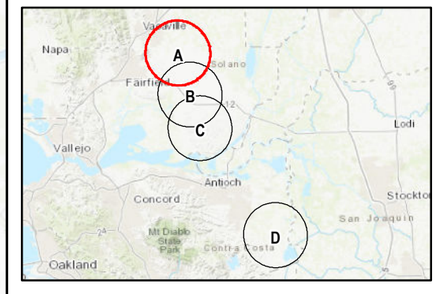
Proposed Project Buffer

Northwestern Pond Turtle

0.25-Mile

1-Mile

5-Mile



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LS POWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

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Attachment D:
CNDDB Occurrences of
Special-Status Wildlife Species
Amphibians - Transposition Tower B

Collinsville 500/230 Kilovolt
Substation Project

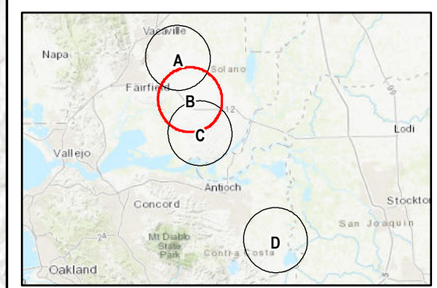
Proposed Project Buffer

California Tiger Salamander - Central California DPS

0.25-Mile

1-Mile

5-Mile



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0 1 2 Miles

LS POWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

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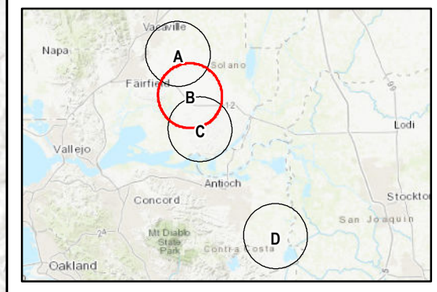
Attachment D:
CNDDB Occurrences of Special-Status Wildlife Species
Birds - Transposition Tower B

Collinsville 500/230 Kilovolt Substation Project

- Proposed Project Buffer
- Burrowing Owl
- California Black Rail
- Golden Eagle
- Mountain Plover
- Northern Harrier
- Saltmarsh Common Yellowthroat
- Short-Eared Owl
- Suisun Song Sparrow
- Swainson's Hawk
- Tricolored Blackbird
- White-Tailed Kite



1:80,000
0 1 2 Miles

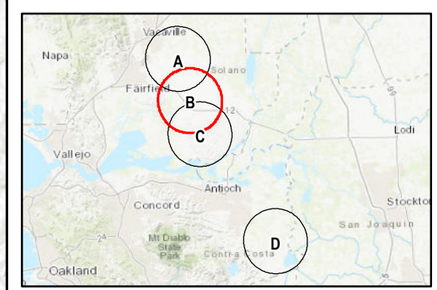
LSPOWER GRID CALIFORNIA
INSIGNIA ENVIRONMENTAL

Z:\Projects\LS_Power_Collinsville\MXD\BRTR\Transposition_Structures_CNDDB_Animals.mxd 3/19/2025

Attachment D:
CNDDB Occurrences of
Special-Status Wildlife Species
Crustaceans/Insects - Transposition Tower B

Collinsville 500/230 Kilovolt
Substation Project

- Proposed Project Buffer
- Conservancy Fairy Shrimp
- Delta Green Ground Beetle
- Vernal Pool Fairy Shrimp
- Vernal Pool Tadpole Shrimp
- Western Bumble Bee



1:80,000

0 1 2 Miles

LS POWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

Z:\Projects\LS_Power_Collinsville\MXD\BRT\RTransposition_Structures_CNDDB_Animals.mxd 3/19/2025

Attachment D:
CNDDB Occurrences of Special-Status Wildlife Species
Fish - Transposition Tower B

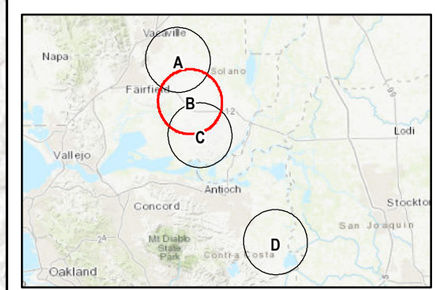
Collinsville 500/230 Kilovolt Substation Project

- Proposed Project Buffer
- Green Sturgeon - Southern DPS
- Longfin Smelt
- Sacramento Splittail

0.25-Mile

1-Mile

5-Mile



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0 1 2 Miles

LS POWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

Z:\Projects\LS_Power_Collinsville\MXD\BRTR\Transposition_Structures_CNDDB_Animals.mxd 3/19/2025

Attachment D:
CNDDB Occurrences of
Special-Status Wildlife Species
Mammals - Transposition Tower B

Collinsville 500/230 Kilovolt
Substation Project

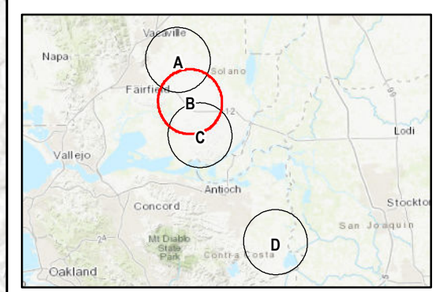
Proposed Project Buffer

Salt-Marsh Harvest Mouse

0.25-Mile

1-Mile

5-Mile



1:80,000

0 1 2 Miles

LSPOWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

Z:\Projects\LS_Power_Collinsville\MXD\BRTR\Transposition_Structures_CNDDB_Animals.mxd 3/19/2025

Attachment D:
CNDDB Occurrences of Special-Status Wildlife Species
Reptiles - Transposition Tower B

Collinsville 500/230 Kilovolt Substation Project

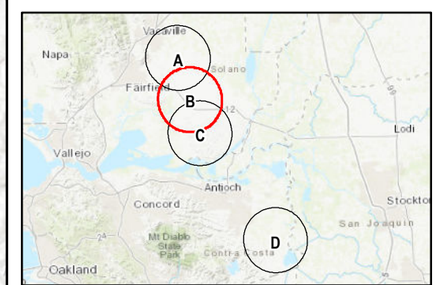
Proposed Project Buffer

Northwestern Pond Turtle

0.25-Mile

1-Mile

5-Mile



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0 1 2 Miles

LS POWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

Z:\Projects\LS_Power_Collinsville\MXD\BRTR\Transposition_Structures_CNDDB_Animals.mxd 3/19/2025

Attachment D:
CNDDB Occurrences of
Special-Status Wildlife Species
Amphibians - Transposition Tower C

Collinsville 500/230 Kilovolt
Substation Project

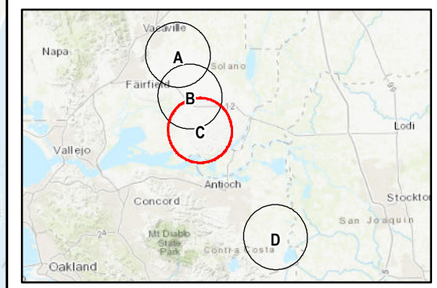
Proposed Project Buffer

California Tiger Salamander - Central California DPS

0.25-Mile

1-Mile

5-Mile



1:80,000

0 1 2 Miles

LS POWER GRID CALIFORNIA

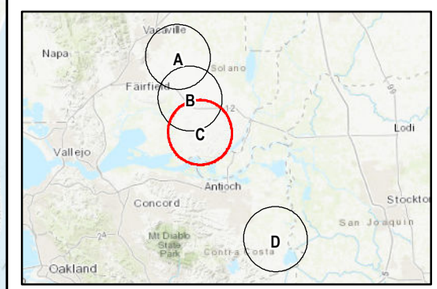
INSIGNIA ENVIRONMENTAL

Z:\Projects\LS_Power_Collinsville\MXD\BRTR\Transposition_Structures_CNDDB_Animals.mxd 3/19/2025

Attachment D:
CNDDB Occurrences of Special-Status Wildlife Species
Birds - Transposition Tower C

Collinsville 500/230 Kilovolt Substation Project

- Proposed Project Buffer
- Burrowing Owl
- California Black Rail
- California Least Tern
- Golden Eagle
- Northern Harrier
- Saltmarsh Common Yellowthroat
- Short-Eared Owl
- Swainson's Hawk
- Suisun Song Sparrow
- Tricolored Blackbird
- Western Snowy Plover
- White-Tailed Kite
- Yellow Rail



1:80,000
0 1 2 Miles

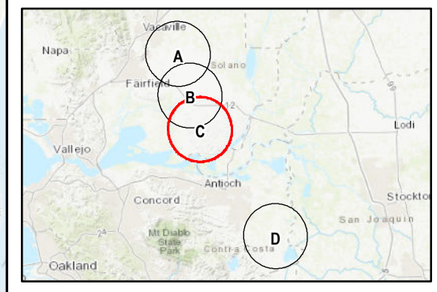
LS POWER GRID CALIFORNIA
INSIGNIA ENVIRONMENTAL

Z:\Projects\LS_Power_Collinsville\MXD\BRTR\Transposition_Structures_CNDDB_Animals.mxd 3/19/2025

Attachment D:
CNDDB Occurrences of Special-Status Wildlife Species
Crustaceans/Insects - Transposition Tower C

Collinsville 500/230 Kilovolt Substation Project

- Proposed Project Buffer
- Conservancy Fairy Shrimp
- Lange's Metalmark Butterfly
- Vernal Pool Fairy Shrimp
- Vernal Pool Tadpole Shrimp



1:80,000
0 1 2 Miles

LS POWER GRID CALIFORNIA
INSIGNIA ENVIRONMENTAL

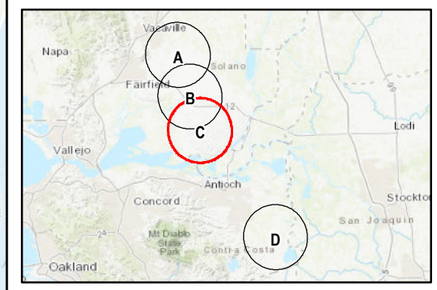
Z:\Projects\LS_Power_Collinsville\MXD\BRTR\Transposition_Structures_CNDDB_Animals.mxd 3/19/2025

Attachment D:
CNDDB Occurrences of Special-Status Wildlife Species
Fish - Transposition Tower C

Collinsville 500/230 Kilovolt Substation Project

- Proposed Project Buffer
- Delta Smelt
- Green Sturgeon - Southern DPS
- Longfin Smelt
- Steelhead - Central Valley DPS

0.25-Mile
1-Mile
5-Mile



1:80,000
0 1 2 Miles

LS POWER GRID CALIFORNIA
INSIGNIA ENVIRONMENTAL

Z:\Projects\LS_Power_Collinsville\MXD\BRTR\Transposition_Structures_CNDDB_Animals.mxd 3/19/2025

Attachment D:
CNDDB Occurrences of Special-Status Wildlife Species Mammals - Transposition Tower C

Collinsville 500/230 Kilovolt Substation Project

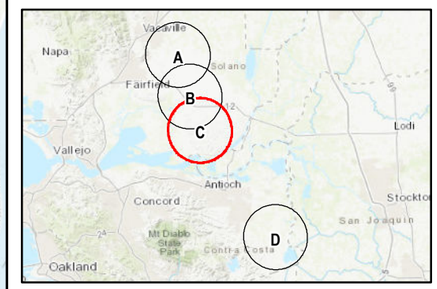
Proposed Project Buffer

Salt-Marsh Harvest Mouse

0.25-Mile

1-Mile

5-Mile



1:80,000

0 1 2 Miles

LS POWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

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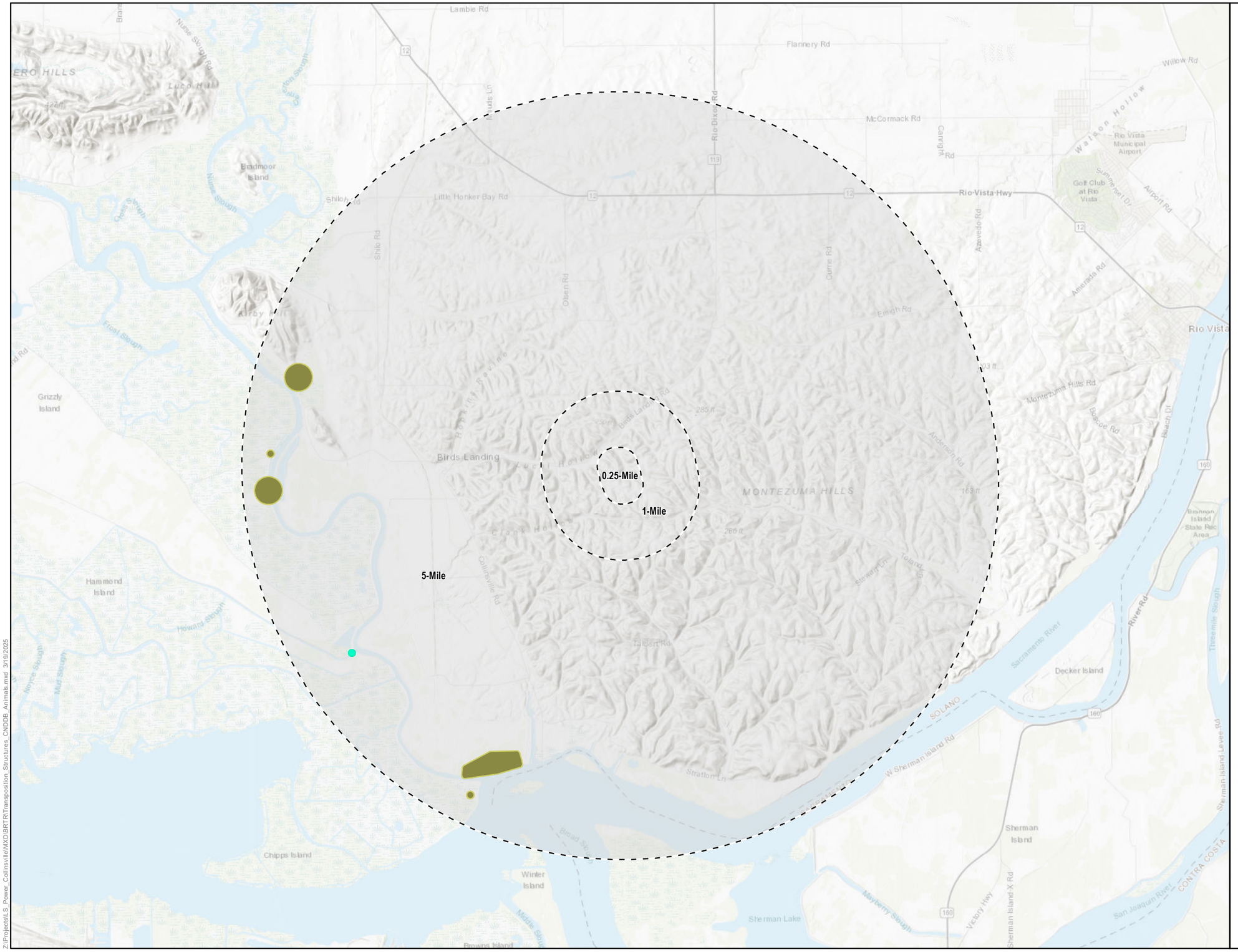
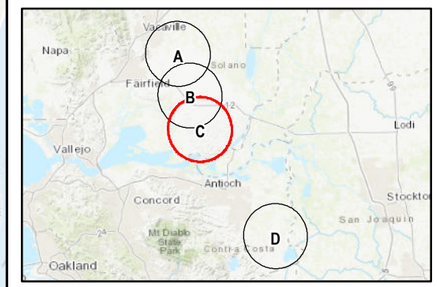


Attachment D:
CNDDB Occurrences of Special-Status Wildlife Species
Reptiles - Transposition Tower C

Collinsville 500/230 Kilovolt Substation Project

- Proposed Project Buffer
- Giant Gartersnake
- Northwestern Pond Turtle



1:80,000
0 1 2 Miles

LS POWER GRID CALIFORNIA
INSIGNIA ENVIRONMENTAL

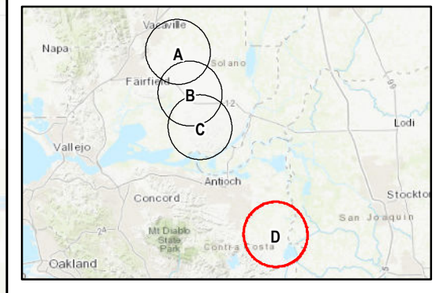
Z:\Projects\LS_Power_Collinsville\MXD\BRTR\Transposition_Structures_CNDDB_Animals.mxd 3/19/2025

Attachment D:
CNDDB Occurrences of Special-Status Wildlife Species
Amphibians - Transposition Tower D

Collinsville 500/230 Kilovolt Substation Project

- Proposed Project Buffer
- California Red-Legged Frog
- California Tiger Salamander - Central California DPS

0.25-Mile
1-Mile
5-Mile



1:80,000
0 1 2 Miles

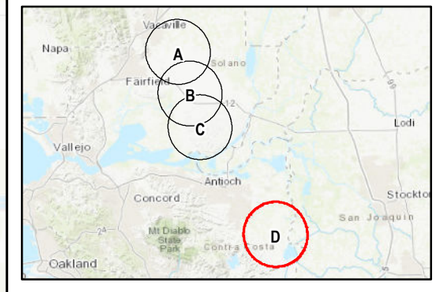
LSPOWER GRID CALIFORNIA
INSIGNIA ENVIRONMENTAL

Z:\Projects\LS_Power_Collinsville\MXD\BRTR\Transposition_Structures_CNDDB_Animals.mxd 3/19/2025

Attachment D:
CNDDB Occurrences of Special-Status Wildlife Species
Birds - Transposition Tower D

Collinsville 500/230 Kilovolt Substation Project

- Proposed Project Buffer
- Burrowing Owl
- California Black Rail
- Golden Eagle
- Prairie Falcon
- Song Sparrow ("Modesto" population)
- Swainson's Hawk
- Tricolored Blackbird



1:80,000
0 1 2 Miles

LS POWER GRID CALIFORNIA
INSIGNIA ENVIRONMENTAL

0.25-Mile
1-Mile
5-Mile

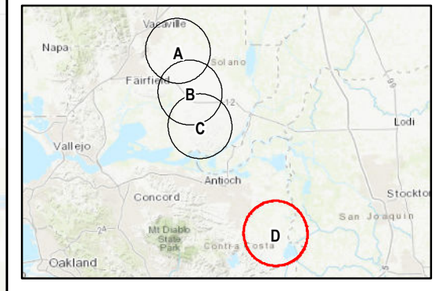
Z:\Projects\LS_Power_Collinsville\MXD\BRTR\Transposition_Structures_CNDDB_Animals.mxd 3/19/2025

Attachment D:
CNDDB Occurrences of
Special-Status Wildlife Species
Crustaceans/Insects - Transposition Tower D

Collinsville 500/230 Kilovolt
Substation Project

- Proposed Project Buffer
- Longhorn Fairy Shrimp
- Vernal Pool Fairy Shrimp
- Western Bumble Bee

0.25-Mile
1-Mile
5-Mile



1:80,000
0 1 2 Miles

LS POWER GRID CALIFORNIA
INSIGNIA ENVIRONMENTAL

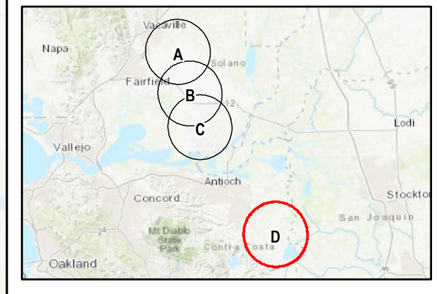
Z:\Projects\LS_Power_Collinsville\MXD\BRTR\Transposition_Structures_CNDDB_Animals.mxd 3/19/2025

Attachment D:
CNDDB Occurrences of Special-Status Wildlife Species
Fish - Transposition Tower D

Collinsville 500/230 Kilovolt Substation Project

- Proposed Project Buffer
- Delta Smelt
- Eulachon
- Green Sturgeon - Southern DPS
- Longfin Smelt
- Steelhead - Central Valley DPS

0.25-Mile
1-Mile
5-Mile



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0 1 2 Miles

LSPOWER GRID CALIFORNIA
INSIGNIA ENVIRONMENTAL

Z:\Projects\LS_Power_Collinsville\MXD\BRTR\Transposition_Structures_CNDDB_Animals.mxd 3/19/2025

Attachment D:
CNDDB Occurrences of Special-Status Wildlife Species Mammals - Transposition Tower D

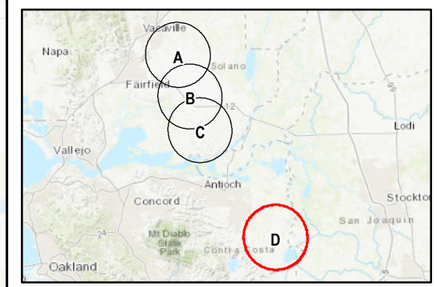
Collinsville 500/230 Kilovolt Substation Project

- Proposed Project Buffer
- American Badger
- San Joaquin Kit Fox
- San Joaquin Pocket Mouse

0.25-Mile

1-Mile

5-Mile



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0 1 2 Miles

LS POWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

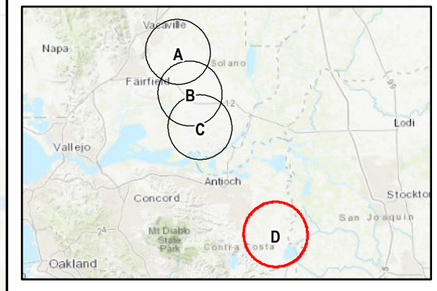
Z:\Projects\LS_Power_Collinsville\MXD\BRTR\Transposition_Structures_CNDDB_Animals.mxd 3/19/2025

Attachment D:
CNDDB Occurrences of Special-Status Wildlife Species
Reptiles - Transposition Tower D

Collinsville 500/230 Kilovolt Substation Project

- Proposed Project Buffer
- Alameda Whipsnake
- Coast Horned Lizard
- Northwestern Pond Turtle
- Northern California Legless Lizard

0.25-Mile
1-Mile
5-Mile



1:80,000
0 1 2 Miles

LS POWER GRID CALIFORNIA
INSIGNIA ENVIRONMENTAL

Z:\Projects\LS_Power_Collinsville\MXD\BRTR\Transposition_Structures_CNDDB_Animals.mxd 3/19/2025

ATTACHMENT E: ESSENTIAL CONNECTIVITY AREAS

Attachment E: Essential Connectivity Areas Tower A **Collinsville 500/230 Kilovolt Substation Project**

More Permeable

Survey Area

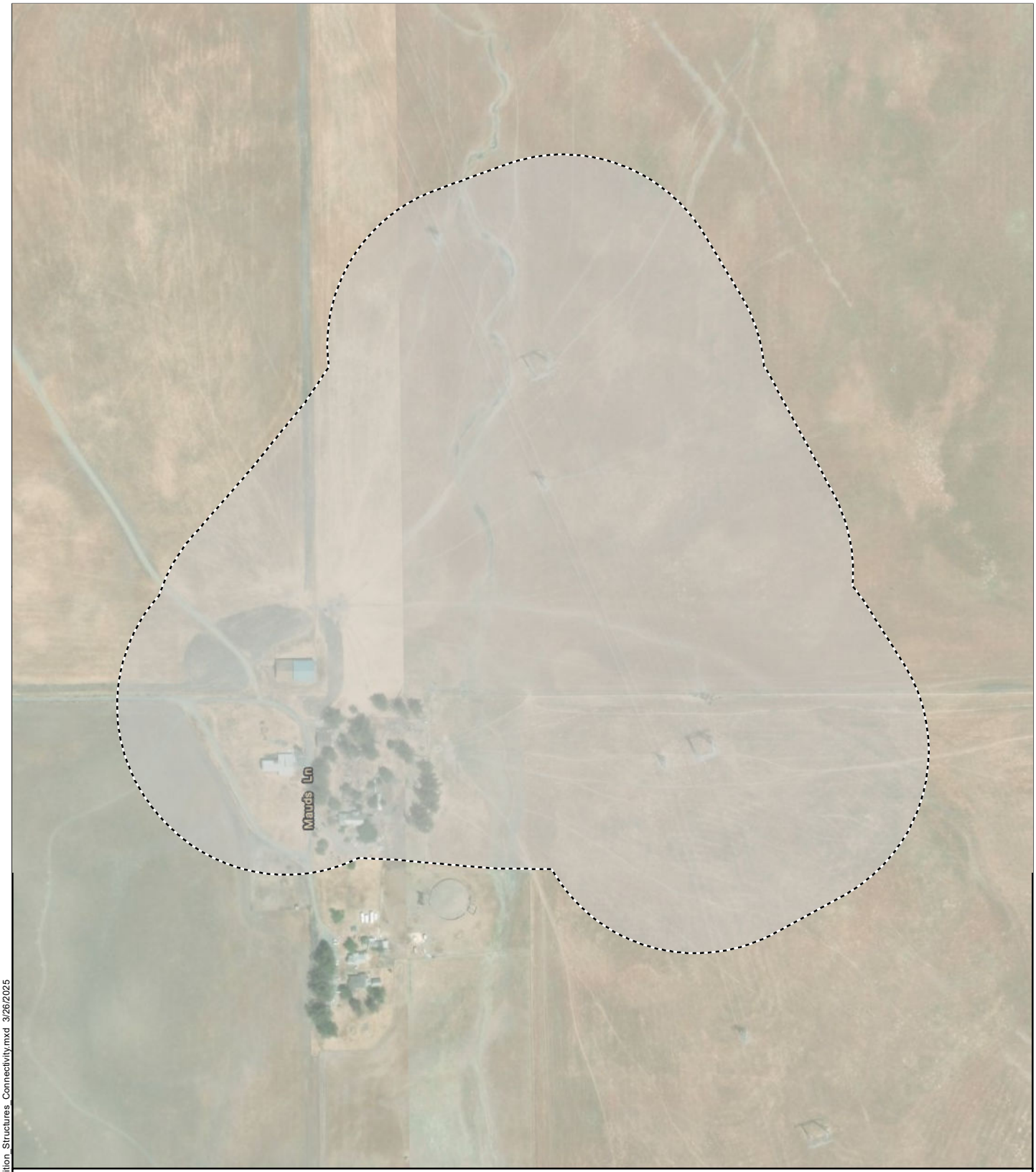
Less Permeable

1:10,000

0 400 800 Feet

LS POWER GRID CALIFORNIA INSIGNIA ENVIRONMENTAL

Z:\Projects\LS_Power_Collinsville\MXD\BRT\RI\Transposition_Structures_Connectivity.mxd 3/26/2025



Attachment E: Essential Connectivity Areas Tower B

Collinsville 500/230 Kilovolt Substation Project

More Permeable

Survey Area

Less Permeable

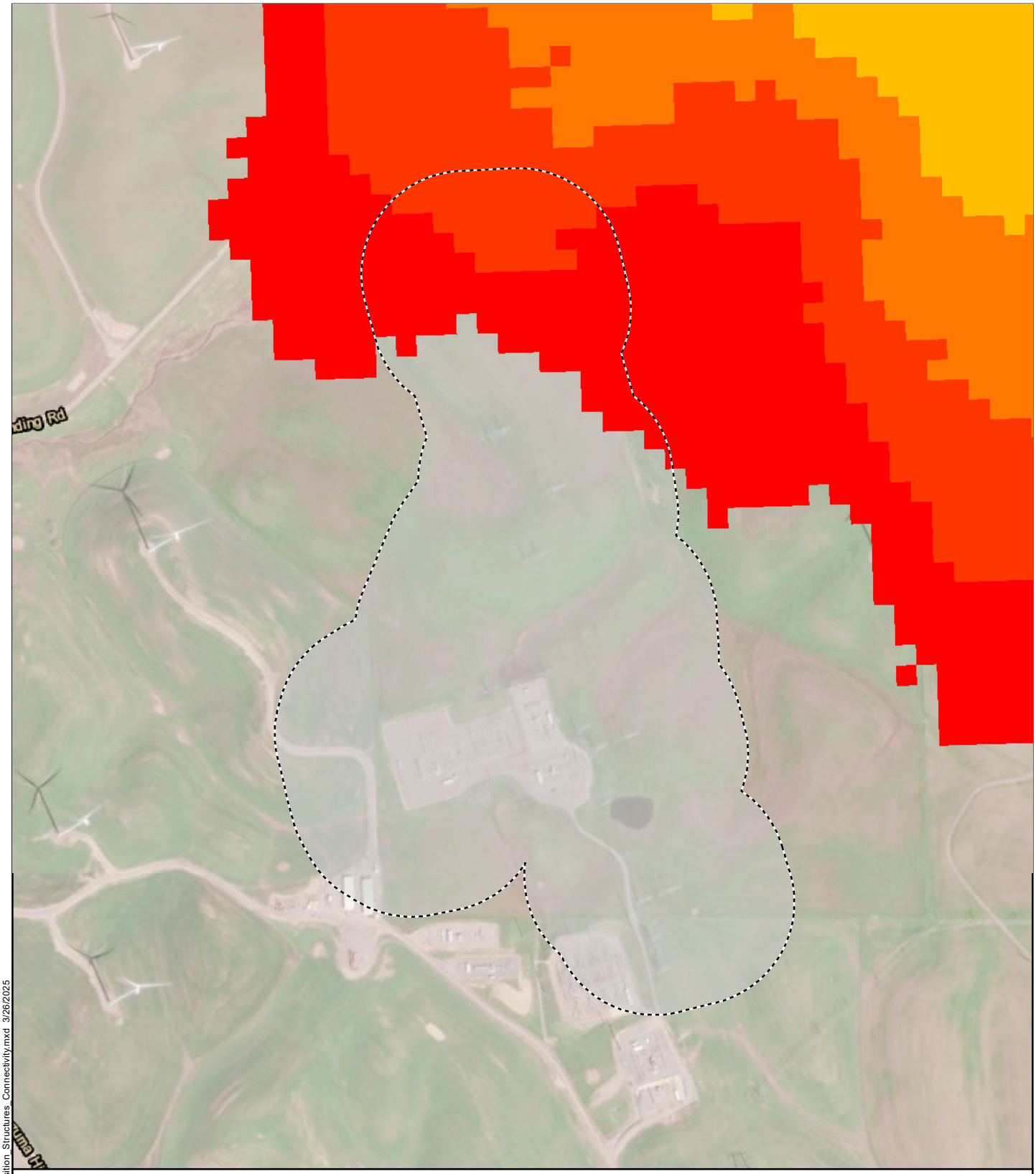
1:5,000

0 400 800 Feet

LS POWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

Z:\Projects\LS_Power_Collinsville\MXD\BRTR\Transposition_Structures_Connectivity.mxd 3/26/2025



Attachment E: Essential Connectivity Areas Tower C **Collinsville 500/230 Kilovolt Substation Project**

More Permeable

Less Permeable

Survey Area

1:8,000

0 400 800 Feet

LS POWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

Z:\Projects\LS_Power_Collinsville\MXD\BRTR\Transposition_Structures_Connectivity.mxd 3/26/2025

Attachment E: Essential Connectivity Areas Tower D **Collinsville 500/230 Kilovolt Substation Project**

More Permeable

Less Permeable

Survey Area

1:4,000

0 400 800 Feet

LS POWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

Z:\Projects\LS_Power_Collinsville\MXD\BRTR\Transposition_Structures_Connectivity.mxd 3/26/2025

ATTACHMENT F: LINEAR WATER FEATURE PHOTOGRAPHS

ATTACHMENT F: LINEAR WATER FEATURE PHOTOGRAPHS

TOWER A

Photograph 1: D-1, facing upstream and west.

Photograph 2: D-1, facing downstream and east.

Photograph 3: D-2, facing upstream and east.

Photograph 4: D-2, facing downstream and west.

Photograph 5: D-3, facing upstream and east.

Photograph 6: D-3, facing downstream and west.

Photograph 7: D-4, facing upstream and south.

Photograph 8: D-4, facing downstream and north.

TOWER B

Photograph 9: D-5, facing upstream and south.

Photograph 10: D-5, facing downstream and northeast.

TOWER C

Photograph 11: D-6, facing upstream and southeast.

Photograph 12: D-6, facing downstream and northeast.

Photograph 13: D-7, facing upstream and southwest.

Photograph 14: D-7, facing downstream and northwest.

Photograph 15: D-8, facing upstream and south.

Photograph 16: D-8, facing downstream and north.

Photograph 17: D-9, facing upstream and north.

Photograph 18: D-9, facing downstream and south.

TOWER D

Photograph 19: D-10, facing upstream and west.

Photograph 20: D-10, facing downstream and east.

Photograph 21: D-11, facing upstream and east.

Photograph 22: D-11, facing downstream and west.

Photograph 23: D-12, facing upstream and south.

Photograph 24: D-12, facing downstream and north.

Photograph 25: D-13, facing upstream and southwest.

Photograph 26: D-13, facing downstream and southeast.

ATTACHMENT G: WETLAND FEATURE PHOTOGRAPHS

ATTACHMENT G: WETLAND FEATURE PHOTOGRAPHS

Photograph 1: W-1, facing north.[1]

Photograph 2: W-2, facing north.

[1] Foot access for surveys was restricted due to landowner access. Photos were taken from the nearest accessible area.

Photograph 3: W-3, facing southeast.

Photograph 4: W-4, facing south.

Photograph 5: W-5, facing north.

Photograph 6: W-6, facing east.[2]

[2] Photographs of W-7 are not available; however, this feature closely resembles W-4, W-5, and W-6 in size, shape, observed hydrology, and vegetation community.

Photograph 7: W-8, facing north.

Photograph 8: W-9, facing north.

Photograph 9: W-10, facing west.

Photograph 10: W-11, facing north.

Photograph 11: W-12, facing west.

Photograph 12: W-13, facing north.

Photograph 13: W-14, facing north.

Photograph 14: W-15, facing northeast.

Photograph 15: W-16, facing southwest.

Photograph 16: W-17, facing north.

Photograph 17: W-18, facing southeast.

Photograph 18: W-19, facing northwest.

ATTACHMENT H: POTENTIALLY JURISDICTIONAL WATER FEATURES TABLES

ATTACHMENT H: POTENTIALLY JURISDICTIONAL WATER FEATURES TABLES

Table H-1: Potentially Jurisdictional Wetland Features

Wetland Identification Number	Vegetation Type	Cowardin Classification	Page Number in Attachment A	Potential USACE Jurisdictional Area within Survey Area (acres)	Potential RWQCB Jurisdictional Area within Survey Area (acres)	Potential CDFW Jurisdictional Area within Survey Area (acres)
Tower A						
W-1	*Lolium perenne* Herbaceous Semi-Natural Alliance	PEM2*	1	--	0.36	--
W-2	*Lolium perenne* Herbaceous Semi-Natural Alliance	PUBC**	1	--	0.02	--
W-3	*Brassica nigra – Centaurea* (*solstitialis*, *melitensis*) Herbaceous Semi-Natural Alliance	PUBC	1	--	0.03	--
W-4	*Lolium perenne* Herbaceous Semi-Natural Alliance	PUBC	1	--	<0.01	--
W-5	*Lolium perenne* Herbaceous Semi-Natural Alliance	PUBC	1	--	<0.01	--
W-6	*Lolium perenne* Herbaceous Semi-Natural Alliance	PUBC	1	--	<0.01	--
W-7	*Lolium perenne* Herbaceous Semi-Natural Alliance	PUBC	1	--	<0.01	--
W-8	*Lolium perenne* Herbaceous Semi-Natural Alliance	PUBC	1	--	0.01	--
W-9	*Lolium perenne* Herbaceous Semi-Natural Alliance	PUBC	1	--	0.01	--
W-10	*Lolium perenne* Herbaceous Semi-Natural Alliance	PUBC	1	--	<0.01	--
W-11	*Lolium perenne* Herbaceous Semi-Natural Alliance	PUBC	1	--	0.54	--
W-12	*Lolium perenne* Herbaceous Semi-Natural Alliance	PUBC	1	--	0.08	--
W-13	*Lolium perenne* Herbaceous Semi-Natural Alliance	PUBC	1	--	<0.01	--
W-14	*Lolium perenne* Herbaceous Semi-Natural Alliance	PUBC	1	--	<0.01	--
W-15	*Lolium perenne* Herbaceous Semi-Natural Alliance	PUBC	1	--	0.04	--

Wetland Identification Number	Vegetation Type	Cowardin Classification	Page Number in Attachment A	Potential USACE Jurisdictional Area within Survey Area (acres)	Potential RWQCB Jurisdictional Area within Survey Area (acres)	Potential CDFW Jurisdictional Area within Survey Area (acres)
W-16	*Lolium perenne* Herbaceous Semi-Natural Alliance	PUBC	1	--	0.05	--
Tower B						
W-17	*Avena* spp. – *Bromus* spp. Herbaceous Semi-Natural Alliance	PUBC	2	--	0.01	--
W-18	*Avena* spp. – *Bromus* spp. Herbaceous Semi-Natural Alliance	PUBC	2	--	<0.01	--
W-19	*Avena* spp. – *Bromus* spp. Herbaceous Semi-Natural Alliance	PUBC	2	--	<0.01	--
Total* **	**--**	**--**	**--**	**--**	**1.19**	**--**

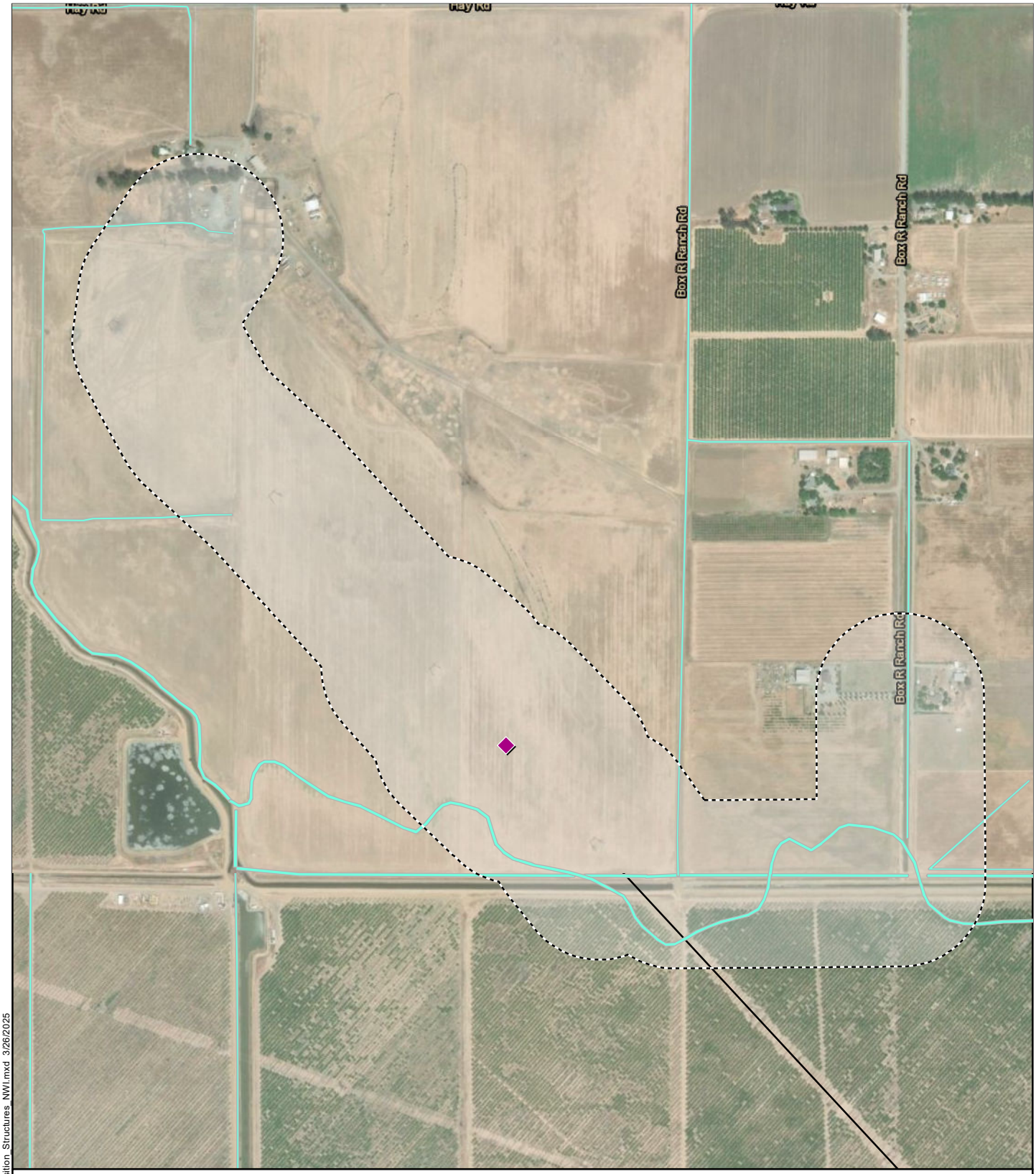
*PEM2 = Palustrine Emergent Non-persistent Wetland
**PUBC = Palustrine Unconsolidated Bottom, Seasonally Flooded
***Due to rounding, totals may not sum.
Notes: USACE = United States Army Corps of Engineers; RWQCB = Regional Water Quality Control Board; CDFW = California Department of Fish and Wildlife

Table H-2: Potentially Jurisdictional Linear Water Features

ID	Feature Type	Page Number in Attachment A	Average Measurements (feet)					Jurisdictional Areas (acres)		
			Length	OHWM Width	OHWM Depth	TOB Width	TOB Depth	USACE	RWQCB	CDFW
Tower A										
D-1	Ephemeral	1	1,180.1	4.0	0.4	67.0	0.3	--	0.11	1.84
D-2	Ephemeral	1	2,923.1	2.0	0.4	35.0	10.0	0.13	0.13	2.35
D-3	Ephemeral	1	1,267.5	4.0	0.2	15.0	6.5	--	0.12	0.44
D-4	Ephemeral	1	1,574.9	40.0	2.0	60.0	15.0	--	1.46	2.20
Tower B										
D-5	Ephemeral	2	1,208.1	14.9	0.6	17.2	1.7	--	0.48	0.56
Tower C										
D-6	Ephemeral	3	588.9	1.5	0.4	8.5	3.25	--	0.02	0.12
D-7	Ephemeral	3	1,154.2	0.8	0.1	4.2	0.1	--	0.02	0.11
D-8	Ephemeral	3	687.4	1.2	0.1	1.2	0.1	--	0.02	0.02
D-9	Ephemeral	3	210.8	1.0	0.2	3.25	3.1	--	<0.01	0.02
Tower D										
D-10	Ephemeral	4	1,303.5	1.2	0.5	4.0	2.0	--	0.12	0.12
D-11	Ephemeral	4	1,363.2	0.7	0.1	3.0	1.0	--	0.09	0.09
D-12	Perennial	4	1,234.9	20.0	2.0	44.0	13.0	0.57	0.57	1.26
D-13	Perennial	4	774.4	20.0	2.0	40.0	15.0	0.36	0.36	0.73
Total*	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**0.93**	**3.51**	**9.85**

*Due to rounding, totals may not sum.
Notes: OHWM = ordinary high water mark; TOB = top of bank

ATTACHMENT I: NATIONAL WETLANDS INVENTORY MAP



Attachment I: National Wetlands Inventory Map 1 of 4 **Collinsville 500/230 Kilovolt Substation Project**

- Proposed PG&E 500 kV Transposition Structure
- Existing PG&E Vaca Dixon-Tesla Transmission Line
- 500-Foot Buffer
- National Wetlands Inventory Feature

1:10,000

0 500 1,000 Feet

LS POWER GRID CALIFORNIA INSIGNIA ENVIRONMENTAL

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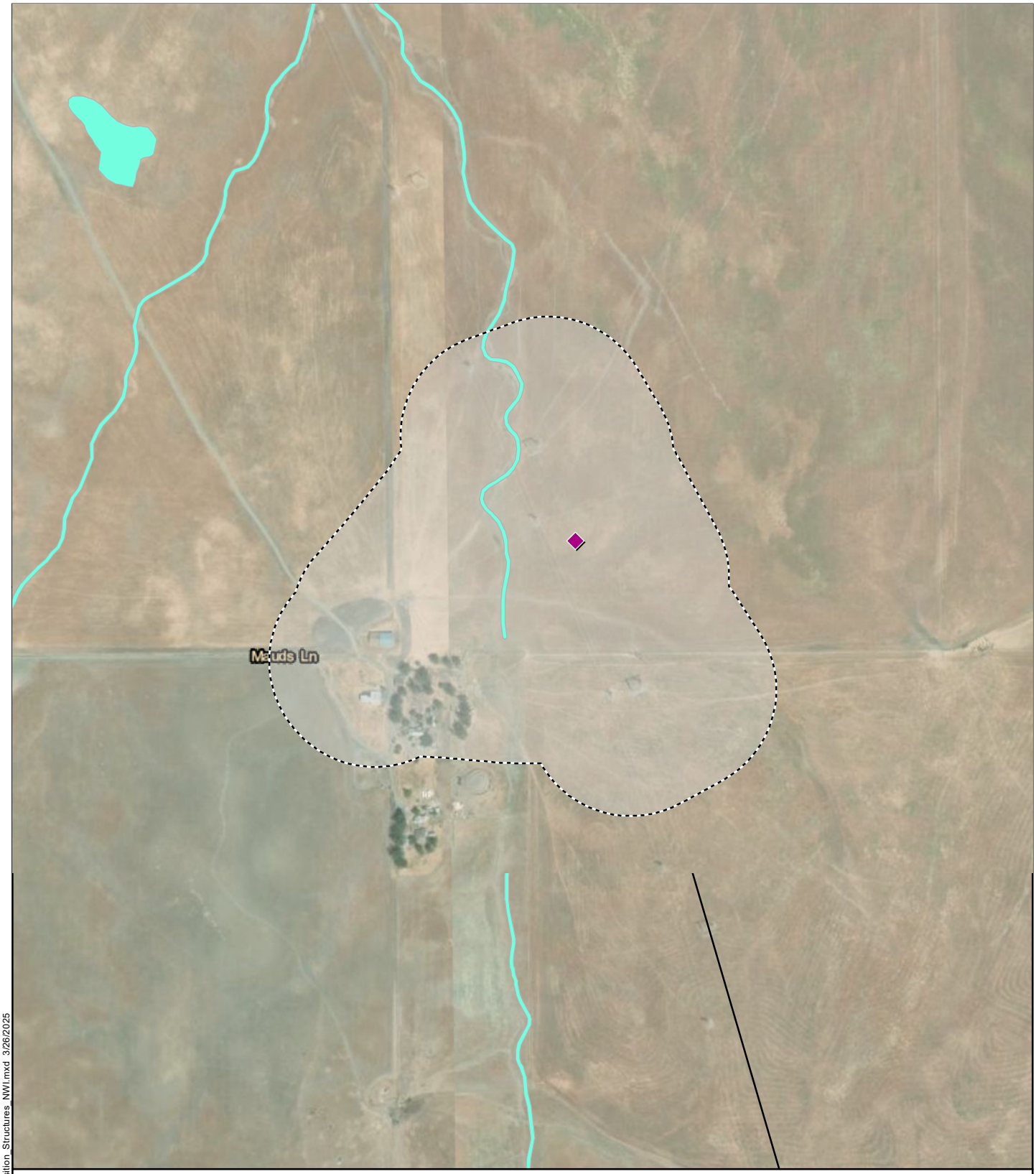

Attachment I: National Wetlands Inventory Map 2 of 4 **Collinsville 500/230 Kilovolt Substation Project**

- Proposed PG&E 500 kV Transposition Structure
- Existing PG&E Vaca Dixon-Tesla Transmission Line
- 500-Foot Buffer
- National Wetlands Inventory Feature

1:8,000

0 500 1,000 Feet

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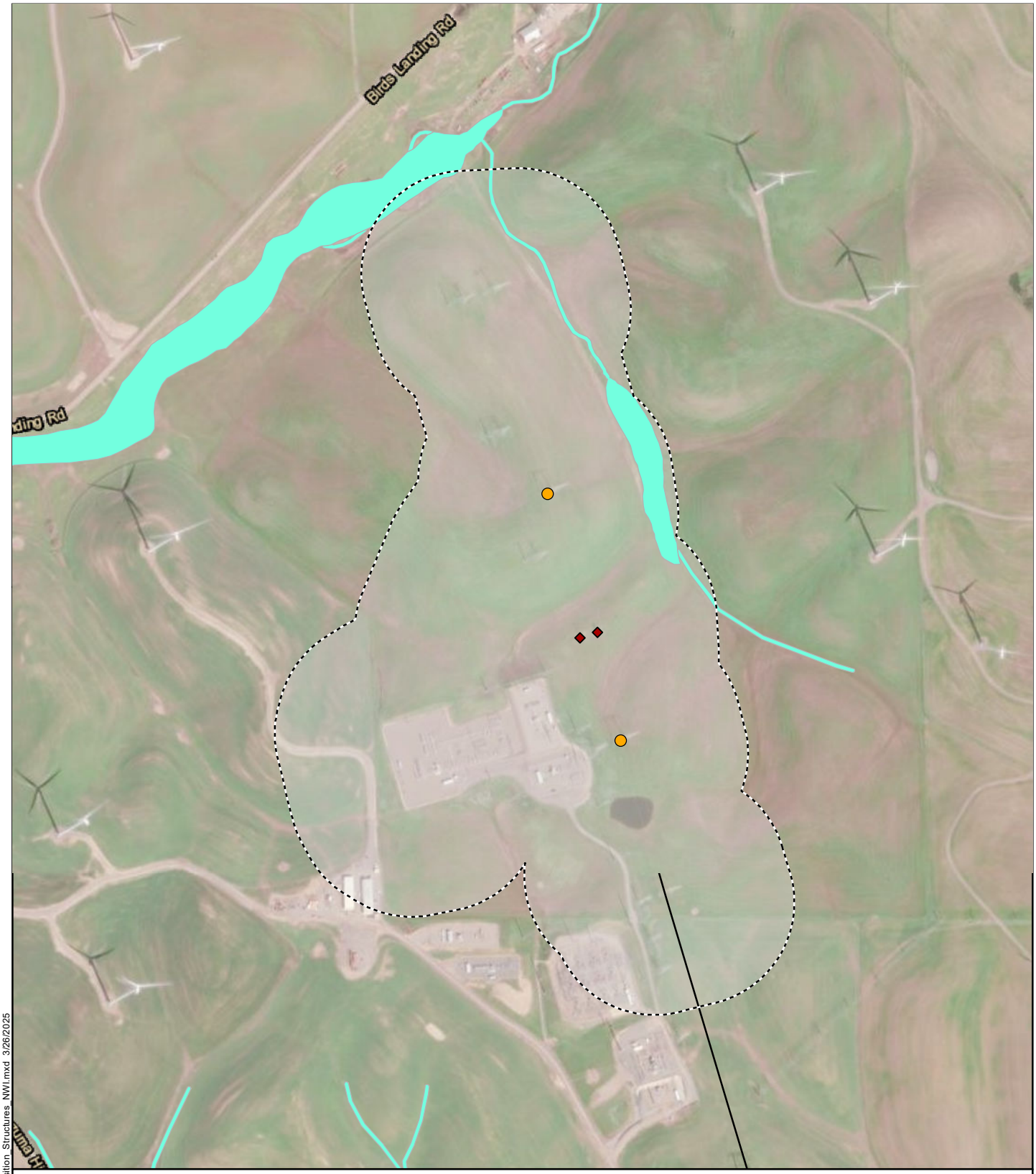

Attachment I: National Wetlands Inventory Map 3 of 4

Collinsville 500/230 Kilovolt Substation Project

- Proposed PG&E LSP Removal
- Proposed PG&E Three-Pole Dead-End TSP
- Existing PG&E Vaca Dixon-Tesla Transmission Line
- 500-Foot Buffer
- National Wetlands Inventory Feature

1:8,000

0 500 1,000 Feet

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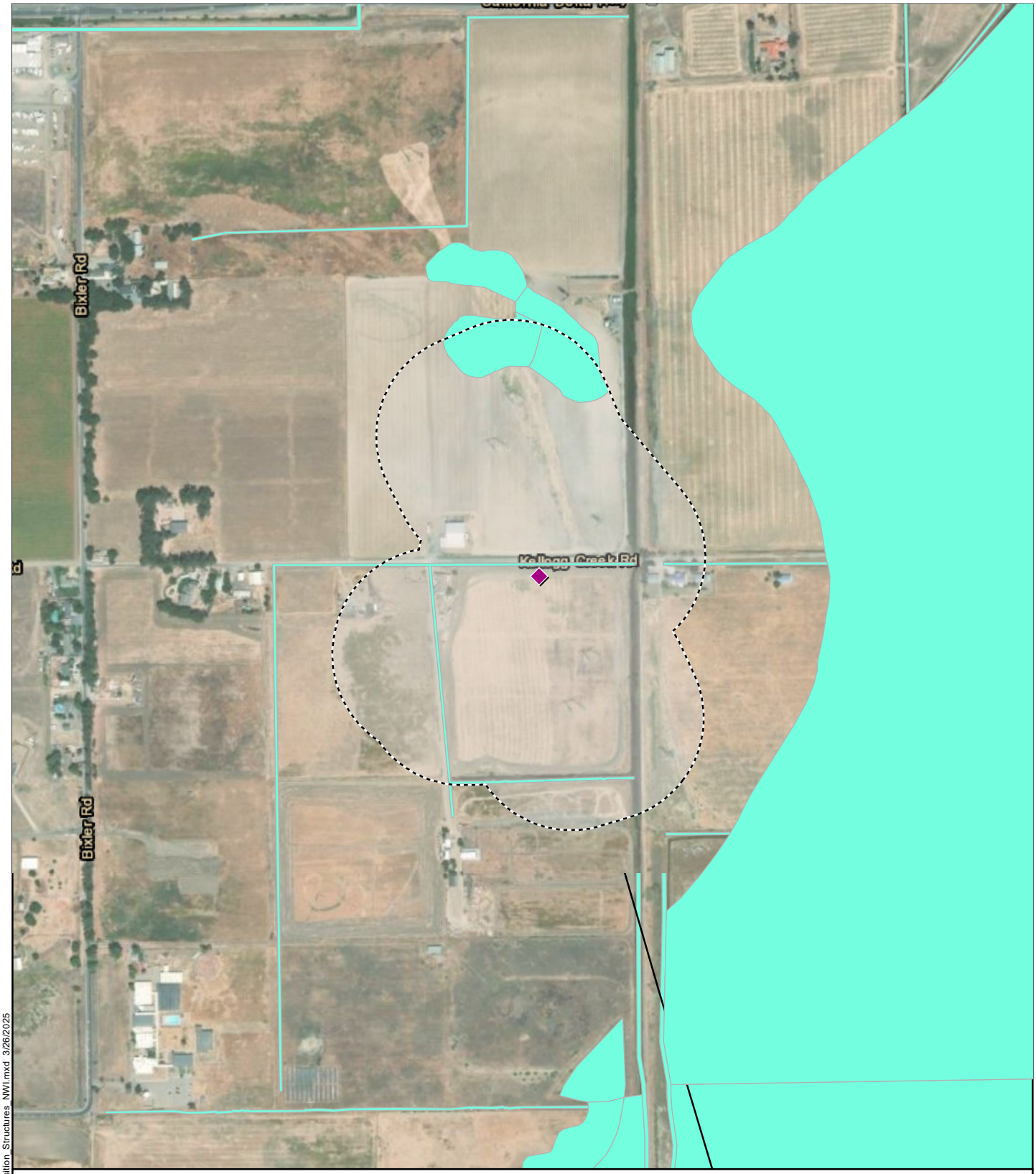

Attachment I: National Wetlands Inventory Map 4 of 4 **Collinsville 500/230 Kilovolt Substation Project**

- Proposed PG&E 500 kV Transposition Structure
- Existing PG&E Vaca Dixon-Tesla Transmission Line
- 500-Foot Buffer
- National Wetlands Inventory Feature

1:8,000

0 500 1,000 Feet

LS POWER GRID CALIFORNIA INSIGNIA ENVIRONMENTAL

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ATTACHMENT B: COLLINSVILLE 500/230 KILOVOLT SUBSTATION PROJECT AQUATIC RESOURCES DELINEATION REPORT

INSIGNIA ENVIRONMENTAL

LS POWER GRID CALIFORNIA, LLC

COLLINSVILLE 500/230 KILOVOLT SUBSTATION PROJECT

AQUATIC RESOURCES DELINEATION REPORT

JUNE 2025

PREPARED FOR:

LS POWER GRID CALIFORNIA

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1 – INTRODUCTION

LS Power Grid California, LLC (LSPGC) retained Insignia Environmental (Insignia) to conduct wetland and waters surveys for the Collinsville 500/230 Kilovolt (kV) Substation Project (Proposed Project). As depicted in Figure 1: Proposed Project Overview Map, the Proposed Project involves the construction of a new 500/230 kV substation (Collinsville Substation), the construction of two new 500 kV single-circuit transmission line segments that would interconnect Pacific Gas and Electric Company's (PG&E's) existing Vaca Dixon-Tesla 500 kV Transmission Line into the proposed Collinsville Substation, and the construction of one new 230 kV double-circuit transmission line (Proposed Project Transmission Line) that would connect the proposed Collinsville Substation to PG&E's existing Pittsburg Substation. The Proposed Project has been designed to address overloads on the existing Contra Costa-Newark 230 kV corridor and provide an additional supply into the northern greater San Francisco Bay Area to increase reliability to the area and advance additional power generation.

This Aquatic Resources Delineation Report (Report) presents the results of a delineation of wetlands and waters to support the necessary permits and authorizations prior to Proposed Project construction. Potentially jurisdictional wetlands and waters within the survey area, as defined in Section 4.1 Delineation of Wetlands and Waters, were assessed for jurisdiction under the United States (U.S.) Army Corps of Engineers (USACE), pursuant to Section 404 of the Clean Water Act (CWA), as well as the Regional Water Quality Control Board (RWQCB), pursuant to the Porter-Cologne Water Quality Control Act (California Water Code § 13000 et seq.) or Section 401 of the CWA. In addition, wetlands, waters, and associated riparian or hydrophytic vegetation were assessed for jurisdiction under the California Department of Fish and Wildlife (CDFW), pursuant to Section 1600 of the California Fish and Game Code. This report summarizes the regulatory framework, field methods, and results of the delineation of wetlands and waters.

2 – PROPOSED PROJECT DESCRIPTION

2.0 PROPOSED PROJECT LOCATION

The proposed Collinsville Substation would be located near the unincorporated community of Collinsville, which is located in the southwestern portion of Solano County. As depicted in Figure 2: Hydrologic Region Map, the survey area is located north and south of the Sacramento-San Joaquin River Delta (Delta). The Proposed Project would create a connection to PG&E's existing Pittsburg Substation, which is located in the City of Pittsburg in the northern portion of Contra Costa County.

2.1 PROPOSED PROJECT OVERVIEW

The following main components of the Proposed Project are depicted on Figure 1: Proposed Project Overview Map:

- A new approximately 11-acre 500/230 kV substation near the unincorporated community of Collinsville in Solano County (Proposed LSPGC Collinsville Substation);

- Two new approximately 1.5-mile-long single-circuit 500 kV, onshore transmission line segments (Proposed PG&E 500 kV Interconnection) that will interconnect PG&E's existing Vaca Dixon-Tesla 500 kV Transmission Line into the proposed Collinsville Substation;[1]

- A new approximately 6-mile-long double-circuit 230 kV transmission line that will connect the proposed Collinsville Substation to PG&E's existing Pittsburg Substation and include the following components:

  - An approximately 1-mile-long overhead transmission line segment will connect between the proposed Collinsville Substation and the north shore of the Delta (Proposed LSPGC 230 kV Overhead Segment),

  - Approximately four 4.7-mile-long submarine cables installed below the bed of the Delta (Proposed LSPGC 230 kV Submarine Segment),

  - Four onshore underground utility vaults near PG&E's existing Pittsburg Substation that will transition the submarine cables to underground cables that will terminate at approximately two new riser poles adjacent to PG&E's existing Pittsburg Substation (Proposed LSPGC 230 kV Underground Segment); and

- Two new telecommunications paths to the proposed Collinsville Substation (a new microwave tower that will be constructed at the substation and a new fiber optic path that would be installed between existing fiber in the City of Pittsburg and the proposed Collinsville Substation (Proposed LSPGC Telecommunications Extension).

3 – REGULATORY FRAMEWORK

3.0 UNITED STATES ARMY CORPS OF ENGINEERS

3.0.0 Section 404 of the Clean Water Act

Under Section 404 of the CWA, the USACE has jurisdiction over waters of the U.S. (WOTUS). The purpose of the CWA is to "restore and maintain the chemical, physical, and biological integrity of the nation's waters." The USACE has regulatory authority to issue permits for the discharge of dredged or fill material in WOTUS, according to Title 33, Section 1344 of the U.S. Code. The USACE issues individual or general permits (i.e., Nationwide Permits) for such discharges. The Proposed Project is under the jurisdiction of the USACE's San Francisco District.

Two Supreme Court of the U.S. (Supreme Court) cases—*Solid Waste Agency of Northern Cook County v. USACE* (SWANCC) and *Rapanos v. U.S.* (Rapanos)—redefined the USACE

[1] PG&E would be responsible for the final configuration of the northern tie-in of the 500 kV loop-in between the proposed Collinsville Substation and the existing Vaca Dixon-Tesla 500 kV Transmission Line. LSPGC would be responsible for the installation of dead-end structures near the proposed Collinsville Substation to facilitate looping in the 500 kV lines.

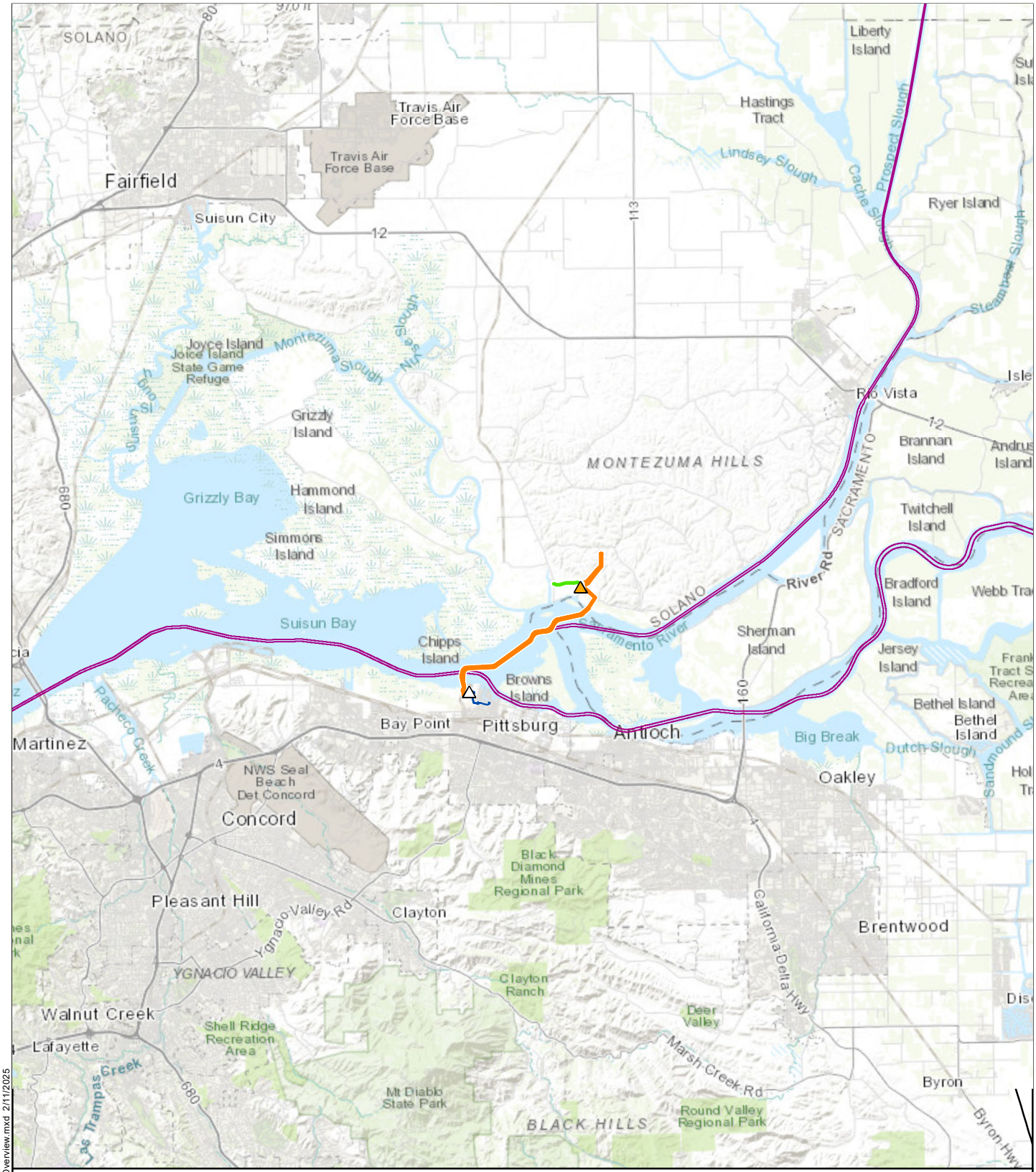

Figure 1: Proposed Project Overview Map **Collinsville 500/230 Kilovolt Substation Project**

- Proposed LSPGC Collinsville Substation
- Existing PG&E Pittsburg Substation
- Proposed Project Transmission Lines
- Proposed PG&E 12 kV Overhead Distribution Line
- Existing PG&E Vaca Dixon-Tesla Transmission Line
- Proposed LSPGC Telecommunications Line
- Navigational Channel

1:250,000

0 2 4 Miles

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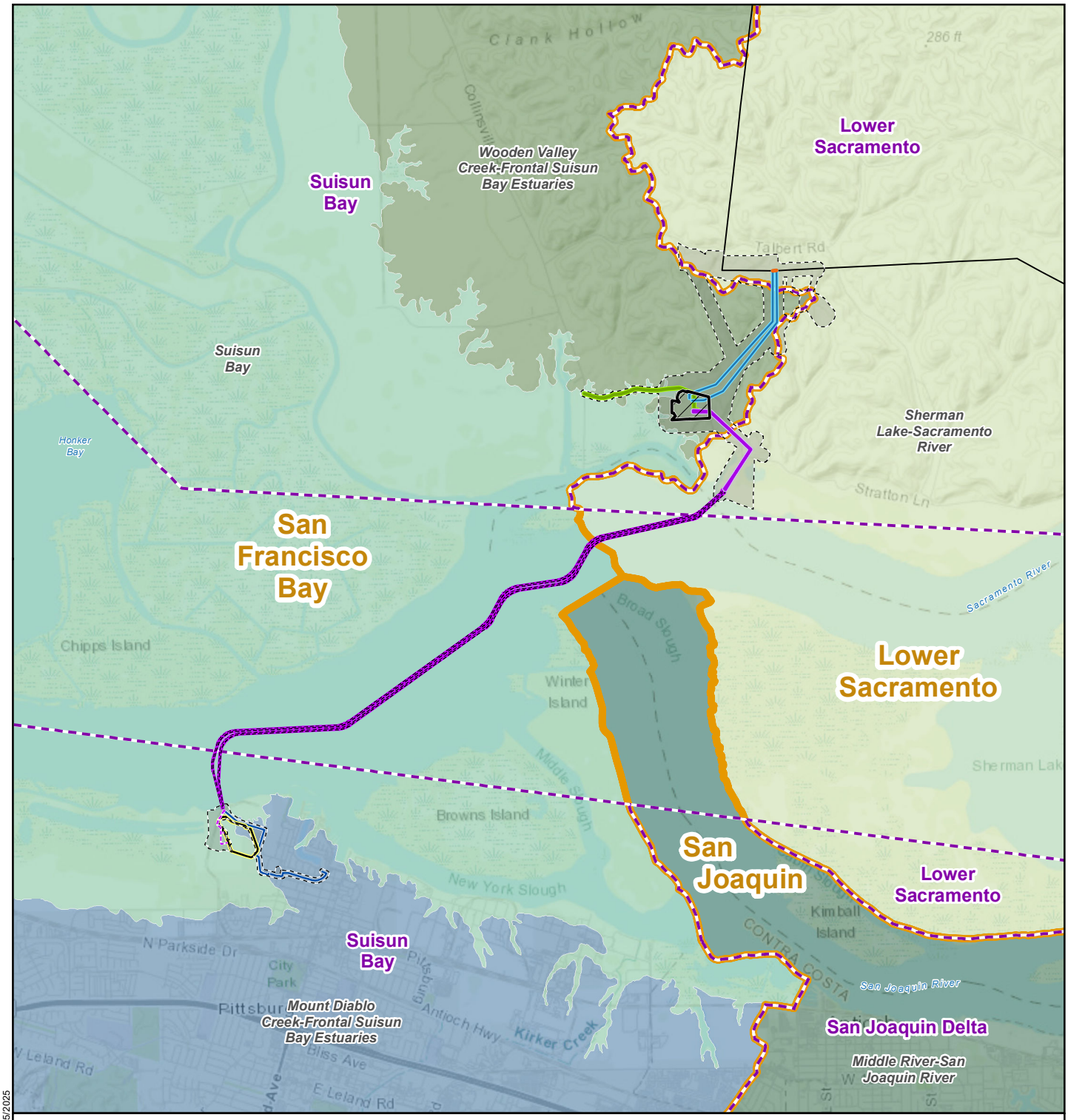

Figure 2: Hydrologic Region Map — **Collinsville 500/230 Kilovolt Substation Project**

- Proposed LSPGC Telecommunications Line
- Proposed LSPGC 230 kV Overhead Segment
- Proposed LSPGC 230 kV Submarine Segment
- Proposed LSPGC 230 kV Underground Segment
- Proposed PG&E 500 kV Interconnection
- Proposed PG&E 12 kV Distribution Line
- Existing PG&E 500 kV Transmission Line to be Removed
- Existing PG&E Vaca Dixon-Tesla Transmission Line
- Existing PG&E Pittsburg Substation
- Proposed LSPGC Collinsville Substation Site
- Survey Area
- Basin (HUC 6)
- Subbasin (HUC 8)

Subbasin (HUC 10)

- Middle River-San Joaquin River
- Mount Diablo Creek-Frontal Suisun Bay Estuaries
- Sherman Lake-Sacramento River
- Suisun Bay
- Wooden Valley Creek-Frontal Suisun Bay Estuaries

1:64,000

0 1 2 Miles

LS POWER GRID CALIFORNIA | INSIGNIA ENVIRONMENTAL

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jurisdiction within the parameters of the CWA. As a result of these court cases, the U.S. Environmental Protection Agency (EPA) and the USACE issued a joint memorandum addressing guidance on determining the jurisdiction of WOTUS (EPA and USACE 2008). Since that time, a final Revised Definition of "Waters of the United States" was published to the *Federal Register* on January 18, 2023, and it took effect on March 20, 2023 (EPA 2024).

However, a third Supreme Court case—*Sackett v. EPA* (Sackett)—further amended the definition of a WOTUS regarding jurisdiction over "adjacent wetlands" on May 25, 2023. The Supreme Court's new two-part test for "adjacent wetlands" is: (1) the body of water to which the wetland is connected is a "relatively permanent body of water" that is connected to traditional navigable waters; and (2) the wetland has a "continuous surface connection with that [connected] water, making it difficult to determine where the 'water' ends and the wetland begins" (Supreme Court 2023). This decision modifies the Supreme Court's existing ruling and eliminates the agencies' jurisdiction over wetlands "adjacent" to non-navigable tributaries when those wetlands had "a significant nexus to a traditional navigable water." On August 29, 2023, the EPA and USACE issued a final rule to amend the 2023 WOTUS rule to be consistent with the Supreme Court's decision, and it became effective in certain states, including California, on September 8, 2023.

Under the final rule following the decision in *Sackett v. EPA*, Title 40, Section 120.2(a) of the Code of Federal Regulations (CFR) defines WOTUS as follows:

1. *Waters which are:*

    i. *currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;*
    ii. *the territorial seas; or*
    iii. *interstate waters;*

2. *Impoundments of waters otherwise defined as WOTUS under this definition, other than impoundments of waters identified under paragraph (a)(5) of this section;*
3. *Tributaries of waters identified in paragraph (a)(1) or (2) of this section that are relatively permanent, standing or continuously flowing bodies of water;*
4. *Wetlands adjacent to the following waters:*

    i. *waters identified in paragraph (a)(1) of this section; or*
    ii. *relatively permanent, standing or continuously flowing bodies of water identified in paragraph (a)(2) or (a)(3) of this section and with a continuous surface connection to those waters;*

5. *Intrastate lakes and ponds not identified in paragraphs (a)(1) through (4) of this section that are relatively permanent, standing or continuously flowing bodies of water with a continuous surface connection to the waters identified in paragraph (a)(1) or (a)(3) of this section.*

Title 40, Section 120.2(c) of the CFR defines wetlands as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that

under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Three parameters—hydrophytic vegetation, hydric soils, and wetland hydrology—must all be present to classify an area as a USACE-jurisdictional wetland under normal circumstances.

The limits of USACE jurisdiction are as follows:

1. Territorial Seas: The limit of jurisdiction in the territorial seas is measured from the baseline in a seaward direction for a distance of 3 nautical miles (33 CFR § 329.12).
2. Tidal WOTUS: The landward limits of jurisdiction in tidal waters extend to the following:
    - the high tide line, or
    - the limits as identified in non-tidal WOTUS when adjacent to non-tidal waters of the U.S.
3. Non-Tidal WOTUS: The limits of jurisdiction in non-tidal waters extend to the following:
    - the ordinary high water mark (OHWM) in the absence of adjacent wetlands,
    - beyond the OHWM to the limit of adjacent wetlands when such wetlands are present, and
    - the limit of the wetland when the WOTUS consist only of wetlands.

The application of EPA and USACE guidance results in a formalized oversight process involving both agencies in the adoption of approved jurisdictional determinations (AJDs). The intent of this formal process is to ensure consistency in how the agencies interpret the rulings and guidance at all levels. The USACE issued Regulatory Guidance Letter No. 08-02 on the subject of jurisdictional determinations (USACE 2008a) to institute the program by which jurisdictional determinations are made. This guidance creates a distinction between an applicant's request for a preliminary jurisdictional determination (PJD) and an AJD. If an applicant pursues a PJD, the determination would be inclusive of all features that have historically been regulated by the USACE under Section 404 of the CWA and Sections 9 and 10 of the Rivers and Harbors Appropriation Act of 1899 (i.e., prior to the SWANCC and Rapanos cases). A PJD excludes exempted jurisdictional waters, but not those excluded by court ruling interpretations. An AJD provides a more thorough evaluation of issues of isolation and adjacency as contemplated by the courts, and it excludes from USACE regulation any areas that fail to meet the necessary litmus tests of the Supreme Court decision and the agencies' implementation guidance.

3.0.1 Rivers and Harbors Appropriation Act Section 10

The USACE regulates construction in navigable waterways of the U.S. through Section 10 of the Rivers and Harbors Act (RHA) of 1899 (33 U.S. Code [USC] 403). Section 10 of the RHA requires USACE approval and a permit for excavation or fill, or alteration or modification of the course, location, condition, or capacity of, any port, roadstead, haven, harbor, canal, lake, harbor or refuge, or enclosure within the limits of any breakwater, or of the channel of any navigable WOTUS. Section 10 requirements apply only to navigable waters themselves, and are not applicable to tributaries, adjacent wetlands, and similar aquatic features not capable of supporting interstate commerce.

3.1 REGIONAL WATER QUALITY CONTROL BOARD

3.1.0 Section 401 of the Clean Water Act

The RWQCB regulates activities in waters of the State—including wetlands—through Section 401 of the CWA (RWQCB 2014). While the USACE administers permitting programs that authorize impacts to WOTUS, any USACE permit authorized for a proposed project would be invalid unless the RWQCB has issued a project-specific water quality certification (WQC) or waiver of water quality. A WQC requires a finding by the RWQCB that the activities permitted by the USACE would not violate state water quality standards individually or cumulatively over the term of the issued USACE permit.

3.1.1 Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (California Water Code § 13260) requires "any person discharging waste, or proposing to discharge waste, within any region that could affect the waters of the State to file a report of discharge" with the RWQCB through an application for waste discharge (California Water Code § 13260[a][1]) (RWQCB 2014). The term "waters of the State" is defined as any surface water or groundwater, including saline waters, within the boundaries of the state (California Water Code § 13050[e]). Pursuant to the Porter-Cologne Water Quality Control Act, the RWQCB also regulates "isolated wetlands," or those wetlands considered to be outside of the USACE's jurisdiction pursuant to court decisions. In 2019, the State Water Resources Control Board (SWRCB) further defined which wetlands are considered waters of the state in the State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (Procedures). The Procedures became effective on May 28, 2020 (SWRCB 2021). According to the Procedures, an area is a wetland if it meets the following three criteria:

- The area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both
- The duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and
- The area's vegetation is dominated by hydrophytes, or the area lacks vegetation.

In April 2020, the SWRCB released the following implementation guidance that includes an updated definition of waters of the state (SWRCB 2020):

> "California Code of Regulations, title 23, section 3831(w) states that '[a]ll waters of the United States are also 'waters of the state.' This regulation has remained in effect despite Supreme Court decisions such as Rapanos and SWANCC, which added limitations to what could be considered a water of the U.S. Therefore, the regulation reflects the Water Boards intent to include a broad interpretation of waters of the United States into the definition of waters of the state. Waters of the state includes features that have been determined by the U.S. EPA or the U.S. Army Corps of Engineers to be 'waters of the U.S.' in an approved jurisdictional determination; 'waters of the U.S.' identified in an aquatic resource report certified by the Corps upon which a permitting decision was based; and features that are consistent with any current or historic final judicial interpretation of 'waters of the U.S.' or any current or historic federal regulation defining

> 'waters of the U.S.' Because the interpretation of waters of the U.S. in place at the time section 3831(w) was adopted was broader than any post-Rapanos or post-SWANCC regulatory definitions that incorporated more limitations into the scope of federal jurisdiction, it is consistent with the Water Boards' intent to include both historic and current definitions of waters of the United States into the Water Boards' wetland jurisdictional framework."

The RWQCB generally considers filling in waters of the state to be pollution. Pollution is defined as an alteration of the quality of the waters of the state by waste that unreasonably affects its beneficial uses (California Water Code § 13050[1]). To determine whether a project should be regulated pursuant to the Porter-Cologne Water Quality Control Act, the RWQCB's litmus test is if the action could result in any threat to water quality.

3.2 CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

3.2.0 California Fish and Game Code Section 1600

Sections 1601 through 1606 of the California Fish and Game Code require that a Notification of Lake or Streambed Alteration Agreement (LSAA) application must be submitted to the CDFW for "any activity that may substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake." The CDFW reviews the proposed actions and, if necessary, submits to the applicant a proposal that includes measures to protect affected fish and wildlife resources. A LSAA is the final proposal that is mutually agreed upon by the CDFW and the applicant.

Generally, the CDFW-jurisdictional boundaries are broader than the USACE-jurisdictional boundaries and include the following:

- rivers/streams;
- lakes;
- entire floodplains;
- wetlands associated with rivers, streams, lakes, or wildlife resources; and
- artificial drainage ditches (in some circumstances).

The CDFW's jurisdiction includes the following:

- areas with a definable bed, bank, or channel;
- areas that support periodic or intermittent flows, perennial flows, or subsurface flows; support fish or other aquatic life; or support riparian or hydrophytic vegetation in association with a streambed; and
- areas that simply have a hydrologic source and/or terminus.

4 – METHODS

4.0 LITERATURE AND DATABASE REVIEW

Prior to conducting field work, Insignia biologists reviewed U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory maps (USFWS 2024), U.S. Geological Survey (USGS)

National Hydrography Dataset maps (USGS 2024a), and color aerial photographs (both recent and past) of the survey area and surrounding area. In addition, the biologists reviewed and referenced the Natural Resources Conservation Service (NRCS) Web Soil Survey, and USGS topographic maps. National Oceanic and Atmospheric Administration (NOAA) seasonal rainfall data were also reviewed (NOAA 2024a). The database review was used to determine if any aquatic resources had been previously mapped or otherwise documented in the Proposed Project area and to create a list of features to verify in the field.

4.1 DELINEATION OF WETLANDS AND WATERS

Vegetation mapping and preliminary waters mapping were conducted for the Proposed Project by Insignia biologists during a habitat assessment conducted in May, June, July, September, and December 2023. At that time, potentially jurisdictional aquatic features were preliminarily mapped and identified for formal delineations. Insignia biologists conducted formal wetland and waters delineations from May 6, 2024, through July 10, 2024, for any feature that was identified during the vegetation and preliminary waters mapping. The survey area included a minimum buffer of 100 feet around the Proposed Project's Collinsville Substation and terrestrial linear components; however, the buffer varies from 100 feet to 500 feet in some locations to accommodate future design changes and to collect additional data in the field for certain areas. The survey area is depicted in Attachment A: Aquatic Resources Delineation Map. The approximately 578.8-acre survey area was also designed to include all potential terrestrial areas of temporary and permanent disturbance associated with the Proposed Project.

4.1.0 Drainage Mapping

Insignia biologists used guidance from *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manua*l (USACE 2008b) to determine the location and size of drainages potentially under the jurisdiction of the USACE and RWQCB. Culverts, if found within the survey area, were also mapped to assist with determining downstream connectivity for potential jurisdictional features within the survey area. The overall landforms, slopes, and climatic and hydrologic conditions were also assessed. Photographs were taken for each drainage feature to record downstream and upstream conditions, as well as OHWM indicators; these photographs are included in Attachment B: Photograph Log. Evidence supporting the delineation of each potentially jurisdictional drainage feature was recorded using a mobile data collection platform that reflected the USACE Arid West Ephemeral and Intermittent Stream OHWM Data Sheet.

Top-of-bank (TOB) measurements were noted for each drainage to assess the areas that may be CDFW-jurisdictional under Section 1600 of the California Fish and Game Code.

4.1.1 Wetland Mapping

Insignia biologists surveyed for wetlands under the jurisdiction of the USACE, RWQCB, and/or CDFW within the survey area. Wetland delineations were conducted in accordance with the USACE's wetlands delineation manual (USACE 1987) in conjunction with the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (USACE 2008c). For an area to be defined as a wetland under normal circumstances, the USACE's routine on-site determination methods call for determining the presence of

hydrophytic vegetation, hydric soils, and wetland hydrology. Insignia biologists determined the presence of hydric soils using the NRCS's Field Indicators of Hydric Soils in the United States (NRCS 2018). Each of these parameters is discussed in further detail in the subsections that follow.

Hydrophytic Vegetation

Hydrophytic vegetation is defined as "the community of macrophytes that occurs in areas where inundation or soil saturation is either permanent, or of sufficient frequency and duration to exert a controlling influence on the plant species present" (USACE 2008c). Hydrophytic vegetation is determined to be present when the plant community is dominated by species that can tolerate prolonged inundations or soil saturation during the growing season. The National Wetland Plant List (USACE 2018) provides a wetland indicator status for plant species in the U.S. The wetland indicator status is a predictor of the likelihood that the plant would occur in wetlands, and is defined as follows:

- Obligate Plant (OBL): a plant that almost always occurs in wetlands.
- Facultative Wetland Plant (FACW): a plant that usually occurs in wetlands, but may occur in non-wetlands.
- Facultative Plant (FAC): a plant that usually occurs in wetlands and non-wetlands.
- Facultative Upland Plant (FACU): a plant that usually occurs in non-wetlands, but may occur in wetlands.
- Upland Plant: a plant that almost never occurs in wetlands.

Hydrophytic vegetation was determined to be present if any of the following indicator tests were satisfied:

- Dominance Test (Indicator 1): More than 50 percent of the dominant plant species across all strata are rated OBL, FACW, or FAC.

- Prevalence Test (Indicator 2): The prevalence index, which is a weighted-average wetland indicator status of all plant species in the sampling plot, is 3.0 or less.

- Morphological Adaptations (Indicator 3): This procedure is used when FACU plant species in wetlands exhibit morphological adaptations to wetland conditions; or it is used in areas of problematic vegetation where hydrophytic vegetation is absent, but indicators of hydric soil and wetland hydrology are present.

- Problematic Hydrophytic Vegetation (Indicator 4): This procedure is used in areas of problematic vegetation where indicators of hydric soil and wetland hydrology are present.

Hydric Soils

A hydric soil is defined as "a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part" (USACE 2008c). Characteristic field indicators of hydric soils, as described in the Field Indicators of Hydric Soils in the United States (NRCS 2018), include the following:

- presence of a histic epipedon,
- presence of sulfidic material,
- presence of an aquic or peraquic moisture regime,
- reducing soil conditions,
- soil color (including gleyed soils or soils with a low matrix chroma, with or without bright mottles),
- iron or manganese concretions, and
- soils listed as hydric by the NRCS.

Hydric soil data was collected using a drain spade shovel to extract soil samples at least 12 inches in depth and color matched using the Munsell Soil Color Book. Following the analysis, the soil sample was returned to its original location.

Wetland Hydrology

Wetland hydrology is indicated by an area that is inundated or saturated for a period long enough to create anaerobic vegetation and soil conditions during the growing season (USACE 2008c). Primary field indicators of wetland hydrology are described in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (USACE 2008c) and include surface water, high water table, soil saturation, water marks, sediment deposits, drift deposits, surface soil cracks, biotic crust, oxidized rhizospheres along living roots, presence of reduced iron, and water-stained leaves, among others. Secondary indicators include, but are not limited to, water marks, sediment deposits, drift deposits, and drainage patterns. These indicators were used in the field to make a determination on whether soil saturation or inundation exists for a long enough period of time during the growing season to create anaerobic conditions and thus conclude whether wetland hydrology was present.

4.1.2 Global Positioning System Data Collection

Drainage and wetland data were mapped using a Trimble DA2-BT Global Positioning System (GPS) unit with submeter accuracy. A data model within the GPS software ensured consistent data collection in the field and was developed in accordance with LSPGC schema. All spatial data was collected in the North American Datum 1983 State Plane California Zone 2 coordinate system.

5 – RESULTS

5.0 ENVIRONMENTAL SETTING

The survey area is located at the southern border of the Sacramento Valley Subregion and the northern border of the San Joaquin Valley Subregion of the California Floristic Province (Jepson eFlora 2024). Ground surface elevations throughout the survey area range from 3 feet to 250 feet above mean sea level. The highest points within the survey area exist along the northernmost components of the Proposed Project. Elevation gradually decreases to approximately 3 feet as the survey area intersects the Delta. The survey area receives an average of 23 inches of rainfall per year, with the majority of precipitation falling between November and March (NOAA 2024a). Average annual temperatures range from 48 to 73 degrees Fahrenheit (NOAA 2024b).

Many of the drainages within the survey area are ephemeral and only flow when it rains. However, several drainages within the survey area have been altered due to agriculture and development and differ from their historical locations and/or were channelized.

5.0.0 Hydrology

As depicted in Figure 2: Hydrologic Region Map, the survey area occurs within the San Francisco Bay basin and the Lower Sacramento basin (USGS 2024a). Subbasins crossed include the Suisun Bay subbasin, which encompasses three crossed watersheds, and the Lower Sacramento subbasin, which encompasses one crossed watershed. The portion of the survey area south of the Delta is highly developed, so stormwater runoff in this area mainly flows through storm drains. North of the Delta, unnamed and non-jurisdictional drainages run through the survey area and drain south into the Delta. Several wetland features identified were observed to have connectivity downstream. This portion of the survey area experiences a high amount of surface runoff as topography is very hilly and gradually decreases in elevation as it joins with the Delta. Findings from soil test pits, which are further detailed in Attachment C: Wetland Determination Data Forms, support this assessment of the hydrology with the presence of wetlands increasing in the southern portion of the survey area closer to the Delta.

5.0.1 Vegetation

Twenty-two vegetation communities and land cover types were identified within the survey area (Insignia 2024). The vegetation classification system and the associated vegetation community descriptions that were used conform to *A Manual of California Vegetation, Second Edition* (CNPS 2024). Insignia biologists observed that no riparian vegetation was present within the channel or riparian zone surrounding the drainage within the survey area.

Ten hydrophytic vegetation communities were identified throughout the survey area, with at least one of these communities occurring within each of the mapped wetland features. The following communities and their dominant plant species are defined according to the National Wetland Plant List (USACE 2018):

- *Distichlis spicata* Herbaceous Alliance – FAC,
- *Frankenia salina* Herbaceous Alliance – FACW,
- *Juncus arcticus* (var. *balticus, mexicanus*) Herbaceous Alliance – FACW,
- *Lolium perenne* Herbaceous Semi-natural Alliance – FAC,
- *Polygonum lapathifolium – Xanthium strumarium* Herbaceous Alliance – UPL,
- *Rosa californica* Shrubland Alliance – FAC,
- *Sarcocornia pacifica* (*Salicornia depressa*) Herbaceous Alliance – OBL,
- *Schoenoplectus* (*acutus, californicus*) Herbaceous Alliance – OBL,
- *Schoenoplectus acutus/Rosa californica* Association – OBL, and
- *Schoenoplectus americanus* Herbaceous Alliance – OBL.

5.0.2 Soils

Soils in the survey area that were mapped by the NRCS Web Soil Survey are shown in Figure 3: Soil Units Map and summarized in Table 1: Summary of NRCS Soil Descriptions.

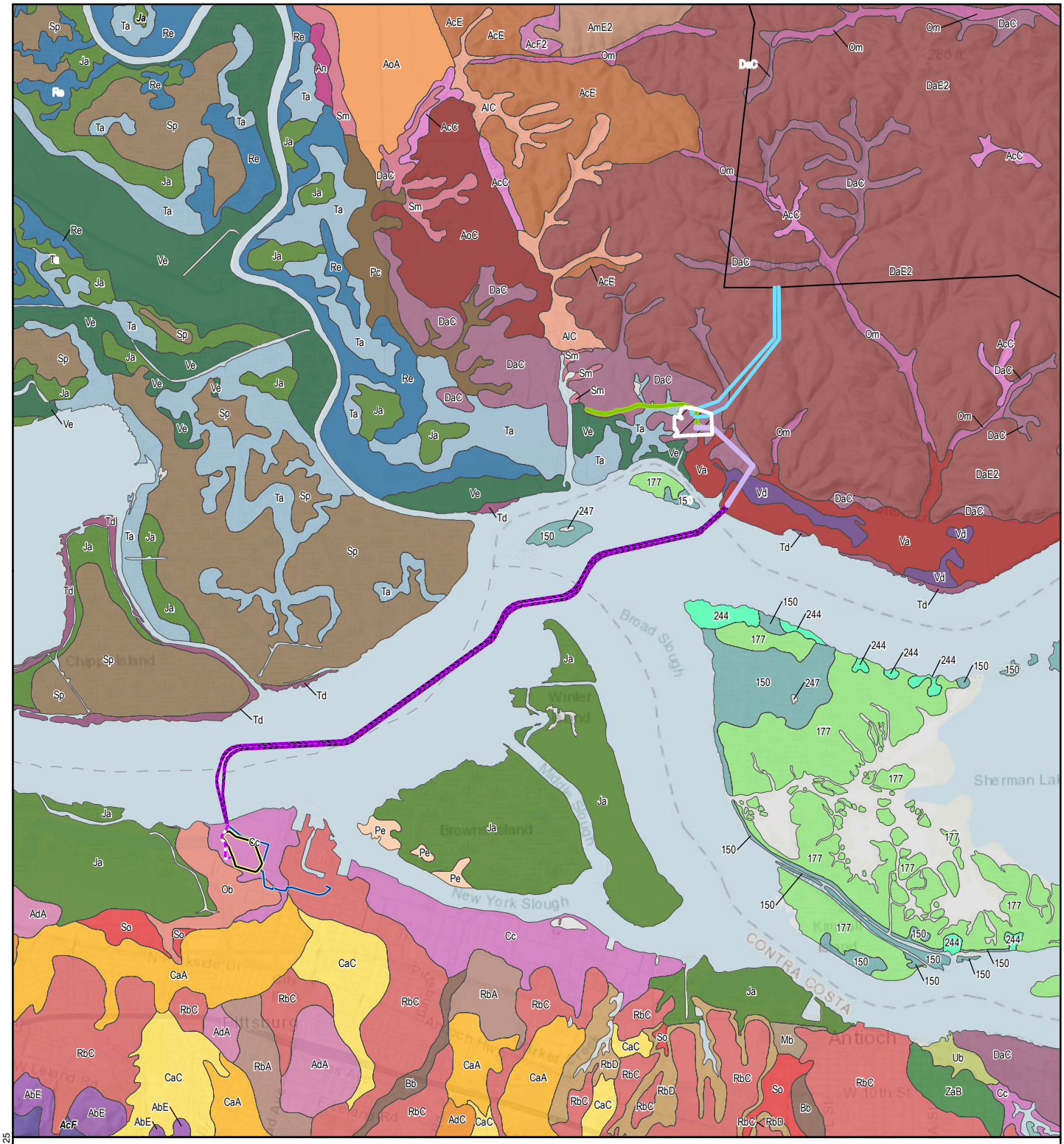

Figure 3: Soil Units Map **Collinsville 500/230 Kilovolt Substation Project**

244	Ve	Ob	Sm	Sp
177	Vd	AlC	An	RbA
Ub	AcF	Pe	Va	AmE2
Ta	AbE	CaC	AoC	Mb
ZaA	Om	CaA	DaE2	RbD
150	AcF2	AoA	Td	AcE
Re	AdA	AdC	DaC	
ZaB	Cc	So	Pc	
Ja	AcC	RbC	Bb	

- Proposed LSPGC Telecommunications Extension
- Proposed LSPGC 230 kV Overhead Segment
- Proposed LSPGC 230 kV Submarine Segment
- Proposed LSPGC 230 kV Underground Segment
- Proposed PG&E 500 kV Interconnection
- Proposed PG&E 12 kV Distribution Line
- Existing PG&E 500 kV Transmission Line to be Removed
- Existing PG&E Vaca Dixon-Tesla Transmission Line
- Proposed LSPGC Collinsville Substation Site
- Existing PG&E Pittsburg Substation

1:64,000

0 4,000 8,000 Feet

LS POWER GRID CALIFORNIA INSIGNIA ENVIRONMENTAL

Z:\Projects\LS_Power_Collinsville\MXD\JD\JD_Soil_Units.mxd 2/5/2025

Table 1: Summary of NRCS Soil Descriptions

Map Unit Symbol	Soil Series	NRCS Listed Hydric Soil (Yes/No)	Water Drainage	Material	Drainage and Permeability
Cc	Clear Lake clay, 0 to 15 percent slopes, MLRA 15	No	Poorly drained	Clayey alluvium derived from metamorphic and sedimentary rock	High runoff, slow to very slow permeability
DaC	Diablo-Ayar clays, 2 to 9 percent slopes	No	Well drained	Residuum weathered from weakly consolidated sediments	Very high runoff, slow permeability
DaE2	Diablo-Ayar clays, 9 to 30 percent slopes, eroded	No	Well drained	Residuum weathered from weakly consolidated sediments	Very high runoff, slow permeability
Ob	Omni silty clay	Yes	Poorly drained	Alluvium derived from sedimentary rock	Medium runoff, slow permeability
RbC	Rincon clay loam, 2 to 9 percent slopes, MLRA 14	No	Well drained	Clayey alluvium derived from sedimentary rock	High runoff
Ta	Tamba mucky clay, MLRA 16	Yes	Very poorly drained	Organic material and/or clayey alluvium derived from igneous, metamorphic, and sedimentary rock	Low runoff, moderate permeability
Va	Valdez silt loam, drained, 0 to 2 percent slopes, MLRA 16	Yes	Poorly drained	Fine-silty alluvium derived from igneous, metamorphic, and sedimentary rock	Low runoff, moderately slow permeability
Vd	Valdez silty clay loam, strongly saline, 0 to 2 percent slopes, MLRA 16	Yes	Poorly drained	Alluvium derived from igneous, metamorphic, and sedimentary rock	High runoff, moderately slow permeability

As shown in Table 1: Summary of NRCS Soil Descriptions, the following eight soil map units were mapped within the survey area:

- Clear Lake clay, 0 to 15 percent slopes, Major Land Resource Area (MLRA) 15;
- Diablo-Ayar clays, 2 to 9 percent slopes;
- Diablo-Ayar clays, 9 to 30 percent slopes, eroded;
- Omni silty clay;
- Rincon clay loam, 2 to 9 percent slopes, MLRA 14;
- Tamba mucky clay, MLRA 16;
- Valdez silt loam, drained, 0 to 2 percent slopes, MLRA 16; and
- Valdez silty clay loam, strongly saline, 0 to 2 percent slopes, MLRA 16.

Table 1: Summary of NRCS Soil Descriptions provides a summary of the NRCS soil descriptions, as well as NRCS-listed hydric soils, within the survey area. Sampling investigations were conducted within all the vegetation alliances listed in Section 5.0.1 Vegetation due to the presence of hydrophytic vegetation. Identified hydric soil indicators (NRCS 2018), including their alphanumeric listing, include the following:

- Depleted below dark surface (A11),
- Thick dark surface (A12),
- Depleted matrix (F3),
- Loamy gleyed matrix (F2),
- Redox dark surface (F6),
- Redox depressions (F8), and
- Sandy redox (S5).

5.1 POTENTIALLY JURISDICTIONAL HYDROLOGICAL FEATURES

In total, 20 potentially jurisdictional features (one ephemeral drainage and 19 wetlands) were mapped within the survey area; these potentially jurisdictional features are depicted in Attachment A: Aquatic Resources Delineation Map. All features were identified north of the Delta and no potentially jurisdictional features were identified within the survey area south of the Delta (i.e., portion of survey area in the City of Pittsburg). Further, the survey area overlaps the Delta, a feature regulated by the USACE, RWQCB, and CDFW. No culverts were identified in the survey area. Attachment B: Photograph Log presents photographs of each jurisdictional feature observed and mapped within the survey area. Table 2: Metrics for D-1 and Table 3: Features within the Survey Area present the characteristics of the observed features, including a unique feature identification number (ID), hydrological regime or Cowardin classifications, and an assessment of agency jurisdiction. Features that were preliminarily mapped during initial reconnaissance-level surveys are included in Table 3: Features within the Survey Area and have a corresponding feature ID; however, as presented in the table, those features do not meet any of the established criteria for a wetland. They were included in the table to show that they were fully analyzed, but they are not mapped in Attachment A. The wetland determination data for the potentially jurisdictional wetlands is detailed in Attachment C: Wetland Determination Data Forms. Eight wetlands are potentially under the jurisdiction of the USACE and CDFW, and all wetlands are potentially under the jurisdiction of the RWQCB, according to Insignia's professional opinion. The ephemeral drainage (D-1) is potentially under the jurisdiction of the CDFW and RWQCB, but does not meet the criteria of WOTUS.

Although W-3, W-5, W-7, and W-9 do not currently have surface connections to navigable waters, it is suspected they are hydrologically connected to the Delta via groundwater due to the presence of salt-tolerant vegetation in the areas. A review of historical aerial imagery suggests these features were once tidally influenced by a surface connection, but due to heavy modification to the landscape (i.e., the addition of a berm), they no longer exhibit a surface connection to the Delta or other tidal waterbody. Aerial imagery does not indicate when this modification occurred. As a result, these features would be considered historic wetlands and likely under the jurisdiction of the USACE. W-1, W-4, and W-6 are tidally influenced by the Delta, making the adjacent wetlands—W-3, W-5, W-7, and W-9—CDFW-jurisdictional.

Four aquatic features evaluated within the survey area—W-19, W-24, W-27, and W-30—satisfied the USACE's vegetation criterion, but did not pass either the soils or hydrology test in accordance with USACE criteria. However, wetland delineator Christina Rodriguez observed that each feature had strong field indicators for the two respective tests they did pass and therefore initially concluded each of these features was a potential wetland. As a result, "Y [Yes]" was marked for the "Is the sampled area within a wetland?" section of the data forms while in the field. Subsequently, the datasheets were reviewed and further evaluation was given to each aquatic feature when determining which agencies have potential jurisdiction. Because the four aquatic features did not meet all three wetland parameters, the determination in the datasheet was changed to "N[No]" based exclusively on the three parameters documented in the field. Attachment C: Wetland Determination Data Forms details the findings and determinations of each of these features and notes any post-fieldwork modifications to the forms.

Table 4: Hydrological Feature Summary within the Survey Area summarizes the total assumed jurisdictional area, by agency, within the survey area.

Table 2: Metrics for D-1

Metric	Value
Feature ID	D-1
Hydrological Regime	Ephemeral
Page Number in Attachment A: Aquatic Resources Delineation Map	3
Approximate Length of Drainage in Survey Area (feet)	926.37
Average OHWM Depth (feet)	0.10
Average OHWM Width (feet)	3.00
Average Top of Bank (TOB Depth) (feet)	2.20
Average TOB Width (feet)	4.90
Approximate USACE-Jurisdictional Area (acres)	0.00
Approximate RWQCB-Jurisdictional Area (acres)	0.06
Approximate CDFW-Jurisdictional Area (acres)	0.10
Feature Description	Unnamed Tributary to the Delta

Table 3: Features within the Survey Area

Feature ID	Cowardin Classification[2]	Attachment A Page Number	Approximate Size of Feature within Survey Area (acres)			Notes
			USACE	RWQCB	CDFW	
W-1	E2EM1	4	14.66	14.66	14.66	The feature meets USACE wetland determination criteria for the Arid West Region and has connectivity to a tidal WOTUS. As a result, the feature is also jurisdictional to the RWQCB and CDFW.
W-2	PEM1	4	0.00	0.56	0.00	The feature meets USACE wetland determination criteria for the Arid West Region but does not have connectivity to a WOTUS. The feature was determined to be an isolated wetland and is therefore a Water of the State under the jurisdiction of the RWQCB. The feature is not associated with a river, stream, or lake and therefore is not under CDFW jurisdiction.
W-3	PEM2	4	0.03	0.03	0.03	The feature meets USACE wetland determination criteria for the Arid West Region. While currently separated by a man-made berm, the feature was historically connected to a tidal WOTUS. As a result, the feature would also be jurisdictional to the RWQCB. The feature is associated with the Delta and therefore under CDFW jurisdiction.
W-4	E2EM1	4	2.60	2.60	2.60	The feature meets USACE wetland determination criteria for the Arid West Region and has connectivity to a tidal WOTUS. As a result, the feature would also be jurisdictional to the RWQCB. The feature is associated with the Delta and therefore under CDFW jurisdiction. Steep terrain and rip rap separate W-4 from W-6, preventing substantial vegetation growth.

[2] PEM1 = Palustrine Emergent Wetland: persistent.
PEM2 = Palustrine Emergent Wetland: non-persistent.
E2EM1 = Estuarine Intertidal Emergent Wetland: persistent.

Feature ID	Cowardin Classification[2]	Attachment A Page Number	Approximate Size of Feature within Survey Area (acres)			Notes
			USACE	RWQCB	CDFW	
W-5	PEM2	4	0.07	0.07	0.07	The feature meets USACE wetland determination criteria for the Arid West Region. While currently separated by a man-made berm, the feature was historically connected to a tidal WOTUS. As a result, the feature would also be jurisdictional to the RWQCB. The feature is associated with the Delta and therefore under CDFW jurisdiction.
W-6	E2EM1	4	1.28	1.28	1.28	The feature meets USACE wetland determination criteria for the Arid West Region. While currently separated by a man-made berm, the feature was historically connected to a tidal WOTUS. As a result, the feature would also be jurisdictional to the RWQCB. The feature is associated with the Delta and therefore under CDFW jurisdiction. Steep terrain and rip rap separate W-6 from W-4, preventing substantial vegetation growth.
W-7	E2EM1	4	0.19	0.19	0.19	The feature meets USACE wetland determination criteria for the Arid West Region. While currently separated by a man-made berm, the feature was historically connected to a tidal WOTUS. As a result, the feature would also be jurisdictional to the RWQCB. The feature is associated with the Delta and therefore under CDFW jurisdiction.
W-8	-	-	-	-	-	The feature does not meet the USACE wetland determination criteria for the Arid West Region. The feature is not an isolated wetland under the jurisdiction of the RWQCB. The feature is not associated with a river, stream, or lake and is not under CDFW jurisdiction.

Feature ID	Cowardin Classification[2]	Attachment A Page Number	Approximate Size of Feature within Survey Area (acres)			Notes
			USACE	RWQCB	CDFW	
W-9	E2EM1	4	0.84	0.84	0.84	The feature meets USACE wetland determination criteria for the Arid West Region. While currently separated by a man-made berm, the feature was historically connected to a tidal WOTUS. As a result, the feature would also be jurisdictional to the RWQCB. The feature is associated with the Delta and therefore under CDFW jurisdiction.
W-10	-	-	-	-	-	The feature does not meet the USACE wetland determination criteria for the Arid West Region. The feature is not an isolated wetland under the jurisdiction of the RWQCB. The feature is not associated with a river, stream, or lake and therefore is not under CDFW jurisdiction.
W-11	PEM1	2	0.00	0.99	0.00	The feature meets USACE wetland determination criteria for the Arid West Region but does not have connectivity to a WOTUS. The feature was determined to be an isolated wetland and is therefore a Water of the State under the jurisdiction of the RWQCB. The feature is not associated with a river, stream, or lake and therefore is not under CDFW jurisdiction.
W-12	PEM1	2	0.85	0.85	0.85	The feature meets USACE wetland determination criteria for the Arid West Region. While currently separated by a man-made berm, the feature was historically connected to a tidal WOTUS. As a result, the feature would also be jurisdictional to the RWQCB. The feature is associated with the Delta and therefore under CDFW jurisdiction.
W-13	PEM1	2	0.00	0.46	0.00	The feature meets USACE wetland determination criteria for the Arid West Region but does not have connectivity to a WOTUS. The feature was determined to be an isolated wetland and is therefore a Water of the State under the jurisdiction of the RWQCB. The feature is not associated with a river, stream, or lake and therefore is not under CDFW jurisdiction.

Feature ID	Cowardin Classification[2]	Attachment A Page Number	Approximate Size of Feature within Survey Area (acres)			Notes
			USACE	RWQCB	CDFW	
W-14	PEM1	2	0.00	0.51	0.00	The feature meets USACE wetland determination criteria for the Arid West Region but does not have connectivity to a WOTUS. The feature was determined to be an isolated wetland and is therefore a Water of the State under the jurisdiction of the RWQCB. The feature is not associated with a river, stream, or lake and therefore is not under CDFW jurisdiction.
W-15	PEM1	2	0.00	0.02	0.00	The feature meets USACE wetland determination criteria for the Arid West Region but does not have connectivity to a WOTUS. The feature was determined to be an isolated wetland and is therefore a Water of the State under the jurisdiction of the RWQCB. The feature is not associated with a river, stream, or lake and therefore is not under CDFW jurisdiction.
W-16	PEM1	2	0.00	0.28	0.00	The feature meets USACE wetland determination criteria for the Arid West Region but does not have connectivity to a WOTUS. The feature was determined to be an isolated wetland and is therefore a Water of the State under the jurisdiction of the RWQCB. The feature is not associated with a river, stream or lake and therefore is not under CDFW jurisdiction.
W-17	PEM1	2	0.00	0.03	0.00	The feature meets USACE wetland determination criteria for the Arid West Region but does not have connectivity to a WOTUS. The feature was determined to be an isolated wetland and is therefore a Water of the State under the jurisdiction of the RWQCB. The feature is not associated with a river, stream, or lake and therefore is not under CDFW jurisdiction.
W-18	-	-	-	-	-	The feature does not meet the USACE wetland determination criteria for the Arid West Region. The feature is not an isolated wetland under the jurisdiction of the RWQCB. The feature is not associated with a river, stream, or lake and therefore is not under CDFW jurisdiction.

Feature ID	Cowardin Classification[2]	Attachment A Page Number	Approximate Size of Feature within Survey Area (acres)			Notes
			USACE	RWQCB	CDFW	
W-19[3]	-	-	-	-	-	The feature does not meet the USACE wetland determination criteria for the Arid West Region. The feature is not an isolated wetland under the jurisdiction of the RWQCB. The feature is not associated with a river, stream, or lake and therefore is not under CDFW jurisdiction.
W-22	PEM1	2	0.00	0.95	0.00	The feature meets USACE wetland determination criteria for the Arid West Region but does not have connectivity to a WOTUS. The feature was determined to be an isolated wetland and is therefore a Water of the State under the jurisdiction of the RWQCB. The feature is not associated with a river, stream, or lake and therefore is not under CDFW jurisdiction.
W-23	PEM1	2	0.00	1.92	0.00	The feature meets USACE wetland determination criteria for the Arid West Region but does not have connectivity to a WOTUS. The feature was determined to be an isolated wetland and is therefore a Water of the State under the jurisdiction of the RWQCB. The feature is not associated with a river, stream, or lake and therefore is not under CDFW jurisdiction.
W-24	-	-	-	-	-	The feature does not meet the USACE wetland determination criteria for the Arid West Region. The feature was determined to be an isolated wetland and is therefore a Water of the State under the jurisdiction of the RWQCB. The feature is not associated with a river, stream, or lake and therefore is not under CDFW jurisdiction.

[3] Feature W-19 was initially thought to be three separate features (i.e., W-19, W-20, and W-21). Following additional evaluation, it was determined that one larger feature was present. As a result, the feature was named W-19, interrupting the sequential numbering of wetland features. This numbering scheme is reflected in Attachment A: Aquatic Resources Delineation Map and Attachment C: Wetland Determination Data Forms.

Feature ID	Cowardin Classification[2]	Attachment A Page Number	Approximate Size of Feature within Survey Area (acres)			Notes
			USACE	RWQCB	CDFW	
W-25	-	-	-	-	-	The feature does not meet the USACE wetland determination criteria for the Arid West Region. The feature was determined to be an isolated wetland and is therefore a Water of the State under the jurisdiction of the RWQCB. The feature is not associated with a river, stream, or lake and therefore is not under CDFW jurisdiction.
W-26	-	-	-	-	-	The feature does not meet the USACE wetland determination criteria for the Arid West Region. The feature was determined to be an isolated wetland and is therefore a Water of the State under the jurisdiction of the RWQCB. The feature is not associated with a river, stream, or lake and therefore is not under CDFW jurisdiction.
W-27	-	-	-	-	-	The feature does not meet the USACE wetland determination criteria for the Arid West Region. The feature was determined to be an isolated wetland and is therefore a Water of the State under the jurisdiction of the RWQCB. The feature is not associated with a river, stream, or lake and therefore is not under CDFW jurisdiction.
W-28	PEM1	1	0.00	0.45	0.00	The feature meets USACE wetland determination criteria for the Arid West Region but does not have connectivity to a WOTUS. The feature was determined to be an isolated wetland and is therefore a Water of the State under the jurisdiction of the RWQCB. The feature is not associated with a river, stream, or lake and therefore is not under CDFW jurisdiction.
W-29	PEM1	1	0.00	0.06	0.00	The feature meets USACE wetland determination criteria for the Arid West Region but does not have connectivity to a WOTUS. The feature was determined to be an isolated wetland and is therefore a Water of the State under the jurisdiction of the RWQCB. The feature is not associated with a river, stream, or lake and therefore is not under CDFW jurisdiction.

Feature ID	Cowardin Classification[2]	Attachment A Page Number	Approximate Size of Feature within Survey Area (acres)			Notes
			USACE	RWQCB	CDFW	
W-30	-	-	-	-	-	The feature does not meet the USACE wetland determination criteria for the Arid West Region. The feature was determined to be an isolated wetland and is therefore a Water of the State under the jurisdiction of the RWQCB. The feature is not associated with a river, stream, or lake and therefore is not under CDFW jurisdiction.
W-31	-	-	-	-	-	The feature does not meet the USACE wetland determination criteria for the Arid West Region. The feature was determined to be an isolated wetland and is therefore a Water of the State under the jurisdiction of the RWQCB. The feature is not associated with a river, stream, or lake and therefore is not under CDFW jurisdiction.
Total	**--**	**--**	**20.52**	**26.75**	**20.52**	**-**

Table 4: Hydrological Feature Summary within the Survey Area

Feature Type	Potential Jurisdiction					
	USACE		RWQCB		CDFW	
	Area (Acres)	Length (Linear Feet)	Area (Acres)	Length (Linear Feet)	Area (Acres)	Length (Linear Feet)
Wetlands	20.52	-	26.75	-	20.52	-
Ephemeral Drainages	-	-	0.06	926.37	0.10	926.37
Total	**20.52**	**-**	**26.81**	**926.37**	**20.62**	**926.37**

5.2 NON-JURISDICTIONAL FEATURES

Non-jurisdictional hydrological features, including swales and erosional features, were present throughout the survey area. These features were reviewed during the jurisdictional delineation survey and were determined to not fall under the jurisdiction of the USACE, RWQCB, or CDFW. Though these features can carry surface water, they are not included in this report because they are non-jurisdictional.

6 – CONCLUSION

In total, 20 potentially jurisdictional hydrological features were identified within the survey area, including one ephemeral drainage and 19 wetlands potentially under the jurisdiction of the USACE, RWQCB, and/or CDFW. If temporary or permanent impacts to jurisdictional features were to occur, a Section 404 authorization from the USACE, a Section 401 WQC and Waste Discharge Requirement permit from the RWQCB, and/or an LSAA from the CDFW would need to be obtained prior to construction.

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ATTACHMENT A: AQUATIC RESOURCES DELINEATION MAP

Attachment A: Aquatic Resources Delineation Map 1 of 4 **Collinsville 500/230 Kilovolt Substation Project**

- Sample Point
- Proposed PG&E 12 kV Distribution Line
- Potentially Jurisdictional Wetland
- Survey Area

Note: Only portions of the survey area with potentially jurisdictional features have been depicted.

1:5,000

0 400 800 Feet

LS POWER GRID CALIFORNIA INSIGNIA ENVIRONMENTAL

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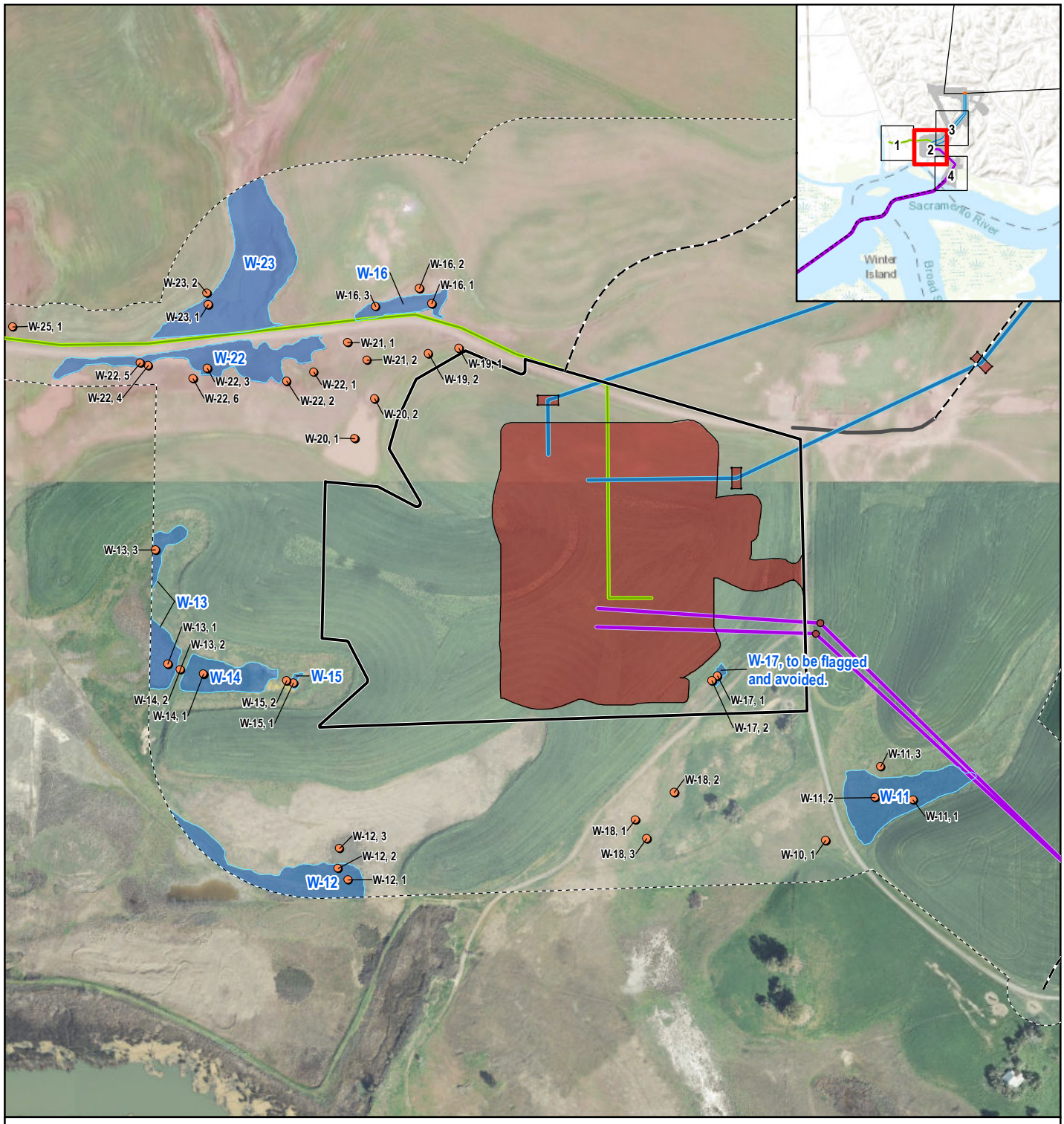

Attachment A: Aquatic Resources Delineation Map 2 of 4 **Collinsville 500/230 Kilovolt Substation Project**

- Sample Point
- Proposed LSPGC 230 kV Overhead Segment
- Proposed PG&E 500 kV Interconnection
- Proposed PG&E 12 kV Distribution Line
- Exisiting Road
- Proposed Temporary Access Road
- Potentially Jurisdictional Wetland
- Substation/Structure Footprint
- Survey Area
- Proposed LSPGC Collinsville Substation Site

Note: Only portions of the survey area with potentially jurisdictional features have been depicted.

1:5,000

0 400 800 Feet

LSPOWER GRID CALIFORNIA INSIGNIA ENVIRONMENTAL

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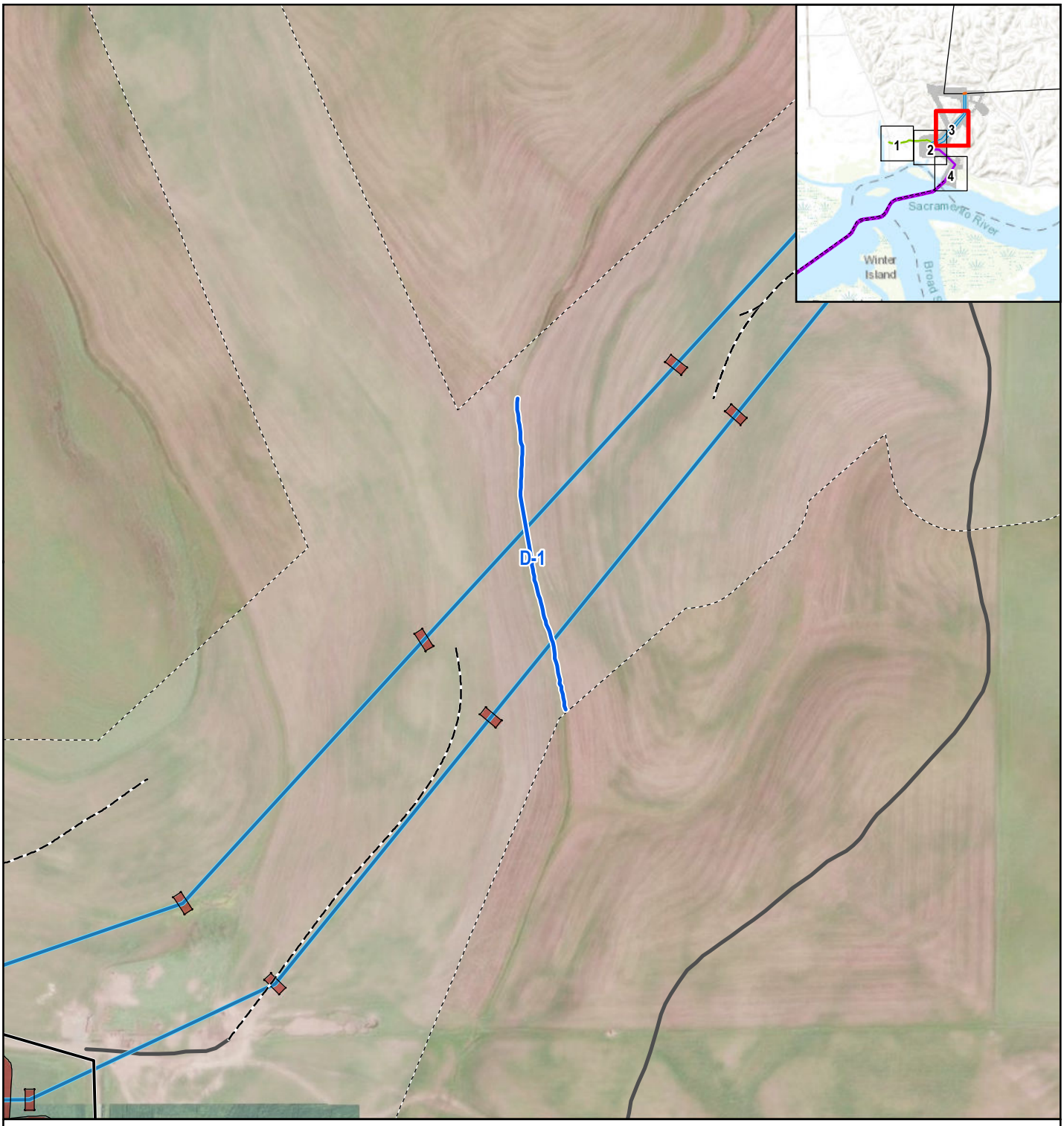


Attachment A: Aquatic Resources Delineation Map 3 of 4 **Collinsville 500/230 Kilovolt Substation Project**

- Proposed PG&E 500 kV Interconnection
- Exisiting Road
- Proposed Temporary Access Road
- Ephemeral Stream
- Substation/Structure Footprint
- Survey Area
- Proposed LSPGC Collinsville Substation Site

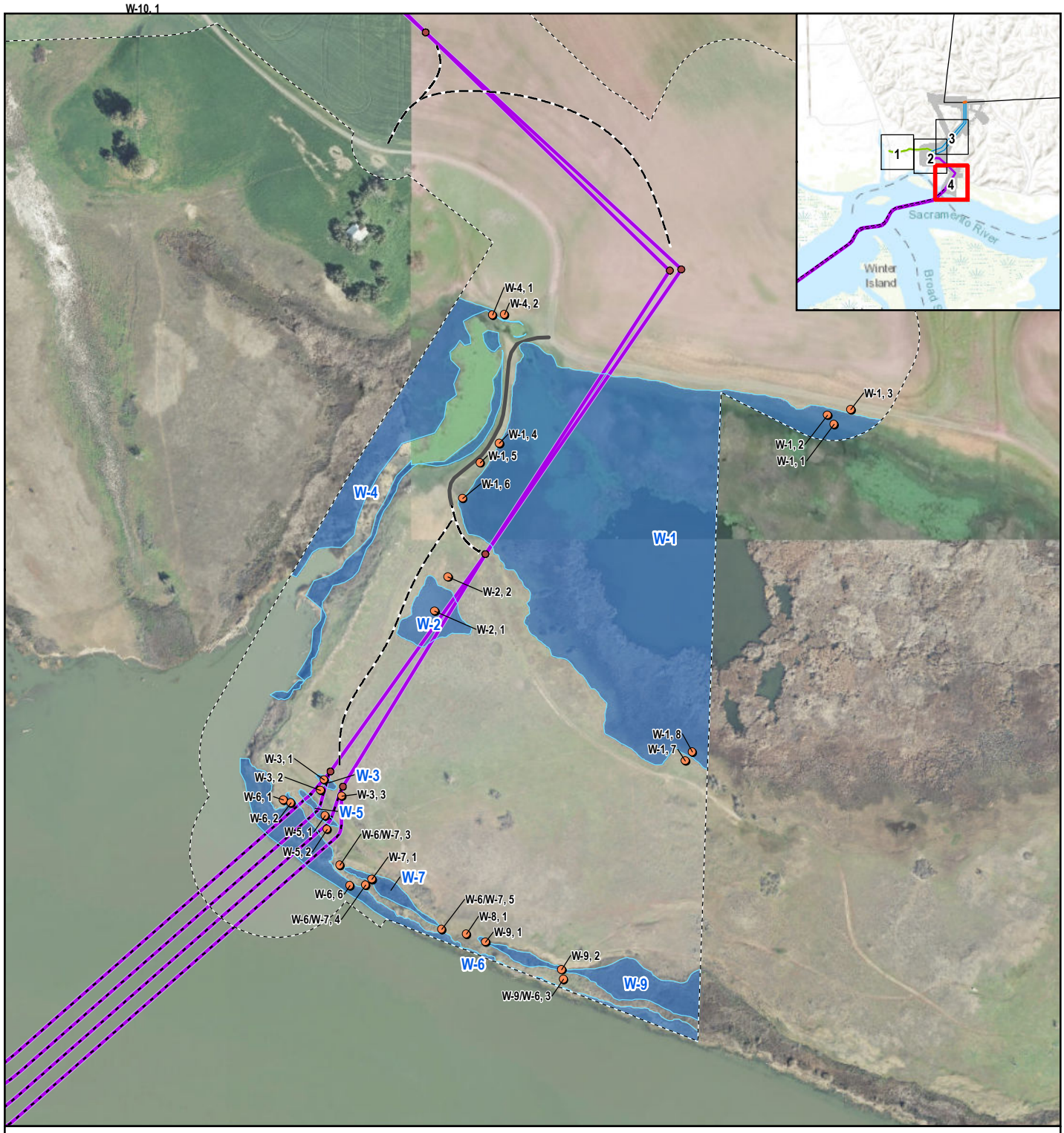
Note: Only portions of the survey area with potentially jurisdictional features have been depicted.

1:5,000

0 400 800 Feet

LS POWER GRID CALIFORNIA INSIGNIA ENVIRONMENTAL

Z:\Projects\LS_Power_Collinsville\MXD\JD\JD_Results.mxd 6/9/2025



Attachment A: Aquatic Resources Delineation Map 4 of 4 **Collinsville 500/230 Kilovolt Substation Project**

- Sample Point
- Proposed LSPGC 230 kV Overhead Segment
- Proposed LSPGC 230 kV Submarine Segment
- Exisiting Road
- Proposed Temporary Access Road
- Potentially Jurisdictional Wetland
- Substation/Structure Footprint
- Survey Area

Note: Only portions of the survey area with potentially jurisdictional features have been depicted.

1:5,000

0 400 800 Feet

LS POWER GRID CALIFORNIA INSIGNIA ENVIRONMENTAL

Z:\Projects\LS_Power_Collinsville\MXD\JD\JD_Results.mxd 6/9/2025

ATTACHMENT B: PHOTOGRAPH LOG

ATTACHMENT B: PHOTOGRAPH LOG

Photograph 1: Northwest-facing view of wetland sample point at W-1.

Photograph 2: East-facing view of W-1.

Photograph 3: South-facing view of wetland sample point at W-2.

Photograph 4: Northwest-facing view of wetland sample point at W-2.

Photograph 5: West-facing view of wetland sample point at W-3.

Photograph 6: Northwest-facing view of W-3.

Photograph 7: South-facing view of wetland sample point at W-4.

Photograph 8: South-facing view of W-4.

Photograph 9: Northwest-facing view of wetland sample point at W-5.

Photograph 10: North-facing view of W-5.

Photograph 11: East-facing view of wetland sample point at W-6.

Photograph 12: East-facing view of upland sample point at W-6.

Photograph 13: North-facing view of wetland sample point at W-7.

Photograph 14: South-facing view of W-7.

Photograph 15: North-facing view of wetland sample point at W-9.

Photograph 16: Southeast-facing view of W-9.

Photograph 17: East-facing view of wetland sample point at W-11.

Photograph 18: Southwest-facing view of W-11.

Photograph 19: Southwest-facing view of wetland sample point at W-12.

Photograph 20: West-facing view of W-12.

Photograph 21: North-facing view of wetland sample point at W-13.

Photograph 22: North-facing view of W-13.

Photograph 23: Northwest-facing view of wetland sample point at W-14.

Photograph 24: East-facing view of W-14.

Photograph 25: West-facing view of wetland sample point at W-15.

Photograph 26: East-facing view of W-15.

Photograph 27: West-facing view of wetland sample point at W-16.

Photograph 28: East-facing view of W-16.

Photograph 29: Northeast-facing view of wetland sample point at W-17.

Photograph 30: Northeast-facing view of W-17.

Photograph 31: Southwest-facing view of wetland sample point at W-22.

Photograph 32: North-facing view of W-22.

Photograph 33: Northeast-facing view of wetland sample point at W-23.

Photograph 34: Southwest-facing view of W-23.

Photograph 35: East-facing view of wetland sample point at W-28.

Photograph 36: South-facing view of W-28.

Photograph 37: Northeast-facing view of wetland sample point at W-29.

Photograph 38: Northwest-facing view of W-29.

ATTACHMENT C: WETLAND DETERMINATION DATA FORMS

W-1

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano County Sampling Date: 5-6-24

Applicant/Owner: LS Power State: CA Sampling Point: SP-1

Investigator(s): Karen Bach, Victoria Yefremenkova Section, Township, Range: S00 T3N R1E

Landform (hillslope, terrace, etc.): toeslope Local relief (concave, convex, none): flat Slope (%): <5

Subregion (LRR): LRR C Lat: 38.0749792 Long: -121.8269361 Datum: NAD 83

Soil Map Unit Name: Valdez silt loam, drained, 0 to 2% slopes, MLRA 16 NWI classification: E2EMIP

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.) r=30'	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum r=15'			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum r=5'			
1. Distichlis spicata	80	Y	FAC
2. Typha latifolia	1	N	OBL
3. Phragmites australis	1	N	FACW
4. Cotula coronopifolia	5	N	OBL
5. Lepidium latifolium	3	N	FAC
6. Atriplex prostrata	2	N	FACW
7. Schoenoplectus acutus	1	N	OBL
8. Frankenia salina	10	N	FACW
Total Cover:	103		
Woody Vine Stratum r=15'			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species 7	x 1 = 7
FACW species 13	x 2 = 26
FAC species 83	x 3 = 249
FACU species 0	x 4 = 0
UPL species 0	x 5 = 0
Column Totals: 103 (A)	282 (B)

Prevalence Index = B/A = 2.74

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

Sample plot located within Frankenia salina/Distichlis spicata alliance adjacent to Schoenoplectus alliance. Some Schoenoplects/typha/phragmites extending into adjacent veg community at small cover amounts but SP-1 located wholly within F. salina/D. spicata com...

SOIL

Sampling Point: SP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	2.5Y 3/2	60					SiCL	
	10Y 4/1	35					SiCL	Gley paye
	N 2.5/0	5					SiCL	Gley paye
5-16	5GY 4/1	99	10YR 3/6	1	C	PL/RC	SiCL	Gley Paye

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- X Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: None

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

TOP 5" of soil is a mixture of several colors. Also meets A11 since surface layer is predominantly dark (i.e. 3/2) colored soil.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- X Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 1"

Water Table Present? Yes X No ___ Depth (inches): 6"

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): Surface

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

W-1

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano County Sampling Date: 5-6-24

Applicant/Owner: LS Power State: CA Sampling Point: SP-2

Investigator(s): Karen Bach, Victoria Yefremenkova Section, Township, Range: S00 T3N R1E

Landform (hillslope, terrace, etc.): toeslope Local relief (concave, convex, none): flat Slope (%): <5

Subregion (LRR): LRRC Lat: 38.0750620 Long: -121.8269983 Datum: NAD83

Soil Map Unit Name: Valdez silt loam, drained, 0 to 2% slopes, MLRA 16 NWI classification: E2EM1P

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
SP-2 is located on a slightly elevated area just north of SP-1. A depression is located just north of SP-2 and South of SP-3.

VEGETATION

Tree Stratum (Use scientific names.) R=30'	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		

Sapling/Shrub Stratum R=15'			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		

Herb Stratum R=5'			
1. Frankenia salina	40	Y	FACW
2. Salicornia pacifica	35	Y	OBL
3. Lepidium latifolium	1	N	FAC
4. Distichlis spicata	2	N	FAC
5. Atriplex prostrata	1	N	FACW
6. Festuca perennis	2	N	FAC
7.			
8.			
Total Cover:	81		

Woody Vine Stratum R=15'			
1.			
2.			
Total Cover:	81		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	35	x 1 = 35
FACW species	41	x 2 = 82
FAC species	5	x 3 = 15
FACU species	0	x 4 = 0
UPL species	0	x 5 = 0
Column Totals:	81 (A)	132 (B)

Prevalence Index = B/A = 1.63

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

W-1

SOIL

Sampling Point: SP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3.5	organic material						SICL	
3.5-5	2.5Y 3/2	100						
5-18	2.5Y 5/2	80	7.5YR 4/6	20	C	M/PL	SICL	Redox prominent

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: N/A

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

FAC Neutral: $\frac{OBL+FACW}{FACU+UPL} : \frac{1+1}{0} = \frac{2}{0}$ ✓

W-1

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano County Sampling Date: 5-6-24

Applicant/Owner: LS Power State: CA Sampling Point: SP-2

Investigator(s): Karen Bach, Victoria Yefremenkova Section, Township, Range: S00 T3N R1E

Landform (hillslope, terrace, etc.): toeslope Local relief (concave, convex, none): flat Slope (%): <5

Subregion (LRR): LRRC Lat: 38.0750620 Long: -121.8269983 Datum: NAD83

Soil Map Unit Name: Valdez silt loam, drained, 0 to 2% slopes, MLRA 16 NWI classification: E2EM1P

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
SP-2 is located on a slightly elevated area just north of SP-1. A depression is located just north of SP-2 and south of SP-3.

VEGETATION

Tree Stratum (Use scientific names.) R=30'	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		

Sapling/Shrub Stratum R=15'			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		

Herb Stratum R=5'			
1. Frankenia salina	40	Y	FACW
2. Salicornia pacifica	35	Y	OBL
3. Lepidium latifolium	1	N	FAC
4. Distichlis spicata	2	N	FAC
5. Atriplex prostrata	1	N	FACW
6. Festuca perennis	2	N	FAC
7.			
8.			
Total Cover:	81		

Woody Vine Stratum R=15'			
1.			
2.			
Total Cover:	81		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	35	x 1 = 35
FACW species	41	x 2 = 82
FAC species	5	x 3 = 15
FACU species	0	x 4 = 0
UPL species	0	x 5 = 0
Column Totals:	81 (A)	132 (B)

Prevalence Index = B/A = 1.63

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

W-1

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano County Sampling Date: 5-6-24

Applicant/Owner: LS Power State: CA Sampling Point: SP-3

Investigator(s): Karen Bach, Victoria Yefremenkova Section, Township, Range: SØØ T3N R1E

Landform (hillslope, terrace, etc.): toeslope Local relief (concave, convex, none): Slope Slope (%): <5

Subregion (LRR): LRRC Lat: 38.0751080 Long: -121.8267615 Datum: NAD83

Soil Map Unit Name: Valdez silt loam, drained, 0 to 2% slopes, MLRA 16 NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
SP-3 is located just downslope of a dirt road. Minor amounts of fill material observed within soil pit but soil texture is consistent with other soils sampled in this location (SP-1 and SP-2)

VEGETATION

Tree Stratum (Use scientific names.) r=30'	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum r=15'			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum r=5'			
1. Hordeum murinum	60	Y	FACU
2. Festuca perrenis	45	Y	FAC
3. Distichlis spicata	10	N	FAC
4. Frankenia salina	3	N	FACW
5. Brassica nigra	1	N	UPL
6. Malvella leprosa	1	N	FACU
7.			
8.			
Total Cover:	120		
Woody Vine Stratum r=15'			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	3	x 2 = 6
FAC species	55	x 3 = 165
FACU species	61	x 4 = 244
UPL species	1	x 5 = 5
Column Totals:	120 (A)	420 (B)

Prevalence Index = B/A = 3.5

Hydrophytic Vegetation Indicators:

__ Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

SOIL

Sampling Point: SP-3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
3.5	organic layer							
0-8	2.5Y 3/2	99	10YR 3/6	<1	C	M	SICL	
8-11	10YR 4/3	80	7.5YR 4/6	20	C	M	SICL	
11-15	10YR 4/1	80	7.5YR 3/4	20	C	M	SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

W-1

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano County Sampling Date: 5-6-24

Applicant/Owner: LS Power State: CA Sampling Point: SP-4

Investigator(s): Karen Bach, Victoria Yeremiyevska Section, Township, Range: S20 T3N R1E

Landform (hillslope, terrace, etc.): footslope Local relief (concave, convex, none): Slope Slope (%): <5

Subregion (LRR): LRR C Lat: 38.074848 4 Long: -121.8303343 Datum: NAD83

Soil Map Unit Name: Valdez silty clay loam, strongly saline, 0 to 2% slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.) r=30'	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum r=15'			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum r=5'			
1. Frankenia salina	80	Y	FACW
2. Hordeum marinum	1	N	FACU
3. Festuca perrenis	1	N	FACU
4. Carduus pycnocephalus	1	N	UPL
5. Silybum marianum	1	N	UPL
6. Atriplex prostrata	3	N	FACW
7.			
8.			
Total Cover:	87		
Woody Vine Stratum r=15'			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	83	x 2 =	166
FAC species	0	x 3 =	0
FACU species	2	x 4 =	8
UPL species	1	x 5 =	5
Column Totals:	87 (A)		179 (B)

Prevalence Index = B/A = 2.05

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: SP-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2.5	OF gravelly Matter							
0-3	10YR 2/2	99	10YR 3/4	1	C	M	SICL	
3-12.5	2.5Y 4/2	75	10YR 4/6	25	C	M	SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- X Drift Deposits (B3) (**Nonriverine**)
- X Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

W-1

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano County Sampling Date: 5-7-24

Applicant/Owner: LS Power State: CA Sampling Point: SP-5

Investigator(s): Karen Buch, Victoria Yefremenkova Section, Township, Range: S20 T3N R1E

Landform (hillslope, terrace, etc.): footslope Local relief (concave, convex, none): slight slope Slope (%): _____

Subregion (LRR): LRR C Lat: 38.074687 2 Long: -121.830519 5 Datum: NAD83

Soil Map Unit Name: Veldez silty clay loam, strongly saline, 0 to 2 % MLRA 16 NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes _____ No X	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum			
1. Rubus armeniacus	25	Y	FAC
2. Rosa californica	70	Y	FAC
3.			
4.			
5.			
Total Cover:	95		
Herb Stratum			
1. Carduus pycnocephalus	2	N	UPL
2. Conium maculatum	15	Y	FACW
3. Marrubium vulgare	10	Y	FACU
4.			
5.			
6.			
7.			
8.			
Total Cover:	27		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

W-1

SOIL

Sampling Point: SP-S

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 2/1	95	5YR 4/6	5	C	PL	SICL	Redox Remark
12-16	10YR 4/3	98	7.5YR 4/4	2	C	M	SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: N/A

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

W-1

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collins Ville City/County: Solano County Sampling Date: 5/7/24

Applicant/Owner: LS Power State: CA Sampling Point: SP-6

Investigator(s): Karen Bach Victoria Yeh[illegible] Section, Township, Range: S00 T3N R1E

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): toeslope Slope (%): _____

Subregion (LRR): LRRC Lat: 38.0744036 Long: -121.8307010 Datum: NAD 83

Soil Map Unit Name: Valdez silt loam, drained, 0 to 2% slopes, MLRA 16 NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____
Hydric Soil Present?	Yes X	No ____
Wetland Hydrology Present?	Yes X	No ____

Is the Sampled Area within a Wetland? Yes X No ____

Remarks:

VEGETATION

Tree Stratum (Use scientific names.) r=30'	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		

Sapling/Shrub Stratum r=15'			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		

Herb Stratum r=5'			
1. Salicornia pacifica	70	Y	OBL
2. Frankenia salina	10	N	FACW
3. Atriplex prostrata	2	N	FACW
4. Distichlis spicata	5	N	FAC
5. Lepidium latifolium	3	N	FAC
6. Festuca perrenis	1	N	FAC
7. Hordeum marinum	1	N	FAC
8.			
Total Cover:	92		

Woody Vine Stratum r=15'			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	70	x 1 = 70
FACW species	12	x 2 = 24
FAC species	10	x 3 = 30
FACU species	0	x 4 = 0
UPL species	0	x 5 = 0
Column Totals:	92 (A)	134 (B)

Prevalence Index = B/A = 1.46

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: SP-6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/1	99	7.5YR 3/4	1	C	M	SICLLO	
4-15	5Y 4/1	90	7.5YR 3/4	10	C	M	SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- X Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- X Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): _____

Water Table Present? Yes ____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Arid West – Version 11-1-2006

W-1

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano County Sampling Date: 9-7-24

Applicant/Owner: LS Power State: _____ Sampling Point: SP-7

Investigator(s): Karen Bach, Victoria Yefremenkova Section, Township, Range: S20 T3N R1E

Landform (hillslope, terrace, etc.): toeslope Local relief (concave, convex, none): slight slope Slope (%): _____

Subregion (LRR): LRRC Lat: 38.0722922 Long: -121.8284471 Datum: NAD83

Soil Map Unit Name: Valdez silt loam, drained, 0 to 2% slopes, MLRA 16 NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes _____ No X	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.) r=30'	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum r=15'			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum r=5'			
1. Distichlis spicata	25	Y	FAC
2. Festuca perrenis	10	N	FAC
3. Lotus corniculatus	50	Y	FAC
4. Bromus hordeaceus	2	N	FACU
5. Frankenia salina	3	N	FACW
6. Asparagus officinalis	2	N	FACU
7. Hordeum Marinum	15	N	FAC
8. Hordeum murinum	5	N	FACU
Total Cover:	112		
Woody Vine Stratum r=15'			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	3	x 2 =	6
FAC species	100	x 3 =	300
FACU species	9	x 4 =	36
UPL species	0	x 5 =	0
Column Totals:	112 (A)		342 (B)

Prevalence Index = B/A = 3.05

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

W-1

SOIL

Sampling Point: SP-7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0.5" organic matter								
0-7	2.5Y 4/1	98	7.5YR 4/6	2	C	M/PL	SiCl	redox prominent
7-15	10YR 4/3	99	7.5YR 4/6	1	C	M	SiCl	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): _____

Water Table Present? Yes ____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): _____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

W-1

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Salono County Sampling Date: 5-7-24

Applicant/Owner: LS Power State: _____ Sampling Point: Sp-8

Investigator(s): Karen Bach, Victoria Yefremenkova Section, Township, Range: S00 T3N R1E

Landform (hillslope, terrace, etc.): toeslope Local relief (concave, convex, none): flat Slope (%): _____

Subregion (LRR): LRRC Lat: 38.0723654 Long: -121.8283719 Datum: _____

Soil Map Unit Name: Valdez silty clay loam, strongly saline, 0 to 2%, MLRA 16 NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	Is the Sampled Area within a Wetland? Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.) r = 30'	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum r = 15'			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum r = 5'			
1. Distichlis spicata	90	Y	FAC
2. Frankenia salina	5	N	FACW
3. Polypogon monspeliensis	2	N	FACW
4. Rumex crispus	2	N	FAC
5. Schoenoplectus acutus	2	N	OBL
6. Atriplex prostrata	1	N	FACW
7. Salicornia pacifica	3	N	OBL
8.			
Total Cover:	105		
Woody Vine Stratum r = 15'			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	5	x 1 = 5
FACW species	8	x 2 = 10
FAC species	92	x 3 = 276
FACU species	0	x 4 = 0
UPL species	0	x 5 = 0
Column Totals:	105 (A)	291 (B)

Prevalence Index = B/A = 2.77

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

W-2

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano County Sampling Date: 5-7-24

Applicant/Owner: LS Power State: CA Sampling Point: SP-1

Investigator(s): Karen Bach, Victoria Yefremenkova Section, Township, Range: S00 T3N R1E

Landform (hillslope, terrace, etc.): bottomland Local relief (concave, convex, none): concave Slope (%): ____

Subregion (LRR): LRRC Lat: 38.073501 Long: -121.830988 Datum: NAD 83

Soil Map Unit Name: Valdez silt loam, drained, 0 to 2% slope, MLRA 16 NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.) r=30'	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		

Sapling/Shrub Stratum r=15'			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		

Herb Stratum r=5'			
1. Salicornia pacifica	10	Y	OBL
2. Frankenia salina	15	Y	FACW
3. Cotula coronopocolia	5	N	OBL
4. Spergula marina	2	N	OBL
5. Atriplex prostrata	1	N	FACW
6. Hordeum marinum	1	N	FAC
7. Polypogon monspeliensis	10	Y	FACW
8.			
Total Cover:	44		

Woody Vine Stratum r=15'			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 60 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	17	x 1 = 17
FACW species	26	x 2 = 52
FAC species	1	x 3 = 3
FACU species	0	x 4 = 0
UPL species	0	x 5 = 0
Column Totals:	44 (A)	72 (B)

Prevalence Index = B/A = 1.63

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: SP-8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/2	100					SICLO	
2-16	SY 7/1	95	7.5YR 3/4	5	C	M/PL/RC	SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: N/A

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- X Biotic Crust (B12)
- X Aquatic Invertebrates (B13)
- X Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes X No ___ Depth (inches): 16

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 9

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

SOIL

Sampling Point: SP-1

Profile Description: (Describe to the depth needed to document the Indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 4/2	80	5YR 4/6	20	C	M/PL	Si. Cl	Salt layers present
8-14	2.5Y 4/1	75	7.5YR 4/6	25	C	M/PL	Si Cl	Salt layers present
14-16	10YR 3/1	85	10YR 3/4	15	C	M/PL	Si Cl	Salt layers present

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: N/A

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- X Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- X Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

W-2

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano County Sampling Date: 5-7-24

Applicant/Owner: LS Power State: _____ Sampling Point: SP-2

Investigator(s): Warren Bach, Victoria Cooper/Ma Section, Township, Range: S20 T3N R1E

Landform (hillslope, terrace, etc.): toeslope Local relief (concave, convex, none): flat Slope (%): _____

Subregion (LRR): LRRC Lat: 38.073773 Long: -121.830852 Datum: NAD 83

Soil Map Unit Name: Valdez silt loam, drained, 0 to 2% slopes, MLRA 16 NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____ No X	
Wetland Hydrology Present?	Yes _____ No X	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.) r=30'	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum r=15'			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum r=5'			
1. Festuca perrenis	80	Y	FAC
2. Hordeum marinum	10	N	FAC
3. Frankenia salina	3	N	FACW
4. Hordeum murinum	15	N	FACU
5. Distichlis spicata	3	N	FAC
6.			
7.			
8.			
Total Cover:	111		
Woody Vine Stratum r=15'			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	3	x 2 =	6
FAC species	93	x 3 =	279
FACU species	15	x 4 =	60
UPL species	0	x 5 =	0
Column Totals:	111 (A)		345 (B)

Prevalence Index = B/A = 3.11

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

W-2

SOIL

Sampling Point: S1-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1.5	10YR 3/1	100					SICLO	
1.5-11	10YR 3/2	98	10YR 3/4	2	C	M	SICL	
11-15	10YR 3/1	85	7.5YR 3/3	15	C	M	SICL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

W-3

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano County Sampling Date: 5-8-24

Applicant/Owner: LS Power State: CA Sampling Point: SP-1

Investigator(s): Karen Bach, Sidney Wells Section, Township, Range: S8 T3N R1E

Landform (hillslope, terrace, etc.): toeslope Local relief (concave, convex, none): concave Slope (%): _____

Subregion (LRR): LRR C Lat: 38.072147° Long: -121.8321079 Datum: NAD83

Soil Map Unit Name: Valdez silt loam, drained, 0-2% slopes, MLRA 16 NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:

Isolated depression adjacent to manmade berm separating inland from coastline to the south. NO inlet/outlet.

VEGETATION

Tree Stratum (Use scientific names.) r=30'	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum r=15'			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum r=5'			
1. Salicornia pacifica	25	Y	OBL
2. Distichlis spicata	75	Y	FAC
3. Frankenia salina	5	N	FACW
4.			
5.			
6.			
7.			
8.			
Total Cover:	105		
Woody Vine Stratum r=15'			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	25	x 1 =	25
FACW species	5	x 2 =	10
FAC species	75	x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	105 (A)		225 (B)

Prevalence Index = B/A = 2.14

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

W-3

SOIL

Sampling Point: SP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/1	100					SiCLo	Mucky Peat. Greasy/stains fingers when rubbed
2-16	Gley 10 4/1	80	5YR 3/4	20	C	M	SiC	Gley base Redox prominent

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- X Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: N/A

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

Top layer of soil is mix of organic matter and a mucky loamy/mucky peat. Becomes greasy then turns powdery and stains fingers when rubbed. Not thick enough to meet F1 indicator.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- X Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes X No ___ Depth (inches): 14"

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 10"

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Saturation starts at 10" deep and extends to water table at 14".

W-3

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano County Sampling Date: 5-8-24

Applicant/Owner: LS Power State: CA Sampling Point: SP-2

Investigator(s): Karen Bach, Sidney Wells Section, Township, Range: S20 T3N R1E

Landform (hillslope, terrace, etc.): terrace / toeslope Local relief (concave, convex, none): convex Slope (%): _____

Subregion (LRR): LRR C Lat: 38.0720645 Long: -121.8321468 Datum: NAD 83

Soil Map Unit Name: Valdez silt loam, drained, 0-2% slopes, MLRA 16 NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:
Low terrace above SP-1 wetland plot, just below manmade berm.

VEGETATION

Tree Stratum (Use scientific names.) r=30'	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum r=15'			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum r=5'			
1. Festuca perrenis	20	N	FAC
2. Hordeum murinum	20	N	FACU
3. Hordeum marinum	50	Y	FAC
4. Distichlis spicata	30	Y	FAC
5. Lactuca serriola	2	N	FACU
6. Foeniculum vulgare	2	N	UPL
7. Frankenia salina	10	N	FACW
8.			
Total Cover:	134		
Woody Vine Stratum r=15'			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL

Sampling Point: SP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1.5	7.5YR 2.5/1	100					ORG. + SiL	
1.5-14	2.5Y 4/3	95	10YR 4/6	5	C	M	SiC	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: N/A

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

W-3

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano County Sampling Date: 05-08-24

Applicant/Owner: LS Power State: _____ Sampling Point: SP-3

Investigator(s): Karen Bach, Sidney Wells Section, Township, Range: S09 T3N R1E

Landform (hillslope, terrace, etc.): toeslope Local relief (concave, convex, none): flat Slope (%): 0

Subregion (LRR): LRRC Lat: 38.07201912 Long: -121.8319306 Datum: NAD83

Soil Map Unit Name: Valdez silt loam, drained, 0-2% slopes, MLRA 16 NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes _____ No X	

Remarks:
Located on flat, gently sloping area slightly upslope and to the east of SP-1. No obvious depression present.

VEGETATION

Tree Stratum (Use scientific names.) r=30'	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum r=15'			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum r=5'			
1. Salicornia pacifica	70	Y	OBL
2. Distichlis spicata	40	Y	FAC
3. Festuca perennes	2	N	FAC
4. Frankenia salina	2	N	FACW
5.			
6.			
7.			
8.			
Total Cover:	144		
Woody Vine Stratum r=15'			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL

Sampling Point: SP-3

Profile Description: (Describe to the depth needed to document the Indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/1						SiCLo	
2-18	2.5Y 4/1	75	7.5YR 3/3	25	C	M	SiC	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: N/A

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5) = $\frac{OBL+FACW}{UPL+FACU} = \frac{1}{6}$

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 22

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Pit dug to 24 inches. No water table observed. Saturation starts at 22 inches. Located slightly higher in elevation than SP-1, no clear depression present in this area. SP-1 located in defined depression.

W-4

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano County Sampling Date: 05-09-24

Applicant/Owner: LS Power State: CA Sampling Point: SP-1

Investigator(s): Karen Bach, Sidney Wells Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes _____ No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.) 5 Ft=r	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum 5Ft=r			
1. Rubus armeniacus	5	Y	
2.			
3.			
4.			
5.			
Total Cover:	5		
Herb Stratum 5ft=r			
1. Schoenoplectus americanus	10	N	OBL
2. Typha latifolia	5	N	OBL
3. Persicaria amphibia	20	Y	OBL
4. Schoenoplectus acutus occidentalis	7	N	OBL
5. Oenanthe sarmentosa	10	N	OBL
6. Ludwigia peploides	25	Y	OBL
7. Juncus balticus	25	Y	FACW
8. Juncus xiphioides	15	N	OBL
Total Cover:	117		
Woody Vine Stratum 5 Ft=r			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: Radius of vegetation plots reduced to avoid crossing vegetation community, wetland boundary, and topographic boundary.

SOIL

Sampling Point: SP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1.5	7.5YR 2.5/1	100					SiLo	
1.5-6	10YR 3/2	100					SiCLo	
6-11	Gley1 N4/0	90	7.5YR 4/6	10	C	M	SiCLo	
11-14	Gley1 N4/0	97	7.5YR 5/8	3	C	M	SiCLo	
14-16	Gley1 N4/0	95	Gley1 10Y 6/1	5	D	M	SaCLo	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- X Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- X Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: N/A

Depth (inches): _____

Hydric Soil Present? Yes X No ____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- X Sediment Deposits (B2) (**Nonriverine**)
- X Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- X Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ____ Depth (inches): _____

Water Table Present? Yes X No ____ Depth (inches): 14"

Saturation Present? (includes capillary fringe) Yes X No ____ Depth (inches): Surface

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Surface water present approx 6ft south of soil pit. water table within pit at 14" deep.

W-4

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Sampling Date: 5-9-24

Applicant/Owner: LS Power State: CA Sampling Point: SP-2

Investigator(s): Karen Bach, Sidney Wells Section, Township, Range:

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):

Subregion (LRR): Lat: Long: Datum:

Soil Map Unit Name: NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No X	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____ No ____	
Wetland Hydrology Present?	Yes ____ No X	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.) r = 10'	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum r = 10'			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum r = 5'			
1. Marrubium vulgare	35	Y	FACU
2. Festuca perrennis	20	Y	FAC
3. Bromus diandrus	20	Y	UPL
4. Medicago polymorpha	5	N	FACU
5. Hordeum murinum	7	N	FACU
6. Malva parvifolia	3	N	UPL
7. Silybum marianum	3	N	UPL
8. Frankenia salina	2	N	FACW
Total Cover:	95		
Woody Vine Stratum r = 10'			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

Dimensions of vegetation plots reduced to avoid crossing vegetation community and topographical boundaries.

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 3/1	99	7.5YR 3/3	4	C	M	SiCl	
7-14	2.5Y 3/3	100					Cl	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: N/A

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

Soil very hard/compact. Difficult to dig.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

W-5

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano County Sampling Date: 05-09-24

Applicant/Owner: LS Power State: CA Sampling Point: SP-1

Investigator(s): Karen Bach, Sidney Wells Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____	
Wetland Hydrology Present?	Yes ✓ No _____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Distichlis spicata	65	Y	FAC
2. Salicornia pacifica	40	N	OBL
3. Juncus balticus	20	N	FACW
4. Schoenoplectus acutus occidentalis	5	N	OBL
5.			
6.			
7.			
8.			
Total Cover:	130		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

W-5

SOIL

Sampling Point: SP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	Gley1 N 2.5/0	100					Si	
1-6	2.5Y 3/1	100					SiCLo	
6-8	5Y 4/1	93	2.5Y 4/4	7			LoSa	
8-17	5Y 5/1	90	5YR 4/4	10	C	M/PL	SiL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- X Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 1"

Water Table Present? Yes X No ___ Depth (inches): 10"

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): surface

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

W-9

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: _____ Sampling Date: 5-9-24

Applicant/Owner: _____ State: _____ Sampling Point: SP-2

Investigator(s): Karenbach, Sidney Wells Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	Is the Sampled Area within a Wetland? Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.) r=15'	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum r=15'			
1. Rosa californica	15	Y	FAC
2. Rubus armeniacus	2	N	
3.			
4.			
5.			
Total Cover:	17		
Herb Stratum r=5'			
1. Festuca perennis	3	N	FAC
2. Foeniculum vulgare	15	N	
3. Juncus balticus	1	N	FACW
4. Distichris spicata	5	N	FAC
5. Festuca myuros	80	Y	UPL
6. Bromus diandrus	3	N	
7.			
8.			
Total Cover:	107		
Woody Vine Stratum r=15'			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

Tree plot size reduced to avoid crossing veg community boundaries.

W-5

SOIL

Sampling Point: SP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/1	100					Sand	
2-16	10YR 3/4	100					Sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

W-6

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano County Sampling Date: 5-10-24
Applicant/Owner: LS Power State: CA Sampling Point: SP-1
Investigator(s): Karen Buch, Sidney Weis Section, Township, Range: S00 T3N R1E
Landform (hillslope, terrace, etc.): footslope Local relief (concave, convex, none): slope Slope (%): 10
Subregion (LRR): LRR C Lat: 38.071987 Long: -121.832524 Datum: NAD83
Soil Map Unit Name: Valdez silt loam, drained, 0-2% slopes NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____ No X	
Wetland Hydrology Present?	Yes ____ No X	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: r= 10')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: r= 10')			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: r= 5')			
1. Lotus tenuis	5	Y	FACU
2. Hordeum marinum	40	Y	FAC
3. Lolium perenne	5	N	FAC
4. Elymus triticoides	2	N	FAC
5. Frankenia salina	15	Y	FACW
6. Distichlis spicata	40	Y	FAC
7. Polypogon monospeliensis	2	N	FACW
8. Sonchus oleraceus	5	Y	UPL
	114 = Total Cover		
Woody Vine Stratum (Plot size: r=10')			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)
Total Number of Dominant Species Across All Strata: 6 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 83% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
__ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

W-6

SOIL

Sampling Point: SP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/1	100					SiLo	
2-5	10YR 4/4	70					SiCLo	
	10YR 4/2	30						
5-16	10YR 4/4	100					SiCLo	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): _____

Water Table Present? Yes ____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): _____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

W-6

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano County Sampling Date: 5-10-24

Applicant/Owner: LS Power State: CA Sampling Point: SP-2

Investigator(s): Karen Bach, Silvy Wells Section, Township, Range: S00 T3N R1E

Landform (hillslope, terrace, etc.): footslope Local relief (concave, convex, none): concave Slope (%): 5

Subregion (LRR): LRRC Lat: 38.071965 Long: -121.832448 Datum: NAD 83

Soil Map Unit Name: Valdez silt loam, drained, 0-2% slopes NWI classification: E2EMIN

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: r=5')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size: r=5')			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	

Herb Stratum (Plot size: r=5')			
1. Schoenoplectus acutus ssp. occidentalis	40	Y	OBL
2. Typha latifolia	30	Y	OBL
3. Cotula coronopifolia	7	N	OBL
4. Cyperus eragrostis	10	N	FACW
5. Alisma gramineum	3	N	OBL
6.			
7.			
8.			
	90	= Total Cover	

Woody Vine Stratum (Plot size: r=5')			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 15 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

Plot size reduced to avoid crossing veg community, wetland, and topographic boundaries.

W-6

SOIL

Sampling Point: Sp-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	Gley1 N2.5/	30					SiLo	
	2.5Y 5/2	55	10YR 4/6	15			SiLo	
6-16	2.5Y 5/1	80	10YR 3/6	20			SiC	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

TOP layer a mix of black high organic matter and gray soil from rest of profile

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1) (**Nonriverine**)
- X Sediment Deposits (B2) (**Nonriverine**)
- X Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 3"

Water Table Present? Yes X No ___ Depth (inches): Surface

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): Surface

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

W-6/W-7

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano County Sampling Date: 5-10-24

Applicant/Owner: LS Power State: CA Sampling Point: SP-3

Investigator(s): Karen Buch, Sidney Wells Section, Township, Range: S20 T3N R1E

Landform (hillslope, terrace, etc.): footslope Local relief (concave, convex, none): slight slope Slope (%): 5

Subregion (LRR): LRR C Lat: 38.071463 Long: -121.831953 Datum: NAD83

Soil Map Unit Name: Vandez silt loam, drained, 0-2% slopes NWI classification: E2EMIN

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes ____ No X	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1. Rosa californica	85	Y	FAC
2. Baccharis pilularis	10	N	UPL
3. Rubus armeniacus	3	N	
4.			
5.			
Total Cover:	98		
Herb Stratum			
1. Distichlis spicata	10	Y	FAC
2. Foeniculum vulgare	5	N	UPL
3. Melilotus albus	15	Y	UPL
4. Elymus triticoides	1	N	FAC
5.			
6.			
7.			
8.			
Total Cover:	31		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

W-6

SOIL

Sampling Point: SP-3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 2/1	100					Si Lo	
7-11	2.5Y 3/1	60	10YR 4/4	40	C	M	Sa	
11-16	Gley1 N4/0	93	10YR 4/6	7	C	RC	SCLo	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- X Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):
Type: None to 22"
Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___
Water Table Present? Yes ___ No X Depth (inches): ___
Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Large drift deposits; may be from storm surges from the Delta / Bay. large logs and debris buried under shrubby vegetation. NO signs of recent or frequent deposition observed within sample area.

W-6/W-7

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano County Sampling Date: 5-10-24

Applicant/Owner: LS Power State: CA Sampling Point: SP-4

Investigator(s): Karen Buck, Sidney Wells Section, Township, Range: S00 T3N R1E

Landform (hillslope, terrace, etc.): berm / mid terrace Local relief (concave, convex, none): flat Slope (%): 0

Subregion (LRR): LRRC Lat: 38.071301 Long: -121.831692 Datum: NAD83

Soil Map Unit Name: Valdez silt loam, drained, 0-2% slopes NWI classification: E2EMN

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes ____	No ____	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
Located on a raised, dry berm between high tide line and wetland to the north.

VEGETATION

Tree Stratum (Use scientific names.) r=10'	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum r=10'			
1. Rosa californica	20	Y	FAC
2. Baccharis pilularis	15	Y	UPL
3. Rubus armeniacus	10	N	
4.			
5.			
Total Cover:	45		
Herb Stratum r=5'			
1. Foeniculum vulgare	30	Y	UPL
2. Raphanus sativus	2	N	
3. Rumex crispus	2	N	
4. Elymus triticoides	3	N	
5. Juncus balticus	2	N	
6. Heterotheca grandiflora	1	N	
7. Distichlis spicata	1	N	
8.			
Total Cover:	41		
Woody Vine Stratum r=10'			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 30% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:
Veg plots reduced in size to avoid crossing wetland, veg community, and topography boundaries.

W-6/W-7

SOIL

Sampling Point: SP-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-						L	Losa	
0-7	10YR 2/1	100						
7-13	2.5Y 3/2	97	10YR 3/4	3	C	M	Sa	
13-17	2.5Y 4/1	60	2.5Y 4/3	40	C	M/PL	Salo	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Large, old drift deposits (i.e. scattered large logs, trash, etc.) present within sample area. Seem to be the result of storm surges. NO evidence of frequent/recent drift deposits present in this area.

W-617

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano County Sampling Date: 06-03-24
Applicant/Owner: LS Power State: CA Sampling Point: SP-5
Investigator(s): Sidney Wells, Karen Bach Section, Township, Range: S00 T3N R1E
Landform (hillslope, terrace, etc.): Footslope Local relief (concave, convex, none): Slope Slope (%): 3
Subregion (LRR): LRRC Lat: 38.070948 Long: -121.830918 Datum: NAD83
Soil Map Unit Name: Valdez silt loam, drained, 0-2% slopes NWI classification: E2EMIN
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes ____ No X
Is the Sampled Area within a Wetland? Yes ____ No X

Remarks:
Slight upland slope at toeslope of hill to the north

VEGETATION

Tree Stratum (Use scientific names.) r=15'	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum r=10'			
1. Rosa californica	40	Y	FAC
2.			
3.			
4.			
5.			
Total Cover: 40			
Herb Stratum r=5'			
1. Lathyrus jepsonii	5	N	OBL
2. Distichlis spicata	80	Y	FAC
3. Xanthium strumarium	2	N	FAC
4. Rumex crispus	2	N	FAC
5. Helminthotheca echioides	5	N	FAC
6.			
7.			
8.			
Total Cover: 94			
Woody Vine Stratum r=15'			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: SP-5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-9	10YR 4/3	100					Sa	
9-10	10YR 2/1	100					LoSa	
10-14	10YR 3/2	100					SiCLo	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: none

Depth (inches): 0

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Large woody debris and drift deposits likely from storm surges rather than regular tide.

W-6

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano County Sampling Date: 6-4-24

Applicant/Owner: LS Power State: CA Sampling Point: SP-6

Investigator(s): Karen Bach, Sidney Wells Section, Township, Range: S00 T3N R1E

Landform (hillslope, terrace, etc.): toeslope Local relief (concave, convex, none): flat Slope (%): 0

Subregion (LRR): LRRC Lat: 38.071301 Long: -121.831849 Datum: NAD83

Soil Map Unit Name: Valdez silt loam, drained, 0-2% NWI classification: E2EMIN

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.) r=10'	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum r=10'			
1. Sesbania punicea	2	Y	FACW
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum r=5'			
1. Potentilla anserina ssp. pacifica	20	Y	OBL
2. Juncus mexicanus	45	Y	FACW
3. Hydrocotyle verticulata	7	N	OBL
4. Plantago lanceolata	3	N	FAC
5. Distichlis spicata	10	N	FAC
6. Schoenoplectus acutus var. occidentalis	2	N	OBL
7.			
8.			
Total Cover:	87		
Woody Vine Stratum r=10'			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 15 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

W-6

SOIL

Sampling Point: SP-6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2.5	2.5Y 3/2	98	7.5YR 4/6	2	C	M	SaC	
2.5-6.5	GleyIN 4/	92	10YR 4/6	8	C	M	SaLo	
6.5-9.5	GleyIN 5/	90	10YR 3/6	10	C	M/PL	C	
9.5-13.5	5Y 4/1	90	10YR 4/6	10	C	M	Sa	
13-18.5	GleyIN 4/	92	10YR 5/6	8	C	M/PL/RC	SiCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- X Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: N/A to 20"

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- X Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Drift deposits present from regular tidal action including large and small drift

NO water table present in pit at time of sample however water table present to distance toward shoreline.

W-7

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano County Sampling Date: 6/3/24

Applicant/Owner: LS Power State: CA Sampling Point: SP-1

Investigator(s): Karen Beck, Sidney Wells Section, Township, Range: S00T3N R1E

Landform (hillslope, terrace, etc.): toeslope Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR): LRR C Lat: 38.071350 Long: -121.831629 Datum: NAD83

Soil Map Unit Name: Valdez silt loam, drained, 0-2% slopes, MLRA 16 NWI classification: E2EM1N

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:
Isolated wetland separated from coastline by upland berm

VEGETATION

Tree Stratum (Use scientific names.) r=15'	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum r=15'			
1. Rosa californica	3	Y	FAC
2.			
3.			
4.			
5.			
Total Cover:	3		
Herb Stratum r=5'			
1. Cotula coronopofolia	20	Y	OBL
2. Typha angustifolia	4	N	OBL
3. Ludwigia peploides	25	Y	OBL
4. Scoenoplectus acutus	15	Y	OBL
5. Cyperus eragrostis	5	N	FACW
6.			
7.			
8.			
Total Cover:	69		
Woody Vine Stratum r=15'			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 45 % Cover of Biotic Crust 2

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

W-7

SOIL

Sampling Point: SP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 3/1	99	7.5YR 4/6	1	C	M	Clo.	
7-8	2.5Y 3/1	95	2.5Y 4/4	5	C	M	SaLo.	
8-9.5	2.5Y 3/1	90	7.5YR 3/4	10	C	M	LoSa.	
9.5-16	5Y 4/2	93	10YR 4/4	7	C	M	SiCLo.	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: none

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- X Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes X No ___ Depth (inches): 12.5"

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 7"

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Large woody debris and drift deposits likely from storm surges rather than regular tide.

W-8

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano County Sampling Date: 6-3-24

Applicant/Owner: LS Power State: CA Sampling Point: SP-1

Investigator(s): Karen Bach, Sidney Wells Section, Township, Range: S00 T3N R1E

Landform (hillslope, terrace, etc.): Footslope Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): LRRC Lat: 38.070911 Long: -121.830671 Datum: NAD83

Soil Map Unit Name: Valdez silt loam, drained, 0-2%, sloped NWI classification: E2EMN

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:
Small isolated depression separated from bay delta by upland berm.

VEGETATION

Tree Stratum (Use scientific names.) r=15'	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum r=15'			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum r=5'			
1. Distichlis spicata	70	Y	FAC
2. Salicornia pacifica	40	Y	OBL
3. Atriplex prostrata	2	N	FACW
4.			
5.			
6.			
7.			
8.			
Total Cover:	112		
Woody Vine Stratum r=15'			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 5

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

WP8

Sampling Point: SP-1

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/2	100					Sa	
2-6	10YR 3/1	100					Sa	
6-27	GleyN3/	100					Sa	
27+	2.5Y 3/1	100					SiCLo	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: none to 27"

Depth (inches): ___

Hydric Soil Present? Yes ___ No X

Remarks:

two soil pits excavated within potential wetland both with same soil profile, took multiple slices. lower layers very dark no redox to 27"! let soil dry, no redox or lightening occurred at moist (not saturated) condition

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- X Salt Crust (B11)
- X Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes X No ___ Depth (inches): 7"

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 6"

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Large drift deposits found within SP result of storm surges rather than regular tidal action

W-9

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano County Sampling Date: 06-03-24
Applicant/Owner: LS Power State: CA Sampling Point: SP-1
Investigator(s): Sidney Wells, Karen Bach Section, Township, Range: S00T3N R1E
Landform (hillslope, terrace, etc.): toeslope Local relief (concave, convex, none): concave Slope (%): 0
Subregion (LRR): LRR C Lat: 38.070842 Long: -121.830475 Datum: NAD83
Soil Map Unit Name: Valdez silt loam, drained, 0-2% NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.) r=10'	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover: 0			
Sapling/Shrub Stratum r=10'			
1.			
2.			
3.			
4.			
5.			
Total Cover: 0			
Herb Stratum r=5'			
1. Distichlis spicata	65	Y	FAC
2. Frankenia salina	17	N	FACW
3. Lepidium latifolium	20	N	FAC
4. Rumex crispus	5	N	FAC
5. Schoenoplectus acutus var. occidentalis	35	Y	OBL
6. Heliotropium curassavicum	3	N	FACU
7.			
8.			
Total Cover: 145			
Woody Vine Stratum r=10'			
1.			
2.			
Total Cover: 0			

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 2

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
__ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

W-9

SP-1

SOIL

Sampling Point: SP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 2/1	90	7.5YR 3/4	10	C	M	CL	
3-16	Gley1 10Y 3/1	90	7.5YR 3/4	10	C	M	SL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: None

Depth (inches): 0

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- X Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- X Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes X No ___ Depth (inches): 20"

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 10"

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Drift deposits likely from storm surges rather than regular tidal influence.

W-9

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano Sampling Date: 6-4/24

Applicant/Owner: LS Power State: CA Sampling Point: SP-2

Investigator(s): Karen Buck, Sidney Wells Section, Township, Range: S00 T3N R1E

Landform (hillslope, terrace, etc.): footslope Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): LRR C Lat: 38.070622 Long: -121.829704 Datum: NAD83

Soil Map Unit Name: Valdez silt loam, drained, 0-2% NWI classification: E2EMIN

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.) 30x5 ft	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix laevigata	10	Y	FACW
2.			
3.			
4.			
Total Cover:	10		
Sapling/Shrub Stratum 15x5ft			
1. Rosa californica	10	Y	FAC
2.	5	N	
3.			
4.			
5.			
Total Cover:	15		
Herb Stratum 5x5ft			
1. typha angustifolia	50	Y	OBL
2. Alisma gramineum	5	N	OBL
3. Distichlis spicata	20	N	FAC
4. Juncus balticus	30	Y	FACW
5. Rumex crispus	4	N	FAC
6. Lathyrus jepsonii	4	N	OBL
7. Schoenoplectus acutus var. occidentalis	5	N	OBL
8.			
Total Cover:	120		
Woody Vine Stratum 15ft x 5ft			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 5

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

Shape/size of plots adjusted to avoid crossing wetland/veg community boundary

W-9

Sampling Point: SP2

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 2/2	97	7.5YR 3/3	3	C	M	SiCl	
3-4.5	Gley1 10Y 5/1	98	10YR 3/4	2	C	M	SiCl	
4.5-12	Gley1 N4/	90	10YR 3/6	10	C	M	SiCl	
12-16	Gley1 N4	90	10YR 3/6	10	C	M	LoSa	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- X Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: None

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- X Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- X Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 1.5"

Water Table Present? Yes X No ___ Depth (inches): Surface

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): Surface

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

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WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano County Sampling Date: 6/4/24
Applicant/Owner: LS Power State: CA Sampling Point: SP-3
Investigator(s): Karen Buck, Sidney Wells Section, Township, Range: S00 T3N R1E
Landform (hillslope, terrace, etc.): toeslope Local relief (concave, convex, none): _____ Slope (%): 0
Subregion (LRR): LRRC Lat: 38.070548 Long: -121.829686 Datum: NAD83
Soil Map Unit Name: Valdez silt loam, drained, 1-2% NWI classification: E2EMN
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____ No X	
Wetland Hydrology Present?	Yes _____ No X	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.) r=20'	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum r=15'			
1. Rosa californica	7	Y	FAC
2.			
3.			
4.			
5.			
Total Cover:	7		
Herb Stratum r=5'			
1. Foeniculum vulgare	4	N	UPL
2. Elymus triticoides	40	Y	FAC
3. Frankenia salina	3	N	FACW
4. Distichlis spicata	30	Y	FAC
5. Carex barbarae	5	N	FAC
6. Helminthotheca echioides	1	N	FAC
7.			
8.			
Total Cover:	83		
Woody Vine Stratum r=15'			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

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Sampling Point: SP-3

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7.5	10YR 2/1	100					LoSa	
7.5-9	2.5Y 3/2	100					Sa	
9-14	7.5YR 3/2	100					CLo	
14-16	2.5Y 4/2	80	10YR 3/6	20	C	M	SiC	Redox prominent

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: N/A

Depth (inches): ___

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

W-1D

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano County Sampling Date: 6-5-24

Applicant/Owner: LS Power State: CA Sampling Point: SP-1

Investigator(s): Karen Bach, Sidney Wells Section, Township, Range: S00 T3N R1E

Landform (hillslope, terrace, etc.): foreshore Local relief (concave, convex, none): slight concave Slope (%): 0

Subregion (LRR): LRR C Lat: 38.078510 Long: -121.833547 Datum: NAD83

Soil Map Unit Name: Valdez silt loam, drained, 0-2% slopes NWI classification: PEMIC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes _____ No X	

Remarks:
Slight depression adjacent to road where water appears to perch above clay layer during short periods in the wet season but not long enough to develop wetland conditions

VEGETATION

Tree Stratum (Use scientific names.) r=30'	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum r=15'			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum r=5'			
1. Distichlis spicata	70	Y	FAC
2. Rumex crispus	30	N	FAC
3. Heliotropium curassavicum	5	N	FACU
4. Bromus madritensis	40	Y	UPL
5. Hebranthotheca echioides	1	N	FAC
6. Juncus mexicanus	10	N	FACW
7. Frankenia salina	8	N	FACW
8. Lactuca serriola	1	N	FACU
Total Cover:	165		
Woody Vine Stratum r=15'			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

W-1D

SOIL

Sampling Point: SP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/1	98	7.5YR 4/6	2	C	M/PL	SiC	
2-4	2.5Y 4/2	65	7.5YR 4/6	35	C	M/PL	SiC	remeasured Several times
4-6	2.5Y 3/2	100					Sa	
6-7.5	2.5Y 3/2	97	10YR 3/6	3	C	M	SaLo	
7.5-14	2.5Y 3/2	100					Sa	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: More to 20"

Depth (inches): _____

Hydric Soil Present? Yes X No ____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): _____

Water Table Present? Yes ____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): _____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

W11

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano County Sampling Date: 06-06-24

Applicant/Owner: LS Power State: CA Sampling Point: SP-1

Investigator(s): Sidney Wells, Karen Bach Section, Township, Range: S00 T3N R1E

Landform (hillslope, terrace, etc.): toeslope Local relief (concave, convex, none): Slight concave Slope (%): 0

Subregion (LRR): LRR C Lat: 38.078597 Long: -121.833439 Datum: NAD83

Soil Map Unit Name: Valdez silt loam, drained, 0-2% slopes NWI classification: PEMCh

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Rumex crispus Curly dock	15	N	FAC
2. Xanthium strumarium Cocklebur	70	Y	FAC
3. Schoenoplectus acutus var. occidentalis	35	Y	OBL
4. Iva axillaris Poverty	3	N	FACW
5. Asclepias fascicularis Milkweed	2	N	FAC
6. Festuca perennes	25	N	FAC
7.			
8.			
Total Cover: 160			
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

W-11

Sampling Point: SP-1

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 6.5	10YR 2/1	99	10YR 5/6	1	C	M	Cl	
6.5 - 13.5	2.5Y 4/2	65	10YR 4/6	35	C	M	SiCLo	
13.5 - 16	2.5Y 4/2	65	10YR 5/8	35	C	M	SiCl	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: none to 20"

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- X Salt Crust (B11)
- X Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

W-11

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano County Sampling Date: 06-05-24

Applicant/Owner: LS Power State: CA Sampling Point: SP-2

Investigator(s): Sidney Wells, Karen Buck Section, Township, Range: S00 T3N R1E

Landform (hillslope, terrace, etc.): toeslope Local relief (concave, convex, none): flat Slope (%): 0

Subregion (LRR): LRR C Lat: 38.078688 Long: -121.833471 Datum: NAD83

Soil Map Unit Name: Valdez silt loam, drained, 0-2% slopes NWI classification: PEMCh

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:			
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:			
Herb Stratum			
1. Rumex crispus	25	Y	FAC
2. Polygonum monospeliensis	15	N	FACW
3. Distichlis spicata	35	Y	FAC
4. Xanthium strumarium	7	N	FAC
5. Bromus madritensis	15	N	UPL
6. Cressa truxillensis	2	N	FACW
7.			
8.			
Total Cover:	99		
Woody Vine Stratum			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 4 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

W-11

SOIL

Sampling Point: SP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5.5	10YR 2/1						SiCl	
5.5-11	2.5Y 3/2	98	10YR 5/6	2	C	M	SaLo	
11-16	2.5Y 4/2	95	10YR 4/6	5	C	M	SiCl Lo	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: None to 20"

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

W-11

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano County Sampling Date: 6/5/24
Applicant/Owner: LS Power State: CA Sampling Point: SP-3
Investigator(s): Karen Bach, Victoria Yefremenkova Section, Township, Range: S9D T3N R1E
Landform (hillslope, terrace, etc.): toeslope Local relief (concave, convex, none): flat Slope (%): 0
Subregion (LRR): LRRC Lat: 38.078891 Long: -121.833543 Datum: NAD83
Soil Map Unit Name: Valdez silt loam, drained, 0-2% slope NWI classification: PEMICh
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No X	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____ No X	
Wetland Hydrology Present?	Yes ____ No X	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.) r=30'	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum r=15'			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum r=5'			
1. Festuca perennis	60	Y	FAC
2. Bromus madritensis	45	Y	UPL
3. Frankenia salina	5	N	FACW
4. Rumex crispus	1	N	FAC
5. Distichlis spicata	8	N	FAC
6.			
7.			
8.			
Total Cover:	119		
Woody Vine Stratum r=15'			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

W-11

SOIL

Sampling Point: SP-3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 2/1	100					Lo	
5-15	2.5Y 3/2	100					Sa	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: None to 20"

Depth (inches): _____

Hydric Soil Present? Yes ____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): _____

Water Table Present? Yes ____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): _____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

W-12

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano, county Sampling Date: 6/6/24

Applicant/Owner: LS Power State: CA Sampling Point: SP-1

Investigator(s): Karen Bach, Victoria Yefremenkova Section, Township, Range: S8Q T3N R1E

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): LRRC Lat: 38.078139 Long: -121.838506 Datum: NAD83

Soil Map Unit Name: Valdez silty clay loam, clay substratum NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	Is the Sampled Area within a Wetland? Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.) r=30'	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum r=15'			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum r=5'			
1. Schoenoplectus acutus ssp. occidentalis	5	N	OBL
2. Lepidium latifolium	8	Y	FAC
3. Distichlis spicata	8	Y	FAC
4. Bolboschoenus maritimus	5	N	OBL
5. Atriplex prostrata	10	Y	FACW
6. Heliotropum curassavicum	2	N	FACU
7. Rumex crispus	1	N	FAC
8.			
Total Cover:	37		
Woody Vine Stratum r=15'			
1.			
2.			
Total Cover:			

% Bare Ground in Herb Stratum 60 % Cover of Biotic Crust 40

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

W-12

SOIL

Sampling Point: SP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/1	99	7.5YR 3/4	1	C	M	Sa	organic materials present
4-9.5	5Y 4/1	91	10YR 3/4	9	C	M	LoSa	
9.5-16	2.5Y 3/2	97	10YR 4/4	3	C	M	Sa	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: rare to 20"

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- X Sediment Deposits (B2) (**Nonriverine**)
- X Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- X Salt Crust (B11)
- X Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- X Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes X No ___ Depth (inches): 6.5

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): to surface

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

W-12

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano County Sampling Date: 6/6/24

Applicant/Owner: LS Power State: CA Sampling Point: SP-2

Investigator(s): Karen Bach, Victoria Yellenovich Section, Township, Range: S20 T3N R1E

Landform (hillslope, terrace, etc.): footslope Local relief (concave, convex, none): slope Slope (%): 10

Subregion (LRR): LRRC Lat: 38.078236 Long: -121.838606 Datum: NAD83

Soil Map Unit Name: Valdez silty clay-loam, clay substratum NWI classification: NA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:
Slightly elevated area adjacent to SP-1.

VEGETATION

Tree Stratum (Use scientific names.) r = 30'	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum r = 15'			
1.			
2.			
3.			
4.			
5.			
r = 5' Total Cover:	0		
Herb Stratum			
1. Lepidium latifolium	100	Y	FAC
2. Schoenoplectus acutus var. occidentalis	3	N	OBL
3.			
4. Festuca perennis	55	Y	FAC
5.			
6.			
7.			
8.			
Total Cover:	158		
Woody Vine Stratum r = 15'			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

W-12

SOIL

Sampling Point: SP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/2	99	10YR 3/4	1	C	M/PL	CLO	
2-6	2.5Y 3/1	95	7.5YR 4/6	5	C	M/PL	SaCLO	redox transitory
6-9.5	2.5Y 4/2	65	7.5YR 3/4	35	C	M/PL	Sa	
9.5-16	5Y 4/1	97	10YR 3/6	3	C	M	Sa	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: none to 20"

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

W-12

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano County Sampling Date: 6/6/24

Applicant/Owner: LS Power State: CA Sampling Point: SP-3

Investigator(s): Karen Buck, Victoria Yefremenkova Section, Township, Range: S00 T3N R1E

Landform (hillslope, terrace, etc.): Backslope Local relief (concave, convex, none): Slope Slope (%): 10

Subregion (LRR): LRRC Lat: 38.078393 Long: -121.8385.87 Datum: NAD 83

Soil Map Unit Name: Valdez silty clay loam, clay substratum NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.) r=30'	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum r=15'			
1. Rosa californica	90	Y	FAC
2.			
3.			
4.			
5.			
Total Cover:	90		
Herb Stratum r=5'			
1. Baccharis glutinosa	3	Y	FACW
2. Polypogon monspeliensis	5	Y	FACW
3. Juncus balticus	1	Y	FACW
4. Distichlis spicata	5	Y	FAC
5.			
6.			
7.			
8.			
Total Cover:	14		
Woody Vine Stratum r=15'			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/2	100					Sa	
6-15	2.5Y 3/2	98	10YR 4/6	2	C	M	Sa	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: none to 20"

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

W-13

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano county Sampling Date: 6/6/24

Applicant/Owner: LS Power State: CA Sampling Point: SP-1

Investigator(s): Maren Bardin, Victoria Yeh-Hammack Section, Township, Range: S00 T3N R1E

Landform (hillslope, terrace, etc.): toeslope Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR): LRRC Lat: 38.079872 Long: -121.840326 Datum: NAD83

Soil Map Unit Name: Tamba Muck clay NWI classification: R4SBA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.) r=30'	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum r=15			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum r=5'			
1. Sonchus oleraceus	75	Y	OBL
2. Polypogon monspeliensis	1	N	FACW
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	76		
Woody Vine Stratum			
1.	0		
2.	0		
Total Cover:	76		

% Bare Ground in Herb Stratum 25 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

W-13

SOIL

Sampling Point: SP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3.5	2.5Y 4/1	95	10YR 4/4	5	C	M	SiCL	
3.5-6	5Y 4/1	45	7.5YR 3/3	5	C	M/PL	SiCL	
	5Y 3/1	45	7.5YR 3/3	5	C	M/PL	SiCL	
6-10	2.5Y 4/1	90	7.5YR 3/4	10	C	M/PL	SiCL	
10-16	GLEY1 N2.5/0	95	7.5YR 3/3	5	C	M	SiCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- X Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- X Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 10"

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

W-13

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano County Sampling Date: 6/6/24
Applicant/Owner: LS Power State: CA Sampling Point: SP-2
Investigator(s): Karen Buch, Victoria Yefremenkova Section, Township, Range: S00 T3N R1E
Landform (hillslope, terrace, etc.): Toeslope Local relief (concave, convex, none): flat Slope (%): 0
Subregion (LRR): LRRC Lat: 38.079826 Long: -121.840703 Datum: NAD83
Soil Map Unit Name: Tamba mucky clay/Diablo-Aygar clays 2-9% slopes NWI classification: R4SBA
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes ____ No X	
Wetland Hydrology Present?	Yes ____ No X	

Remarks:
potentially manmade berm separating W-13 and W-14

VEGETATION

Tree Stratum (Use scientific names.) 10'x20'	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum 10'x15'			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum 5'x5'			
1. Festuca perennis	60	Y	FAC
2. Bromus madritensis	45	Y	UPL
3. Polypogon monspeliensis	30	Y	FACW
4. Frankenia salina	2	N	FACW
5. Salicornia pacifica	3	N	OBL
6.			
7.			
8.			
Total Cover:	140		
Woody Vine Stratum 10'x15'			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 60% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
__ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

W-13

SOIL

Sampling Point: SP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	2.5Y 5/4	100					SiCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: none to 20"

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

Several small angular rock fragments present in top 6" of soil. May be old fill along constructed berm

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Dry berm between two low depressional wetlands

W-13

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano Sampling Date: 6-7-24

Applicant/Owner: LS Power State: CA Sampling Point: SP-3

Investigator(s): Victoria Hernandez, Maren Beck Section, Township, Range: S20 T3N R1E

Landform (hillslope, terrace, etc.): Toeslope Local relief (concave, convex, none): convex Slope (%): 0

Subregion (LRR): LRRC Lat: 38.080785 Long: -121.840447 Datum: NAD83

Soil Map Unit Name: Diablo-Ayar clays 2-9% slopes/Tambo mucky clay NWI classification: R4SBA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes ____ No ____	
Wetland Hydrology Present?	Yes ____ No ____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.) R=30'	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover: 0			
Sapling/Shrub Stratum R=15'			
1.			
2.			
3.			
4.			
5.			
Total Cover: 0			
Herb Stratum R=5'			
1. Festuca perennis	98	Y	FAC
2. Distichlis spicata	10	N	FAC
3. Salicornia pacifica	8	N	OBL
4. Frankenia salina	3	N	FACW
5.			
6.			
7.			
8.			
Total Cover: 119			
Woody Vine Stratum			
1.			
2.			
Total Cover: 0			

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

W-13

SOIL

Sampling Point: SP-3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	Gley1 N 2.5/0	100					SiCL	
12-14.5	5Y 4/2	95	10YR 4/4	5	C	M	SiCL	
14.5+	2.5Y 4/1	63	5Y 7/1	35	D	M	C	
			10YR 5/6	2	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- X Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: none to 24"

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- X Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- X Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Salt crust present within top 6" of soil but not on surface due to dense vegetation

W-14

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano County Sampling Date: 6/7/24

Applicant/Owner: LS Power State: CA Sampling Point: SP-1

Investigator(s): Karen Buck, Victoria Yeffermonaco Section, Township, Range: S 20 R 3N T 1E

Landform (hillslope, terrace, etc.): toeslope Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR): CRRC Lat: 38.079793 Long: -121.839967 Datum: NAD83

Soil Map Unit Name: Tamba mucky clay NWI classification: R4SBA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.) r=30'	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum r=15'			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum r=5'			
1. Salicornia Pacifica	15	N	OBL
2. Polypogon monspeliensis	2	N	FACW
3. Cotula coronopofolia	5	N	OBL
4. Chenopodiastrum murale	1	N	FACU
5. Sperguaria marina	90	Y	OBL
6.			
7.			
8.			
Total Cover:	113		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

W-14

SOIL

Sampling Point: SP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7.5	5Y 4/1	93	7.5 YR 4/6	7	C	M/RC	SiCL	
7.5-11	2.5Y 3/1	98	5YR 3/4	2	C	M/RC	SiCL	
11-18	10YR 2/1	83	2.5Y 4/2	15	D	M		
			10YR 3/6	2	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: rare to 22"

Depth (inches): _____

Hydric Soil Present? Yes X No ____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- X Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): ____

Water Table Present? Yes ____ No X Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): ____

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

W-15

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano County Sampling Date: 6/7/24

Applicant/Owner: LS Power State: CA Sampling Point: SP-1

Investigator(s): Karen Bach, Victoria Yefremenkova Section, Township, Range: S00 T3N R1E

Landform (hillslope, terrace, etc.): toeslope Local relief (concave, convex, none): convex Slope (%): 0

Subregion (LRR): LRRC Lat: 38.079719 Long: -121.839053 Datum: NAD83

Soil Map Unit Name: Tamba Mucky Clay NWI classification: R4SBA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____
Hydric Soil Present?	Yes X	No ____
Wetland Hydrology Present?	Yes X	No ____

Is the Sampled Area within a Wetland? Yes X No ____

Remarks:

VEGETATION

Tree Stratum (Use scientific names.) r=5'	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	Ø		

Sapling/Shrub Stratum r=5'			
1.			
2.			
3.			
4.			
5.			
Total Cover:	Ø		

Herb Stratum r=5'			
1. Salicornia pacifica	2	N	OBL
2. Spergularia marina	8	Y	OBL
3. Cotula coronopofolia	1	N	OBL
4. Bromus madritensis	5	Y	UPL
5. Polypogon monspeliensis	4	Y	FACW
6.			
7.			
8.			
Total Cover:	20		

Woody Vine Stratum r=5'			
1.			
2.			
Total Cover:	Ø		

% Bare Ground in Herb Stratum 50 % Cover of Biotic Crust Ø

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

W-15

Sampling Point: SP-1

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	2.5Y 3/1	99	10YR 3/6	1	C	M	SiCl	
8-16	2.5Y 4/1	98	2.5Y 4/4	2	C	M	SiCl	Redox distinct

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- X Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- X Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

W-15

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Colinville City/County: Solano County Sampling Date: 6/7/24
Applicant/Owner: LS Power State: CA Sampling Point: SP-2
Investigator(s): Kara Buch, Victoria Yohannes Section, Township, Range: S20 T3N R1E
Landform (hillslope, terrace, etc.): toeslope Local relief (concave, convex, none): flat Slope (%): 0
Subregion (LRR): LRRC Lat: 38.079740 Long: -121.839122 Datum: NAD83
Soil Map Unit Name: Tamba muddy clay NWI classification: R4SBA
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No X	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes ____ No X	

Remarks:
Slightly higher elevation grassy area between W-14 and W-15

VEGETATION

Tree Stratum (Use scientific names.) r=30'	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum r=15'			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum r=5'			
1. Festuca perennis	30	Y	FAC
2. Bromus madritensis	45	Y	UPL
3. Bromus hordeaceous	60	Y	FACU
4. Frankenia salina	1	N	OBL
5. Salicornia pacifica	1	N	FACW
6. Iva axillaris	1	N	FACU
7.			
8.			
Total Cover:			
Woody Vine Stratum r=15'			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 30% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

W-15

SOIL

Sampling Point: SP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-9.5	2.5Y 3/1	99	7.5YR 3/4	1	C	M	SiC	
9.5-16	2.5Y 4/1	70	7.5YR 3/4	5	C	M	SiC	
	2.5Y 2.5/1	25						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: rock to 20"

Depth (inches): _____

Hydric Soil Present? Yes X No ____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): ____

Water Table Present? Yes ____ No X Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): ____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

W-16

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano Sampling Date: 6/7/24

Applicant/Owner: LS Power State: CA Sampling Point: Sp-1

Investigator(s): Horton, Victoria Section, Township, Range: S23 T3N R1E

Landform (hillslope, terrace, etc.): toeslope Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR): LRR C Lat: 38.082693 Long: -121.837654 Datum: NAD83

Soil Map Unit Name: Tamba mucky clay NWI classification: R4SBA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.) R= 15'	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum R= 10'			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum R=5'			
1. Polypogon monspeliensis	5	N	FACW
2. Spergularia marina	20	Y	OBL
3. Juncus bufonius	30	Y	FACW
4. Distichlis spicata	20	Y	FAC
5.			
6.			
7.			
8.			
Total Cover:	75		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 27 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

W-16

SOIL

Sampling Point: SP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	2.5Y 5/1	99	7.5YR 3/4	1	C	M	Cl	Redox Concretion
7-16	10YR 4/3	100					SiCl	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: none to 20"

Depth (inches): _____

Hydric Soil Present? Yes X No ____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- X Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- X Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): ____

Water Table Present? Yes ____ No X Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): ____

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

W-16

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano County Sampling Date: 6/1/24
Applicant/Owner: LS Power State: CA Sampling Point: SP-2
Investigator(s): Karen Bach, Victoria Yefremenkova Section, Township, Range: S23 T3N R1E
Landform (hillslope, terrace, etc.): footslope Local relief (concave, convex, none): slope Slope (%): 9
Subregion (LRR): LRR C Lat: 38.082666 Long: -121.837785 Datum: NAD83
Soil Map Unit Name: Diablo-Ayar clay 2-9% slopes NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____ No X	
Wetland Hydrology Present?	Yes ____ No X	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.) 10'x20'	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover:	0		
Sapling/Shrub Stratum 10'x15'			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum r=5'			
1. Frankenia salina	15	N	FACW
2. Juncus balticus	25	Y	FACW
3. Distichlis spicata	80	Y	FAC
4. Bromus madritensis	5	N	UPL
5.			
6.			
7.			
8.			
Total Cover:	125		
Woody Vine Stratum 10x15'			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

W-16

SOIL

Sampling Point: SP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 2/1	100					LO	
3-8.5	2.5Y 4/1	100					SaLO	
8.5-16	2.5Y 3/1	100					SiCl	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

W-16

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano Sampling Date: 6/7/24
Applicant/Owner: LS Power State: CA Sampling Point: SP-3
Investigator(s): Karen Buch, Victoria Yefremenkova Section, Township, Range: S23 T3N R1E
Landform (hillslope, terrace, etc.): toeslope Local relief (concave, convex, none): slope Slope (%): 5
Subregion (LRR): LRR C Lat: 38.082653 Long: -121.838206 Datum: NAD83
Soil Map Unit Name: Tamba muddy clay NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.) R=15'	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
Total Cover: 0			
Sapling/Shrub Stratum R=10'			
1.			
2.			
3.			
4.			
5.			
Total Cover: 0			
Herb Stratum R=5'			
1. Distichlis spicata	85	Y	FAC
2. Festuca Perennis	70	Y	FAC
3. Bromus madritensis	30	Y	UPL
4. Polypogon monspeliensis	5	N	FACW
5. Frankenia salina	1	N	FACW
6.			
7.			
8.			
Total Cover: 191			
Woody Vine Stratum			
1.			
2.			
Total Cover: 191			

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
__ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

W-16

SOIL

Sampling Point: SP-3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	2.5Y 3/1	97	7.5YR 3/4	3	C	M	SiCl	
6-15	10YR 4/1	25	2.5Y 4/4	5	C	M	SaLO	
	2.5Y 3/1	67	10YR 3/4	3	C	M	SiCl	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- X Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- X Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Plowed Soils (C6)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Thin Muck Surface (C7)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

W-17

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano Sampling Date: 06-24-24

Applicant/Owner: LS Power State: CA Sampling Point: SP-1

Investigator(s): Christina Rodriguez, Sidney Wells Section, Township, Range: 3N 1E 26

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): NONE Slope (%): 0

Subregion (LRR): C Lat: 38.079777 Long: -121.833901 Datum: NAD1983

Soil Map Unit Name: DIABLO-AYAR CLAYS, 2 to 9% slopes NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 sq. feet)			
1. DISTICHLIS SPICATA	5	N	FAC
2. RUMEX CRISPUS	25	Y	FAC
3. FRANKENIA SALINA	35	Y	FACW
4.			
5.			
6.			
7.			
8.			
	65 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 35 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

W-17

SOIL

Sampling Point: SP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/2	85	5YR 4/6	15	C	M	CL	
6-11	7.5YR 4/1	97	5YR 4/6	3	C	M	CL	
11-15	7.5YR 3/1	100					CL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

Hydrologic source NHD Ephemeral Stream / River
Redox concentrations in the dark layer

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- X Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

W-17

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano Sampling Date: 06-24-24

Applicant/Owner: LS Power State: CA Sampling Point: SP-2

Investigator(s): Sidney Wells, Christina Rodriguez Section, Township, Range: 3N 1E 26

Landform (hillslope, terrace, etc.): Flat to slight hillslope Local relief (concave, convex, none): NONE Slope (%): <2

Subregion (LRR): C Lat: 38.079765 Long: -121.833901 Datum: NAD1983

Soil Map Unit Name: DIABLO-AYAR CLAYS, 2 to 9% slopes NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____ No X	
Wetland Hydrology Present?	Yes ____ No X	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: Sq. ft.)			
1. Polypogon monospeliensis	100	Y	FACW
2. Distichlis spicata	20	N	FAC
3.			
4.			
5.			
6.			
7.			
8.			
	120 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

W-17

SOIL

Sampling Point: SP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-9	5Y 3/2	100					Sa Lo	
9-13	10YR 3/2	100					Sa Lo	
13-19	10YR 3/1	100					Sa	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

NHD Ephemeral Stream/River

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

W-18

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano Sampling Date: 06-24-24

Applicant/Owner: LS Power State: CA Sampling Point: SP-1

Investigator(s): Christina Rodriguez, Sidney Wells Section, Township, Range: 00 3N 1E

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): NONE Slope (%): 0

Subregion (LRR): C Lat: 38,078615 Long: -121.835576 Datum: NAD 1983

Soil Map Unit Name: Valdez silt loam, drained, 0 to 2% slopes MLRA 16 NWI classification: FRESHWATER EMERGENT WETLAND

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____ No X	
Wetland Hydrology Present?	Yes ____ No X	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	Ø = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	Ø = Total Cover		
Herb Stratum (Plot size: 5 sq. ft.)			
1. Distichlis spicata	100	Y	FAC
2. Centaurea solstitialis	35	N	Ø
3.			
4.			
5.			
6.			
7.			
8.			
	135 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	Ø = Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

W-18

SOIL

Sampling Point: SP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
							SAND	
0-3.5	10YR 2/1	100						
3.5-9	7.5 YR 3/3	100					SAND	
9-15.5	7.5YR 3/2	95	10YR 5/6	5%	C	M	SAND	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

W-18

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Arid West Region
See ERDC/EL TR-08-28; the proponent agency is CECW-COR

OMB Control #: 0710-0024, Exp: 06/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: COLLINSVILLE City/County: SOLANO Sampling Date: 6-25-24
Applicant/Owner: LS POWER State: CA Sampling Point: SP-2
Investigator(s): SIDNEY WELLS & CY RODRIGUEZ Section, Township, Range: 00 3N 1E
Landform (hillside, terrace, etc.): Flat Local relief (concave, convex, none): none Slope (%): 0
Subregion (LRR): C Lat: 38.078828 Long: -121.835184 Datum: NAD 1983
Soil Map Unit Name: Valdez silt loam, drained 0 to 2% slopes, MLRA 16 NWI classification: FRESHWATER EMERGENT WETLAND
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes ____ No X

Is the Sampled Area within a Wetland? Yes ____ No X

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
	0 =Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 =Total Cover		
Herb Stratum (Plot size: 5sq ft)			
1. Rumex crispus	4		FAC
2. Distichlis spicata	100	Y	FAC
3. Brassica? sp. (nigra?)	<1		
4. Centaurea solstitialis (dead)	15		
5. Lolium perenne	1		FAC
6. Hordeum marinum	2		FAC
7. JUNCUS sp. (balticus?)	12		FACW
8.			
	135 =Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 =Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)
Prevalence Index = B/A = ____	

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
____ Prevalence Index is ≤3.0[1]
____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: The Juncus sp. & BRASSICACEAE did not have all parts for identification confirmation. Centaurea solstitialis is dead.

W-18

SOIL

Sampling Point: SP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3.5	7.5YR 2/1						LoSa	
3.5-8.5	10YR 3/4	96	10YR 4/4	4	C/PL	M	Sa	
8.5-16.5	5YR 4/6	93	7.5 YR 4/6	7	C	M	Sa	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

W-18

U.S. Army Corps of Engineers **WETLAND DETERMINATION DATA SHEET – Arid West Region** See ERDC/EL TR-08-28; the proponent agency is CECW-COR	*OMB Control #: 0710-0024, Exp: 06/30/2024* *Requirement Control Symbol EXEMPT:* *(Authority: AR 335-15, paragraph 5-2a)*

Project/Site: COLLINSVILLE City/County: SOLANO Sampling Date: 6-25-24

Applicant/Owner: LS POWER State: CA Sampling Point: SP-3

Investigator(s): S. WELLS + CYRODRIGUEZ Section, Township, Range: 00 3N 1E

Landform (hillside, terrace, etc.): flat Local relief (concave, convex, none): none Slope (%): Ø

Subregion (LRR): C Lat: 38.078463 Long: -121.835468 Datum: NAD1983

Soil Map Unit Name: VALDEZ SIH 10AM, drained, 0 to 2% slopes, MLRA 16 NWI classification: FRESHWATER EMERGENT WETLAND

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the Sampled Area within a Wetland?** Yes ___ No X
Hydric Soil Present?	Yes X	No ___	
Wetland Hydrology Present?	Yes ___	No X	

Remarks: Revisited to look for hydrology 07-08-24. none observed.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	Ø =Total Cover		

Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
	Ø =Total Cover		

Herb Stratum (Plot size: 5 sq.ft.)			
1. SCHOENOPLECTUS CALIFORNICUS	15	N	OBL
2. RUMEX CRISPUS	25	N	FAC
3. FRANKENIA SALINA	35	Y	FACW
4. HELIOTROPIUM CURASSAVICUM	5	N	FACU
5. XANTHIUM STRUMARIUM	15	N	FAC
6. PSEUDOGNAPHALIUM STRAMINEUM	3	N	FAC
7. DISTICHLIS SPICATA	50	Y	FAC
8.			
	148 =Total Cover		

Woody Vine Stratum (Plot size: ___)			
1.			
2.			
	Ø =Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ___

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: XANthium strumarium (orientale in Japan) dead but spines not observed at nodes.

LW-18

Sampling Point: SP-3

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 2/1	97	7.5YR 5/6	3	C	PL,M	SaCl LO	OXIDIZED RHIZOSPHERE among small living roots. Very little, not 20%
5-9	10YR 3/3	98	5YR 4/6	2	C	M	Sa	
9-15	2.5Y 3/2	95	7.5YR 4/6	5	C	M	Sa	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Oxidized Rhizospheres in the first layer were observed on tiny fibrous roots but limited and hard to see once wetted. Pulled a second core-hole pit to look for more & again, hard to tell if roots were alive ⊕ not 20%, only a few.

Note:
This sampling point did not meet the three criteria and the data sheet was revised on 11/25/24 to indicate it is not a wetland. See section 5.1 of the Aquatic Resources Delineation Report for more detail.

W-19

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Arid West Region
See ERDC/EL TR-08-28; the proponent agency is CECW-COR

OMB Control #: 0710-0024, Exp: 06/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Olivehurst City/County: Solano Sampling Date: 10-25-24
Applicant/Owner: LS Power State: CA Sampling Point: SP-1
Investigator(s): Sidney Wells, Christina Rodriguez Section, Township, Range: 3N 1E 23
Landform (hillside, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0
Subregion (LRR): C Lat: 38.082449 Long: -121.837352 Datum: NAD 1983
Soil Map Unit Name: DIABLO-AYAR CLAYS, 2 to 9% slopes NWI classification: 0
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No X SW 11/25/24
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes X	No ____	

Remarks: Strong indicators of Hydrophytic Vegetation and wetland hydrology as well as landscape position. Problematic hydric soil likely! Seasonally ponded soil.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 =Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 =Total Cover		
Herb Stratum (Plot size: 5 sqft)			
1. CENTROMADIA PUNGENS	25	Y	FAC(W)
2. DISTICHLIS SPICATA	35	Y	FAC
3. LOLIUM PERENNE	5	N	FAC
4.			
5.			
6.			
7.			
8.			
	65 =Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 =Total Cover		

% Bare Ground in Herb Stratum 32% % Cover of Biotic Crust 3%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)
Prevalence Index = B/A = ____	

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: Centromadia pungens ssp. pungens = FAC; C. parryi = FACW → both FAC.

W-19

Sampling Point: SP-1

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-14	5YR 3/1	100					C1	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: CLAY

Depth (inches): 0-14

Hydric Soil Present? Yes ___ No X

Remarks: Recently developed wetland or seasonally ponded soil. Likely seasonally ponded soil due to restrictive clay layer.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- X Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- X Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Biotic crust polygon shaped w/ characteristic upturned edges + darker surface layer.

Note:
This sampling point did not meet the three criteria and the data sheet was revised on 11/25/24 to indicate it is not a wetland. See section 5.1 of the Aquatic Resources Delineation Report for more detail.

W-19

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Arid West Region
See ERDC/EL TR-08-28; the proponent agency is CECW-COR

OMB Control #: 0710-0024, Exp: 06/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Collinsville City/County: Solano Sampling Date: 06-26-24
Applicant/Owner: LS power State: CA Sampling Point: SP-2
Investigator(s): Sidney Wells, Christina Rodriguez Section, Township, Range: 3N 1E 23
Landform (hillside, terrace, etc.): flat Local relief (concave, convex, none): none Slope (%): 0
Subregion (LRR): C Lat: 38.082532 Long: -121.837631 Datum: NAD1983
Soil Map Unit Name: TAMBA MUCKY CLAY, MLRA 16 NWI classification: 0
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes X No ____

Is the Sampled Area within a Wetland? Yes X No X SW 11/25/24

Remarks: Strong indicators of Hydrophytic Vegetation & wetland hydrology as well as landscape position. Problematic hydric soil likely; seasonally ponded soil

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
	0 =Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 =Total Cover		
Herb Stratum (Plot size: 5 sq ft.)			
1. Centromadia pungens	60	Y	FACW
2. Distichlis spicata	40	Y	FAC
3. Hordeum sp.	1	N	FACU
4.			
5.			
6.			
7.			
8.			
	101 =Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 =Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 2

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
____ Prevalence Index is ≤3.0[1]
____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: Hordeum jubatum (FAC), marinum (FAC), murinum (FACU), likely marinum or murinum but ID features not present, plants dead.

TW-19

SOIL

Sampling Point: SP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	2.5Y 3/2	99	2.5 YR 5/8	1	C	PL/M	CL	
5-14	2.5Y 4/2						CL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: CLAY

Depth (inches): 0-14

Hydric Soil Present? Yes ___ No X

Remarks: May be a recently developed wetland or is a seasonally ponded soil likely seasonally ponded soil due to restrictive clay layer. Landscape position generally sloping 'downhill' along NHD flowline/water.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- X Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- X Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Next to ephemeral stream/river NHD flowline. Biotic crust is polygon shaped w/ characteristic upturned edges + darker surface layer.

Note:
This sampling point did not meet the three criteria and the data sheet was revised on 11/25/24 to indicate it is not a wetland. See section 5.1 of the Aquatic Resources Delineation Report for more detail.

W-19

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Arid West Region
See ERDC/EL TR-08-28; the proponent agency is CECW-COR

OMB Control #: 0710-0024, Exp: 06/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: COLLINS VILLE City/County: SUISUN CITY/SOLANO Sampling Date: 6-26-24
Applicant/Owner: LS POWER State: CA Sampling Point: SP-3
Investigator(s): S. WELLS + C.Y. RODRIGUEZ Section, Township, Range: 00 3N 1E
Landform (hillside, terrace, etc.): flat Local relief (concave, convex, none): NONE Slope (%): 0
Subregion (LRR): C Lat: 38.082512 Long: -121.838496 Datum:
Soil Map Unit Name: TAMBA MUCKY CLAY, MLRA 16 NWI classification: RIVERINE
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes X No ____

Is the Sampled Area within a Wetland? Yes X No X SW 11/25/24

Remarks: STRONG indicators of Hydrophytic vegetation and wetland hydrology as well as landscape position. Problematic hydric soil likely; seasonally ponded soil.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 =Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 =Total Cover		
Herb Stratum (Plot size: 5 sq ft.)			
1. SALICORNIA PACIFICA	20%	Y	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	20% =Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 =Total Cover		

% Bare Ground in Herb Stratum 80% % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)
Prevalence Index = B/A = ____	

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: Salicornia pacifica can handle saline conditions.

W-19

SOIL

Sampling Point: SP-3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16.5	7.5YR 3/1	99	5YR 4/6	1	C	M	CLAY	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: CLAY

Depth (inches): 0-16.5

Hydric Soil Present? Yes ___ No X

Remarks:

Soils w faint or no indicators! Recently Developed Wetland or Seasonally Ponded Soil. Likely seasonally ponded soil due to restrictive clay layer. Seems to have been happening for a long time.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- X Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- X Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Located in NWI riverine. Hard/brittle salt crust from evaporation of saline surface water (presence of Salicornia pacifica).

Note:
This sampling point did not meet the three criteria and the data sheet was revised on 11/25/24 to indicate it is not a wetland. See section 5.1 of the Aquatic Resources Delineation Report for more detail.

W-19

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: SUISUN CITY/SOLANO Sampling Date: 6-26-24

Applicant/Owner: LS Power State: CA Sampling Point: SP-4

Investigator(s): CY RODRIGUEZ + S. WELLS Section, Township, Range: 23 3N 1E

Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): NONE Slope (%): Ø

Subregion (LRR): C Lat: 38.082023781 Long: -121.838289534 Datum: NAD 1983

Soil Map Unit Name: TAMBA MUCKY CLAY NWI classification: Ø

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No _____

Hydric Soil Present? Yes _____ No X

Wetland Hydrology Present? Yes _____ No X

Is the Sampled Area within a Wetland? Yes X No X SW 11/25/24

Remarks: Strong indicator of hydrophytic vegetation + likely a wetland 'periodically lacking indicators of wetland hydrology' due to DRY SEASON. Problematic hydric soil likely seasonally ponded soil. Landscape position, vicinity to other wetlands supports as well as aerial imagery.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	Ø = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	Ø = Total Cover		
Herb Stratum (Plot size: 5 sq. ft.)			
1. Distichlis spicata	35	Y	FAC
2. Frankenia salina	1	N	FACW
3. Hordeum marinum	90	Y	FAC
4. Lolium perenne	1	N	FAC
5.			
6.			
7.			
8.			
	127 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	Ø = Total Cover		

% Bare Ground in Herb Stratum Ø % Cover of Biotic Crust Ø

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: Hordeum marinum was very dry and inflorescence was broken/blown away on all specimens. Species identified through familiarity; also possibly Hordeum murinum. Atriplex sp. next to area to be sprayed by W-20 - salt on leaves + leaves of the Distichlis spicata.

W 19

SOIL

Sampling Point: SP-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3.5	5Y 3/1	99	10YR 5/6	1	C	M	C1	
3.5-10	2.5Y 3/2	100					C1	
10-12	10YR 4/2	100					SaC1	
12-15	2.5Y 4/2	100					SiC1	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3) no Redox concentrations
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8) no redox
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: CLAY

Depth (inches): 0-10

Hydric Soil Present? Yes ____ No X

Remarks: Likely seasonally ponded soil due to restrictive clay layer.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): ____

Water Table Present? Yes ____ No X Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): ____

B7 & B11 not strong INDICATORS. DRY SEASON

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Periods of potential inundation visible on aerial imagery as well as salt crust. Salt visible on Distichlis spicata in the area. Landscape position indicates that surface water inundation likely during RAIN SEASON (visit is during dry season). Located on the fringe of wetland, level, & restrictive layer.

Note:
This sampling point did not meet the three criteria and the data sheet was revised on 11/25/24 to indicate it is not a wetland. See section 5.1 of the Aquatic Resources Delineation Report for more detail.

W19

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Suisun City/Solano Sampling Date: 6-26-24

Applicant/Owner: LS Power State: CA Sampling Point: SP-5

Investigator(s): Sidney Wells, Christina Rodriguez Section, Township, Range: 3N 1E 23

Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): NONE Slope (%): 0

Subregion (LRR): C Lat: 38.082511 Long: -121.838500 Datum: NAD 1983

Soil Map Unit Name: TAMBA MUCKY CLAY, MLRA 16 NWI classification: RIVERINE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes X No X SW 11/25/24
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes X	No _____	

Remarks: Strong indicators of hydrophytic vegetation and wetland hydrology as well as landscape position. Problematic hydric soil likely: seasonally ponded soil.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5SQ.FT.)			
1. Distichlis spicata	7	Y	FAC
2. Polypogon monospeliensis	5	Y	FACW
3.			
4.			
5.			
6.			
7.			
8.			
	12 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 83 % Cover of Biotic Crust 12

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

W-19

SOIL

Sampling Point: SP-5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	2.5Y 3/1	100					Clay	
10-15.25	10YR 3/2	100					Clay	Slight horizon of sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: CLAY

Depth (inches): 0-15.25

Hydric Soil Present? Yes ___ No X

Remarks: Likely seasonally ponded soil due to restrictive clay layer.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- X Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- X Salt Crust (B11)
- X Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): 0

Water Table Present? Yes ___ No X Depth (inches): 0

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): 0

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Biotic crust is polygon shaped w/ characteristic upturned edges + darker surface layer. Hard/brittle salt crust from evaporation of saline surface water. NWI Riverine

Note:
This sampling point did not meet the three criteria and the data sheet was revised on 11/25/24 to indicate it is not a wetland. See section 5.1 of the Aquatic Resources Delineation Report for more detail.

W-19

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Suisun City/Solano Sampling Date: 07-01-24

Applicant/Owner: LS Power State: CA Sampling Point: SP-6

Investigator(s): Sidney Wells, Christina Rodriguez Section, Township, Range: 3N 1E 23

Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): C Lat: 38.082528 Long: -121.838312 Datum: NAD1983

Soil Map Unit Name: TAMBA MUCKY CLAY, MLRA 16 NWI classification: 0

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes X No X
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes ____ No X	

SW 11/25/24

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5sq.ft.)			
1. Rumex crispus	15	N	FAC
2. Distichlis spicata	80	Y	FAC
3. Brassica nigra	5	N	
4. Lepidium latifolium	1	N	FAC
5.			
6.			
7.			
8.			
	101 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: Distichlis spicata cover is largely dead, approximately 50% Absolute cover seems alive. The dead forms a sort of mat going in the east direction which would be due to wind based on the other, taller plants.

W-19

SOIL

Sampling Point: SP-6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	2.5Y 3/1	99	10YR 3/3	1	C	PL	Clay	
6-15.5	10YR 4/2	93%	7.5YR 4/6	7%	C	M,PL	Cl	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Clay

Depth (inches): 0-15.5

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): 0"

Water Table Present? Yes ___ No X Depth (inches): 0"

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): 0"

B6 & B7 not strong indicators

Wetland Hydrology Present? Yes ___ No X (DRY SEASON)

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Area crusty & had potential for cracks under dense vegetation but looks to be possible cow footprints causing lots of indentations & cracks & holes in the soil. Also some cow patties dried. Landscape position indicates that surface water inundation likely during R&I season (visit is during dry season). Located on the fringe of wetland, level, & restrictive layer.

W-22

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: COLLINSVILLE City/County: SUISUN CITY / SOLANO Sampling Date: JULY 1, 2024

Applicant/Owner: LS POWER State: CA Sampling Point: SP-1

Investigator(s): S. WELLS + C. RODRIGUEZ Section, Township, Range: 3N 1E 23

Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): C Lat: 38.082479 Long: -121.838864 Datum: NAD 1983

Soil Map Unit Name: TAMBA MUCKY CLAY, MLRA 16 NWI classification: FRESHWATER EMERGENT WETLAND

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks: Landscape position higher than surrounding area – maybe a berm/levee.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 meter)			
1. Foeniculum vulgare	15%	N	
2. Lepidium latifolium	2%	N	FAC
3. Juncus spp. (balticus?)	90%	Y	FACW
4.			
5.			
6.			
7.			
8.			
	107 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: No flowers found on Juncus spp. Potentially J. balticus or J. mexicanus based on the botanical surveys completed for the project – both are FACW.

W-22

SOIL

Sampling Point: SP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4.5	10YR 2/1	100					LoSa	
4.5-15	2.5YR 3/2	100					Sa	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ No X

Remarks: Landscape position looks to be a berm/levee relative to surrounding area.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): _____

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dense vegetation (mostly dead Juncus spp.) covering ground. Dug under + no signs of soils - cracks, salt crust, etc.

W22

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: SUISUN CITY / SOLANO Sampling Date: 07-01-24

Applicant/Owner: US Power State: CA Sampling Point: SP2

Investigator(s): Sidney Wells, Christina Rodriguez Section, Township, Range: 3N 1E 23

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0

Subregion (LRR): C Lat: 38.082455 Long: -121.839133 Datum: NAD1983

Soil Map Unit Name: TAMBA MUCKY CLAY, MLRA 16 NWI classification: FRESHWATER EMERGENT WETLAND

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks: Redox and oxidized rhizospheres along living roots, though present, were both just barely 2% - therefore not strong indicators for both soil + hydrology.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5SQFT)			
1. Lepidium latifolium	20	N	FAC
2. Heliotropium curassavicum	60	Y	FACU
3. Schoenoplectus americanus	25	Y	OBL
4. dead sticks (maybe Brassicaceae)	7	N	
5.			
6.			
7.			
8.			
	112 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: Heliotropium curassavicum very dense and S. americanus just starting. On this wetland area L. latifolium monoculture nearby in the larger potential area, may indicate invasion in seasonally flooded marsh + slightly higher elevation.

W-22

SOIL

Sampling Point: SP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-5	7.5YR 2.5/1	100					SACLLO	ORGANIC matter visual
5-16	10YR 4/1	95	7.5YR 3/4	5	C	M	SAND	C/soft masses; reddish mottles; sandy soils 1987 manual

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5) BARELY 2%
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___ NOT STRONG INDICATOR

Remarks: Matrix chroma of 2 or less + 2% redox concentrations though not much more than 2% - very little redox visible. High organic matter at surface. seen visually-soil texture determination (p.29) not done due to 'CLLO' often 'inconclusive' sandy soils Arid West supp.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4) BARELY 2%
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): 0"

Water Table Present? Yes ___ No X Depth (inches): 0"

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): 0"

Wetland Hydrology Present? Yes X No ___ NOT STRONG INDICATOR

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: C3 observed along living a few roots, but very low percentage overall

W-22

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: COLLINSVILLE City/County: SUISUN CITY/SOLANO Sampling Date: JULY 1 2024

Applicant/Owner: LS POWER State: CA Sampling Point: SP-3

Investigator(s): S. WELLS + CY. RODRIGUEZ Section, Township, Range: 3N 1E 23

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0

Subregion (LRR): C Lat: 38.082382 Long: -121.839942 Datum: NAD1983

Soil Map Unit Name: TAMBA MUCKY CLAY, MLRA 16 NWI classification: FRESHWATER EMERGENT WETLAND

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes X	No ____	

Remarks: Strong indicators of hydrophytic vegetation + wetland hydrology. Problematic hydric soil likely seasonally ponded.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5SQFT)			
1. Schoenoplectus acutus	45	Y	OBL
2. Polypogon monspeliensis	20	Y	FACW
3. Heliotropium curassavicum	5	N	FAC
4.			
5.			
6.			
7.			
8.			
	70 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 30% % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species ____	x 1 =	____
FACW species ____	x 2 =	____
FAC species ____	x 3 =	____
FACU species ____	x 4 =	____
UPL species ____	x 5 =	____
Column Totals: ____ (A)		____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

W-22

SOIL

Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	7.5YR 2.5/1	100					SANDY CLAY	
4-14	10YR 3/1	100					SAND	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: SANDY CLAY

Depth (inches): 0-4

Hydric Soil Present? Yes ___ No X

Remarks: Dominant chroma of 2 or less but lacking Redox concentrations. Darker organic surface layer = sandy clay → clay could present restrictive layer matter (sandy soil 1987 manual) for Seasonally Ponded problematic hydric soil.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- X Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Surface soil cracks apparent in vicinity of sampling point and similar vegetation, just more S acutus and bare ground.

W-22

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: COLLINSVILLE City/County: SUISUN CITY/SOLANO Sampling Date: 7-9-24

Applicant/Owner: LS POWER State: CA Sampling Point: SP-4

Investigator(s): CY. RODRIGUEZ + S. WELLS Section, Township, Range: 3N 1E 23

Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): none Slope (%): Ø

Subregion (LRR): C Lat: 38.082332 Long: -121.840525 Datum: NAD 1983

Soil Map Unit Name: TAMBA MUCKY CLAY, MURA16 NWI classification: RIVERINE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No _____

Hydric Soil Present? Yes _____ No X

Wetland Hydrology Present? Yes _____ No X

Is the Sampled Area within a Wetland? Yes _____ No X

Remarks: On the larger potential wetland area, Lepidium latifolium invasion / monoculture may be changing the hydrology & can be associated w/ slightly higher areas of elevation.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	Ø = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	Ø = Total Cover		
Herb Stratum (Plot size: 5SQFT.)			
1. LEPIDIUM LATIFOLIUM	80	Y	FAC
2. POLYPOGON MONOSPELIENSIS	10	N	FACW
3. DISTICHLIS SPICATA	35	Y	FAC
4.			
5.			
6.			
7.			
8.			
	125 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	Ø = Total Cover		

% Bare Ground in Herb Stratum Ø % Cover of Biotic Crust Ø

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: Lepidium latifolium invaded area / monoculture. Very dense and likely @ slightly higher elevation / bordering area w/ hydrology (potential wetland area).

W-22

SOIL

Sampling Point: SP-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3.5	5Y 2.5/1						SA CL	full of roots + plant material >5%
3.5-15	5Y 3/1	99	2.5YR 4/8	1	C	M	SAND	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: SANDY CLAY

Depth (inches): 0-3.5

Hydric Soil Present? Yes ___ No X

Remarks: Potential for seasonally ponded problematic hydric soil w/ dominant chroma of 2 or less but lacking redox concentrations @ 2cm or higher. Clay could present restrictive layer + roots + plant material (darker organic) @ surface (1987 manual).

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: On the immediate surrounding areas that lack vegetation the surface soil cracks are apparent as well as the salt crust + similar to other seasonally ponded wetlands in the area. Hydrology not observed in the vegetation plot or areas dominated by Lepidium latifolium 'monoculture'. NW1 Riverine.

W-22

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Suisun City / Solano Sampling Date: 07-08-24

Applicant/Owner: LS Power State: CA Sampling Point: SP-5

Investigator(s): Sidney Wells, Christina Rodriguez Section, Township, Range: 3N 1E 23

Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): C Lat: 38.082327 Long: -121.840606 Datum: NAD1983

Soil Map Unit Name: TAMBA MUCKY CLAY, MLRA16 NWI classification: Riverine

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5sq FT)			
1. Distichlis spicata	30	Y	FAC
2. Salicornia pacifica	40	Y	OBL
3. Polypogon monospeliensis	1	N	FACW
4.			
5.			
6.			
7.			
8.			
	71 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 29 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 % (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: No Lepidium latifolium in immediate vicinity. Salicornia pacifica can prefer more salinity.

W-22

SOIL

Sampling Point: SP-5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 2/2	100					Clay loam	
5-12.5	10YR 2/1						Silty Clay	
12.5-16.5	5Y 4/1	93	10YR 5/8	7	C	M	Clay	Redox concentrations/ masses

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- X Depleted Below Dark Surface (A11)
- ~ Thick Dark Surface (A12) Depleted layer below 12in w/ redox & soft masses
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present): auger did not pull 6 inches with

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:
Redox concentrations as soft masses. >2% distinct → low chroma hue value.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- X Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- X Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): 0'

Water Table Present? Yes ___ No X Depth (inches): 0'

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): 0'

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Surface soil cracks in the immediate vicinity of the vegetation community in open bare ground. Salt crust result from saline surface water likely + Distichlis/Shuttle + Salicornia pacifica likes more saline.

W-22

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: COLLINSVILLE City/County: SUISUN CITY/SOLANO Sampling Date: JULY 10, 2024

Applicant/Owner: LS POWER State: CA Sampling Point: SP-6

Investigator(s): C.Y. RODRIGUEZ & J. WELLS Section, Township, Range: 3N 1E 23

Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): NONE Slope (%): 0

Subregion (LRR): C Lat: Long: Datum: NAD 1983

Soil Map Unit Name: TAMBA MUCKY CLAY, MLRA 16 NWI classification: Ø

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ____

Hydric Soil Present? Yes ____ No X

Wetland Hydrology Present? Yes ____ No X

Is the Sampled Area within a Wetland? Yes ____ No X

Remarks: In the larger potential wetland area, Lepidium latifolium invasion/monoculture may be changing the hydrology ⊕ can be associated w/ slightly higher areas of elevation.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
	Ø = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	Ø = Total Cover		
Herb Stratum (Plot size: Sq. ft.)			
1.			
2. SALICORNIA PACIFICA	2		OBL
3. LEPIDIUM LATIFOLIUM	25		FAC
4. DISTICHLIS SPICATA	90		FAC
5.			
6.			
7.			
8.			
	117 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	Ø = Total Cover		

% Bare Ground in Herb Stratum Ø % Cover of Biotic Crust Ø

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: In the transition area of Lepidium latifolium invasion/monoculture.

W-22

SOIL

Sampling Point: SP-6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3.5	2.5Y 3/2	98	5YR 3/4	2			SACL	
3.5-15	10YR 3/1	99	10YR 5/6	1	C,CS	M	SAND	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: SACL

Depth (inches): 0-3.5

Hydric Soil Present? Yes ___ No X

Remarks: Removed a second core to confirm 3.5 vs. 4 for depth for first layer being Sandy redox matrix. Potential for seasonally ponded problematic soil by Sandy clay textures. Organic/plant matter darker + visible in first layer (1987 manual)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Hydrology not apparent in areas w/ Lepidium latifolium transition or monoculture. Could indicate slightly higher elevation than nearby less vegetated areas w/ soil cracks + Schoenoplectus americanus

W-23

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: COLLINSVILLE City/County: SUISUN CITY/SOLANO Sampling Date: JULY 2, 2024
Applicant/Owner: LS POWER State: CA Sampling Point: SP-1
Investigator(s): S. WELLS + CY RODRIGUEZ Section, Township, Range: 3N 1E 23
Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0
Subregion (LRR): C Lat: 38.082503 Long: -121.839880 Datum: NAD 1983
Soil Map Unit Name: PIABLO - AYAR CLAYS + TAMBA MUCKY CLAY NWI classification: none
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:
Point next to NWI: PEM 1B freshwater emergent wetland

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5)			
1. FRANKENIA SALINA	30%	Y	FACW
2. DISTICHLIS SPICATA	75%	Y	FAC
3. DRIED BRANCHES (NO ID)	2%	N	
4. SCHOENOPLECTUS CALIFORNICUS	2%	N	OBL
5.			
6.			
7.			
8.			
	107 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
__ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

4W-23

SOIL

Sampling Point: SP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-1.5	5YR 3/1	100					SaCl	
1.5-8.5	10YR 4/1	100					SaCl	
8.5-17.5	Gley1 5/10Y	99	10YR 4/6	1	C	M	Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- X Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- X Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): 0"

Water Table Present? Yes _____ No X Depth (inches): 0'

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): 0"

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Standing, ponded water up in 20 feet. Typha spp. + large dense stand S. californicus. Water stained leaves + salt crust up in 10 feet. Heavily cracked.

W-23

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: COLLINSVILLE City/County: Suisun City/SOLANO Sampling Date: JULY 2, 2021

Applicant/Owner: LS POWER State: CA Sampling Point: SP-2

Investigator(s): CY RODRIGUEZ + S. WELLS Section, Township, Range: 3N 1E 23

Landform (hillslope, terrace, etc.): slight hillslope Local relief (concave, convex, none): none Slope (%): 22.5

Subregion (LRR): C Lat: 38.082501 Long: -121.839900 Datum: NAD 1983

Soil Map Unit Name: PIABLO-AYAR CLAYS, 2 to 9% slopes NWI classification: Q

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ✓)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		

Sapling/Shrub Stratum (Plot size: ✓)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		

Herb Stratum (Plot size: 5)			
1. Dead grass	45		
2.			
3. Dead sticks/twigs (no parts to ID)	30		
4. but probably Brassica			
5.			
6. Dead Brassicaceae	25		
7.			
8.			
	100 = Total Cover		

Woody Vine Stratum (Plot size: ✓)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks: All plants are dead. Brassicaceae spp. ↳ FAC U + Raphanus sativus ?. } Probably. Brassica seeds (most upland spp.) Brassica are FAC U species

W-23

Sampling Point: SP-2

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14.5	2.5Y 3/2	100					CLO	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): 0

Water Table Present? Yes _____ No X Depth (inches): 0'

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): 0'

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Cleared dead veg to look at soil surface. CRUMBLY SOIL w/ CLODS + CREVICES + BURROWS but not surface soil cracks.

Note:
This sampling point did not meet the three criteria and the data sheet was revised on 11/25/24 to indicate it is not a wetland. See section 5.1 of the Aquatic Resources Delineation Report for more detail.

W-24

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: COLLINSVILLE City/County: SOLANO Sampling Date: 07-02-24

Applicant/Owner: LS POWER State: CA Sampling Point: SP-1

Investigator(s): S. WELLS, CY. RODRIGUEZ Section, Township, Range: 23 3N 1E

Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): none Slope (%): Ø

Subregion (LRR): C Lat: 38.082579 Long: -121.842914 Datum: NAD 1983

Soil Map Unit Name: Tambra Mucky Clay NWI classification: Ø

Are climatic / hydrologic conditions on the site typical for this time of year? Yes Y No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes Ø	No ____	Is the Sampled Area within a Wetland? Yes X No X
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes ____	No X	

SW 11/25/24

Remarks: Sandy soils. Large, dry salt crust area to the Northwest = NWI freshwater pond + soils water w/ NWI Riverine between. Strong indicators of hydrophytic vegetation + hydric soil: likely lacking hydrology due to dry season + sandy soil.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	

Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	

Herb Stratum (Plot size: ____)			
1. Distichlis spicata	50	Y	FAC
2. Heterotheca grandiflora	3	N	
3. Bromus diandrus	1	N	
4. unknown spp. #1 (twigs)	10	N	
5. unknown spp. #2 (grass)	6	N	
6.			
7.			
8.			
	70	= Total Cover	

Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes Ø No ____

Remarks: Heterotheca grandiflora likely based on skeletons (dead) plants + one partially live plant. Jepson ecology: disturbed areas, dry streambeds, sand.

W-24

SOIL

Sampling Point: SP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8.5	7.5YR 3/2	95	7.5 YR 5/8	5	C	M	Sandy	coated sand grains
8.5-16	10YR 3/3	97	5YR 5/8	3	C	M	Sandy	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5) common redox concentrations
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks: S5 based on the first soil layer where concentrations where within a matrix. An additional, a few coated sand grains were observed by hand lense.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): 0'

Water Table Present? Yes ___ No X Depth (inches): 0'

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): 0'

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: 300 feet to the northwest is a large, unvegetated area w/ salt crust. Likely wetland / periodically lacking indicators of wetland hydrology / due to dry season.

W-24

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: COLLINSVILLE City/County: SOLANO Sampling Date: JULY 2, 2024

Applicant/Owner: LS POWER State: CA Sampling Point: SP-2

Investigator(s): S. WELLS + C.Y. RODRIGUEZ Section, Township, Range: 3N 1E 23

Landform (hillslope, terrace, etc.): Slight hillslope Local relief (concave, convex, none): none Slope (%): 20

Subregion (LRR): C Lat: 38.082549 Long: -121.842681 Datum: NAD 1983

Soil Map Unit Name: Tamba muddy clay, MLRA 16 NWI classification: Ø

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No Ø	
Wetland Hydrology Present?	Yes ____	No Ø	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: X)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	Ø	= Total Cover	

Sapling/Shrub Stratum (Plot size: X)			
1.			
2.			
3.			
4.			
5.			
	Ø	= Total Cover	

Herb Stratum (Plot size: 5)			
1. Dead Annual grass (Bromus + Avena sp.)	10	N	
2. DISTICHLIS SPICATA	5	N	FAC
3. BRASSICA SP.	40	Y	
4. Dead STICKS + BRANCHES	30	Y	
5.			
6.			
7.			
8.			
	85	= Total Cover	

Woody Vine Stratum (Plot size: X)			
1.			
2.			
	Ø	= Total Cover	

% Bare Ground in Herb Stratum 15 % Cover of Biotic Crust Ø

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: Ø (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: Ø % (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

WN-24

SOIL

Sampling Point: SP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-15	2.5Y 3/2	100					SaCl lo	
						C		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): 18

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): 0

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

W-25

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Colinsville City/County: Solano Sampling Date: 07-03-24

Applicant/Owner: LS Power State: CA Sampling Point: SP-1

Investigator(s): SWells, CYRodrigues Section, Township, Range: 23 3N 1E

Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): C Lat: 38.082470 Long: -121.841899 Datum: NAD 1983

Soil Map Unit Name: TAMBA MUCKY CLAY, MLRA 16 NWI classification: 0

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: _____)			
1. Rumex crispus	5	N	FAC
2. Distichlis spicata	15	Y	FAC
3. Bulboschoenus maritimus	30	Y	OBL
4.			
5.			
6.			
7.			
8.			
	50 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 60 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: Vegetation in plot is very dry and degraded; vegetation ID'd based on remaining plant characteristics.

W-25

SOIL

Sampling Point: SP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8.5	10YR 3/4	99	10YR 5/8	1	C	M	Sand	
8.5-16	7.5YR 2.5/2	96	5YR 4/6	4	C,CS	M	Sand	has covered sand grains, paste-like

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): 0

Water Table Present? Yes _____ No X Depth (inches): 0

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): 0

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Oxidized rhizospheres present; however, not more than 2%.

W-26

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: COLLINSVILLE City/County: BIRDS LANDING/SOLANO Sampling Date: 7/3/2024

Applicant/Owner: LS POWER State: CA Sampling Point: SP-1

Investigator(s): CY RODRIGUEZ + S. WELLS Section, Township, Range: 3N 1E 22

Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): C Lat: 38.082423 Long: -121.844126 Datum: NAD1983

Soil Map Unit Name: DIABLO - ANAK CLAYS, 2 TO 9 % SLOPES NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: X)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: X)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5)			
1. DISTICHLIS SPICATA	75	X	FAC
2. HETEROTHECA GRANDIFLORA	2%		
3. dead grass (Festuca perennis)?	3%		
4. dead forbes	5%		
5.			
6.			
7.			
8.			
	85	= Total Cover	
Woody Vine Stratum (Plot size: X)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 15 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

W-26

SOIL

Sampling Point: SP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 2/1						Sand	
3-12.5	2.5Y 3/2		7.5YR 5/4	1	C	M	Sand	hard to find, low %
12.5-14	7.5YR 3/2						loamy sand	
SECOND CORE								
3IN			2.5YR 4/6	2	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks: Sandy. Redox is not 2ks

took second core to look at bottom layer @ 3in very red compared to middle layer

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Elevational changes are subtle but seem to indicate drainage patterns including one channel/stream where the Distichlis is less green & is close to NWI line. Approximately 1,000 feet from a 'downstream' dried salt crust in NWI freshwater pond. Salt crust visible from pit location.

Swale-like valleys sloping down to the south.

W-26

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano Sampling Date: 07-03-24

Applicant/Owner: LS Power State: CA Sampling Point: SP-2

Investigator(s): S. Wells, C.Y. Rodriguez Section, Township, Range:

Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): None Slope (%): 0

Subregion (LRR): C Lat: Long: Datum: NAD1983

Soil Map Unit Name: PIABLO - AYAR CLAYS, 2 to 9% slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: ____)			
1. Distichlis spicata	75	Y	FAC
2. Rumex crispus	15	N	FAC
3.			
4.			
5.			
6.			
7.			
8.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 4 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

W-26

SOIL

Sampling Point: SP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8.5	10YR 2/1	100					SAND	
8.5-15.5	10YR 3/2	98	7.5YR 5/8	2	C	M,CS	SAND	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks: Sandy soils

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): 0'

Water Table Present? Yes _____ No X Depth (inches): 0'

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): 0'

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Pit was dug in the channel of what appears to be a swale. Pit is nearby a "Freshwater pond" on NWI map, approximately 300ft upstream.

Note:
This sampling point did not meet the three criteria and the data sheet was revised on 11/25/24 to indicate it is not a wetland. See section 5.1 of the Aquatic Resources Delineation Report for more detail.

W-27

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: COLLINSVILLE City/County: BIRDS LANDING / SOLANO Sampling Date: 11/13/2024

Applicant/Owner: LS POWER State: CA Sampling Point: SP-1

Investigator(s): S. WELLS + C. Y RODRIGUEZ Section, Township, Range: 3N 1E 22

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0

Subregion (LRR): C Lat: 38.081822 Long: -121.846953 Datum: NAD 1983

Soil Map Unit Name: DIABLO-Ayar CLAYS 2 to 9% slopes NWI classification: Ø

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	Is the Sampled Area within a Wetland? Yes ~~X~~ No X
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes ____	No X	

SW 11/25/24

Remarks: Strong indicators of hydrophytic vegetation + hydric soil, likely lacking indicators of hydrology due to dry season survey. Below a NWI flowline stream / + above NWI freshwater emergent wetland. pasture.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: X)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	Ø	= Total Cover	

Sapling/Shrub Stratum (Plot size: X)			
1.			
2.			
3.			
4.			
5.			
	Ø	= Total Cover	

Herb Stratum (Plot size: /)			
1. DISTICHLIS SPICATA	75	Y	FAC
2. LEPIDIUM LATIFOLIUM	5%	N	FAC
3. (Dead Sticks (Rumex crispus)	2%	N	FAC
4. Dead Sticks (CENTAUREA SOLSTITIALIS)	5%		Ø
5. (LEPIDIUM LATIFOLIUM dead sticks)			
6.			
7.			
8.			
	87	= Total Cover	

Woody Vine Stratum (Plot size: /)			
1.			
2.			
	Ø	= Total Cover	

% Bare Ground in Herb Stratum 13 % Cover of Biotic Crust Ø

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: Best guesses on species for the 'dead sticks'. Seems to have Lepidium latifolium, Rumex + C. solstitialis could indicate the boundary. Vegetation of nearby upland used for delineation of wetland.

WW-24

SOIL

Sampling Point: SP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3.5	10YR 2/2						SANDY LOAM	
3.5-12	10YR 3/2	90	2.5Y 4/4	10	C	M	SAND	
12-14	10YR 2/2	93	10YR 4/4	7	C	M	SAND	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks: Sandy soil → low chroma (≤2) + Redox > 2%

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): 0'

Water Table Present? Yes ___ No X Depth (inches): 0'

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): 0

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No obvious Salt crust nearby / lush to the South ⇒ NWI freshwater Emergent Wetland. Likely a wetland periodically lacking indicators of wetland hydrology due to dry season survey.

W-28

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano Sampling Date: 07-08-24

Applicant/Owner: LS Power State: CA Sampling Point: SP-1

Investigator(s): Sidney Wells, Christina Rodriguez Section, Township, Range: 3N 1E 22

Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): C Lat: 38.081714 Long: -121.848830 Datum: NAD 1983

Soil Map Unit Name: DIABLO-AMARCLAYS 2 to 9% slopes NWI classification: 0

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: ____)			
1. Conium maculatum	35	Y	FACW
2. Artemisia douglasiana	15	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
	50 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 50 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

UU-28

SOIL

Sampling Point: SP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	7.5YR 3/2	100					SaLoam	
4-11.5	10YR 4/2	70	2.5YR 4/6	30	C	PL/M	SiClay	
11.5-155	10YR 2/1	96	5YR 3/4	4	C	PL/M	Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks: Soil pit was offset from location of vegetation plot due to health concerns from poisonous plants (Conium maculatum).

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- X Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- X Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): 0"

Water Table Present? Yes ___ No X Depth (inches): 0"

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): 0"

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Approximately 30 feet to the SE of pit an area was observed where water had washed through + been sitting + evaporating. Soil cracks and salt crust observed there + within a Conium.

WV-28

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano Sampling Date: 07-08-24

Applicant/Owner: LS Power State: CA Sampling Point: SP-2

Investigator(s): Sidney Wells, Christina Rodriguez Section, Township, Range: 3N 1E 22

Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): C Lat: 38.081743 Long: -121.848972 Datum: NAD1983

Soil Map Unit Name: DIABLO-AYAR CLAYS, 2 to 9% NWI classification: 0

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5)			
1. BRASSICA sp?	30	✓	X
2. ARTEMESIA DOUGLASIANA	5	x	FAC
3. CENTAUREA SOLSTITIALIS (dead)	40	✓	X
4. SALSOLA SODA? (dead, skeleton)	3	x	FACW
5.			
6.			
7.			
8.			
	78 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 22 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: Skeleton looked similar to Salsola soda skeleton but based on floristic survey that species was not observed.

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	2.5Y 3/2						LOAMY SAND	
4-16.5	2.5Y 3/3						SAND	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

W-29

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: COLLINSVILLE City/County: SUISUN CITY/SOLANO Sampling Date: 7/8/24

Applicant/Owner: LS POWER State: CA Sampling Point: SP-1

Investigator(s): CY. RODRIGUEZ + S. WELLS Section, Township, Range: 00 3N 1E

Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): C Lat: 38.081801 Long: -121.846584 Datum: NAD1983

Soil Map Unit Name: DIABLO - AMAR CLAYS, 2 to 9% NWI classification: 0

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: 5 sq. ft)			
1. LEPIDIUM LATIFOLIUM	30	Y	FAC
2. FRANKENIA SALINA	5	N	FACW
3.			
4.			
5.			
6.			
7.			
8.			
	35 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 65 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

W-29

SOIL

Sampling Point: SP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	5YR 2.5/1	99	5YR 4/6	1	C	M	Loamy Sand	
4-16	2.5Y 3/2	65	10YR 3/6	35	C+CS	PL+M	Sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

W-29

Project/Site: COLLINSVILLE City/County: SUISUN CITY / SOLANO Sampling Date: 7/8/24

Applicant/Owner: LS POWER State: CA Sampling Point: SP-2

Investigator(s): CM. RODRIGUEZ & S. WELLS Section, Township, Range: 00 3N 1E

Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): none Slope (%): Ø

Subregion (LRR): C Lat: 38.081740 Long: -121.846810 Datum: NAD1983

Soil Map Unit Name: DIABLO-AYAR CLAYS, 2 to 9% NWI classification: Ø

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	Ø = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	Ø = Total Cover		
Herb Stratum (Plot size: 5sq.ft)			
1. CENTAUREA SOLSTITIALIS	35	Y	X
2. LEPIDIUM LATIFOLIUM	20	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
	55 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	Ø = Total Cover		

% Bare Ground in Herb Stratum 45 % Cover of Biotic Crust Ø

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

W-29

SOIL

Sampling Point: SP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-15.5	7.5YR 2.5/2	100					SAND	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Note:
This sampling point did not meet the three criteria and the data sheet was revised on 11/25/24 to indicate it is not a wetland. See section 5.1 of the Aquatic Resources Delineation Report for more detail.

W-30

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: COLLINSVILLE City/County: SUISUN CITY / SOLANO Sampling Date: 7/8/24

Applicant/Owner: LS POWER State: CA Sampling Point: SP-1

Investigator(s): CY RODRIGUEZ S. WELLS Section, Township, Range: 3N 1E 22

Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): none Slope (%): Ø

Subregion (LRR): C Lat: 38.082298 Long: -121.844150 Datum: NAD 1983

Soil Map Unit Name: DIABLO - AYAR CLAYS 2 to 9 percent slopes NWI classification: Ø

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	Is the Sampled Area within a Wetland? Yes ~~X~~ No X SW 11/25/24
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes ____	No X	

Remarks: Strong indicators of hydrophytic vegetation + hydric soil, landscape position. Periodically lacking wetland hydrology likely due to dry season survey.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	Ø = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	Ø = Total Cover		
Herb Stratum (Plot size: ____)			
1. DISTICHLIS SPICATA	75	Y	FAC
2. CENTAUREA SOLSTITIALIS	10		X
3.			
4.			
5.			
6.			
7.			
8.			
	85 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	Ø = Total Cover		

% Bare Ground in Herb Stratum 25 % Cover of Biotic Crust Ø

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

W-30

SOIL

Sampling Point: SP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 2/2	100					Loamy Sand	
3-14.5	10YR 3/1	98	5YR 4/6	2	C	M	Sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Periodically lacking wetland hydrology likely due to dry season. Near NWI riverine & above a freshwater emergent wetland

W-30

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: COLLINSVILLE City/County: SUISUN CITY / SOLANO Sampling Date: JULY 9 2024

Applicant/Owner: LS POWER State: CA Sampling Point: SP-2

Investigator(s): C.Y. RODRIGUEZ + S. WELLS Section, Township, Range: 3N 1E 22

Landform (hillslope, terrace, etc.): on top of a slight hill Local relief (concave, convex, none): none Slope (%): 15

Subregion (LRR): C Lat: 38.082463 Long: -121.843560 Datum: NAD 1983

Soil Map Unit Name: DIABLO AMAR CLAY, 2 to 9% slope NWI classification: Ø

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.	Ø		
	Ø = Total Cover		

Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	Ø = Total Cover		

Herb Stratum (Plot size: 5sqft)			
1.			
2. BRASSICA skeletons (species?)	1		
3. Dead grass (Annual?)	75	✓	
4. Frankenia salina	4		
5. Distichlis spicata (dead)	3		
6. Centaurea solstitialis	1		
7.			
8.			
	84 = Total Cover		

Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	Ø = Total Cover		

% Bare Ground in Herb Stratum 16 % Cover of Biotic Crust Ø

Dominance Test worksheet: probable

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

Collected specimens of the dead grass but could not make a determination on species (too much dead some structure left). Maybe a Hordeum?

W-30

SOIL

Sampling Point: SP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4.5	10YR 4/2	97	10YR 4/6	3	C	M	CLAY	
4.5-13	10YR 3/2	100					CLAY	
13-15.5	10YR 6/6	100					SI CL	
STRIPES	10YR 3/1							Stripes in Matrix darker color

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks: Soil core top layer came out in hard clods. Measurements are estimates taking the spaces out between the clods. Hole depth where the core came from is 15.5 feet.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Cracks in the soil but not from water sitting in the area

W-31

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville City/County: Solano Sampling Date: July 7, 2024

Applicant/Owner: LS Power State: CA Sampling Point: SP-1

Investigator(s): Sidney Wells, Christina Rodriguez Section, Township, Range: 3N 1E 23

Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): C Lat: 38.082410 Long: -121.842498 Datum: NAD1983

Soil Map Unit Name: TAMBA MUCKY CLAY, MLRA 16 NWI classification: Ø

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes O No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____ No X	
Wetland Hydrology Present?	Yes _____ No X	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	Ø = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	Ø = Total Cover		
Herb Stratum (Plot size: 5m FT)			
1. Frankenia salina	5	N	FACW
2. Centaurea solstitialis	30	Y	UPL
3. Distichlis spicata	30	Y	FAC
4.			
5.			
6.			
7.			
8.			
	65 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	Ø = Total Cover		

% Bare Ground in Herb Stratum 35 % Cover of Biotic Crust Ø

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ✓ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

W-371

SOIL

Sampling Point: SP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5.5	7.5YR 3/2	99	10YR 4/6	1	C	M	LO SA	
5.5-16	10YR 3/3	95	10YR 4/6	5	C	M	SA	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: There is a sage wetland with green vegetation south of the soil pit. No hydrology indicators in the immediate area. The wetland is approximately 100 feet away. Obvious (+ freshwater emergent - NWI)

ATTACHMENT C: COLLINSVILLE 500/230 KILOVOLT SUBSTATION PROJECT BOTANICAL SURVEY REPORT

INSIGNIA ENVIRONMENTAL

LS POWER GRID CALIFORNIA, LLC

COLLINSVILLE 500/230 KILOVOLT SUBSTATION PROJECT

BOTANICAL SURVEY REPORT

OCTOBER 2023

PREPARED FOR:

LS POWER GRID CALIFORNIA

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1 – INTRODUCTION

LS Power Grid California, LLC (LSPGC) retained Insignia Environmental (Insignia) to conduct fully floristic botanical surveys for the Collinsville 500/230 Kilovolt (kV) Substation Project (Proposed Project). As depicted in Figure 1: Project Components, the Proposed Project proposes the construction of a new 500/230 kV substation (Collinsville Substation), the construction of two new 500 kV single-circuit transmission line segments that will interconnect Pacific Gas and Electric Company's (PG&E's) existing Vaca Dixon-Tesla 500 kV Transmission Line into the proposed Collinsville Substation, and the construction of one new 230 kV double-circuit transmission line that will connect the proposed Collinsville Substation to PG&E's existing Pittsburg Substation. The Proposed Project has been designed to address overloads on the existing Contra Costa-Newark 230 kV corridor and provide an additional supply into the northern greater San Francisco Bay Area to increase reliability to the area and advance additional renewable generation.

This Botanical Survey Report was prepared to identify any special-status plant species that may be present within or adjacent to the Proposed Project's terrestrial survey area.[1]

2 – PROJECT DESCRIPTION

2.0 PROJECT LOCATION

As depicted in Figure 2: Project Overview Map, the Collinsville Substation will be near the unincorporated community of Collinsville, which is located in the southwestern portion of Solano County. The terrestrial survey area is bordered on the south and southwest by the Sacramento River where it debouches into the Suisun Bay; on the west by the Montezuma Hills and Suisun Marsh; and to the north and east by agricultural lands. The Proposed Project will create a connection to the existing Pittsburg Substation, which is located in the city of Pittsburg in the northern portion of Contra Costa County.

2.1 PROJECT OVERVIEW

The four main components of the Proposed Project comprise the following:

- The approximately 20-acre Collinsville Substation;
- Two approximately 1.5-mile-long single-circuit 500 kV transmission line segments that will interconnect PG&E's existing Vaca Dixon-Tesla 500 kV Transmission Line into the proposed Collinsville Substation; and

[1] The survey area consists of all terrestrial areas of the Proposed Project area north of the Carquinez Strait. This includes the Collinsville Substation, the entire 500 kV alignment, and the entire 230 kV overhead alignment, plus an approximately 10-acre buffer.

- One approximately 6-mile-long double-circuit 230 kV transmission line connecting the proposed Collinsville Substation to PG&E's existing Pittsburg Substation, including:
  - A 1- to 2-mile-long overhead transmission segment,
  - Four to six steel in-river monopole structures to transition the overhead conductors to submarine cables on the northern edge of the Sacramento River,
  - Four to six approximately 4.5-mile-long submarine cables running in a northeast to southwest direction installed 6 to 15 feet below the sediment surface, and
  - Four to six utility vault structures near PG&E's existing Pittsburg Substation to connect the submarine cables to underground cables that will terminate at PG&E's existing Pittsburg Substation.

PG&E will be responsible for the final configuration of the new circuits into the Pittsburg Substation and the northern connection from the existing Vaca Dixon-Tesla 500 kV Transmission Line to the proposed Collinsville Substation. Construction is anticipated to begin in early 2026, after all required approvals have been received, and will take 24 to 30 months to complete. Energization of the Proposed Project facilities is required by June 1, 2028. The in-water construction and installation of the submarine cables is anticipated to take approximately 7 months to complete.

3 – METHODS

3.0 DEFINITIONS

The following definitions were used to define special-status resources within the survey area.

3.0.0 Special-Status Plants

Plant species were considered special-status if they met one or more of the following criteria:

- Species listed or candidates for listing as threatened or endangered under the federal Endangered Species Act;
- Species listed or candidates for listing as threatened or endangered under the California Endangered Species Act;
- Species meeting the definition of endangered, rare, or threatened under the California Environmental Quality Act (CEQA) (14 California Code of Regulations Section 15380), which may include species not found on the federal or state endangered species lists; or

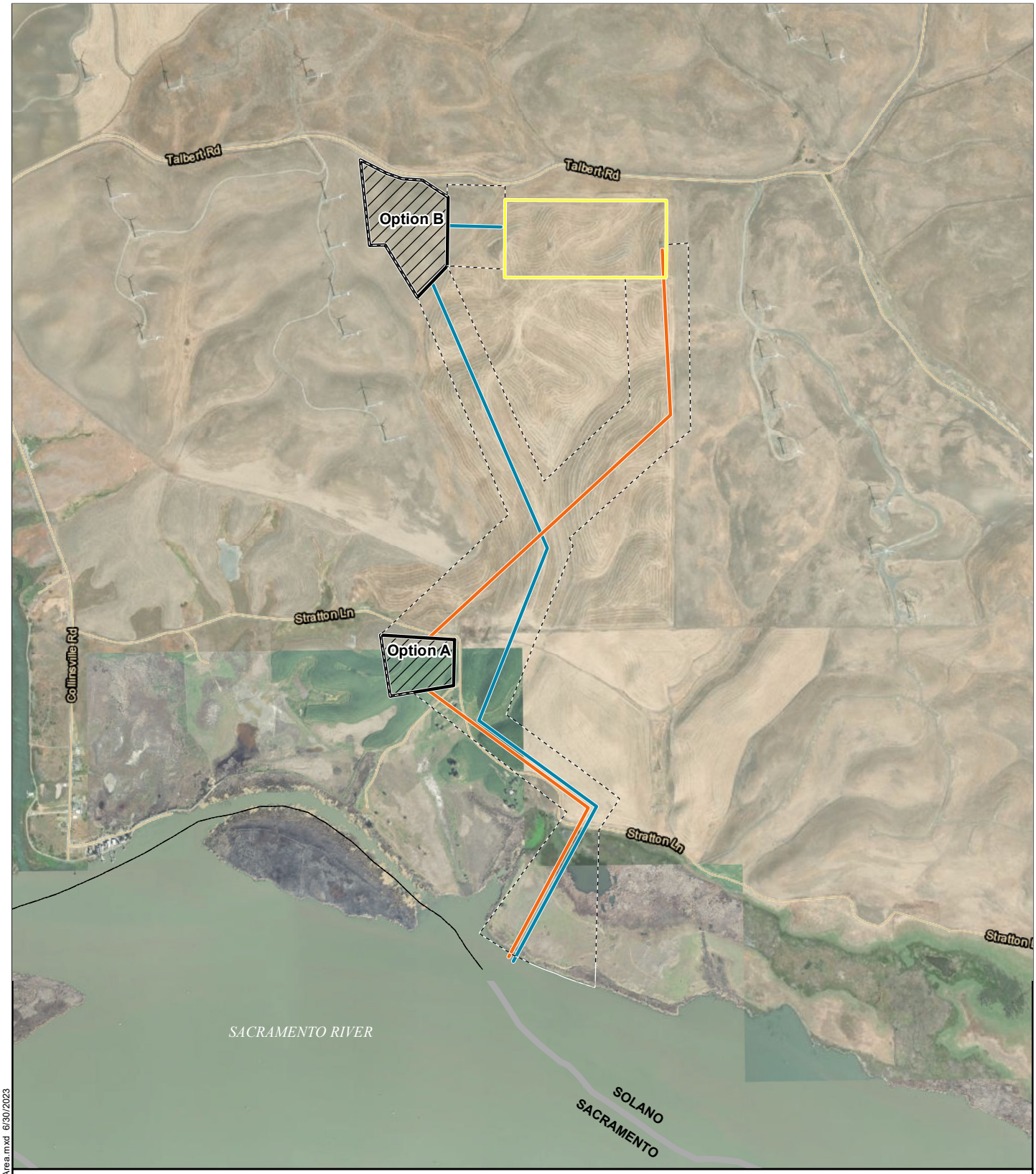

Figure 1: Project Components **Collinsville 500/230 Kilovolt Substation Project**

- Project/Survey Area
- PG&E Parcel
- Potential Substation Sites
- Option A Overhead Alignment
- Option B Overhead Alignment
- County Boundary

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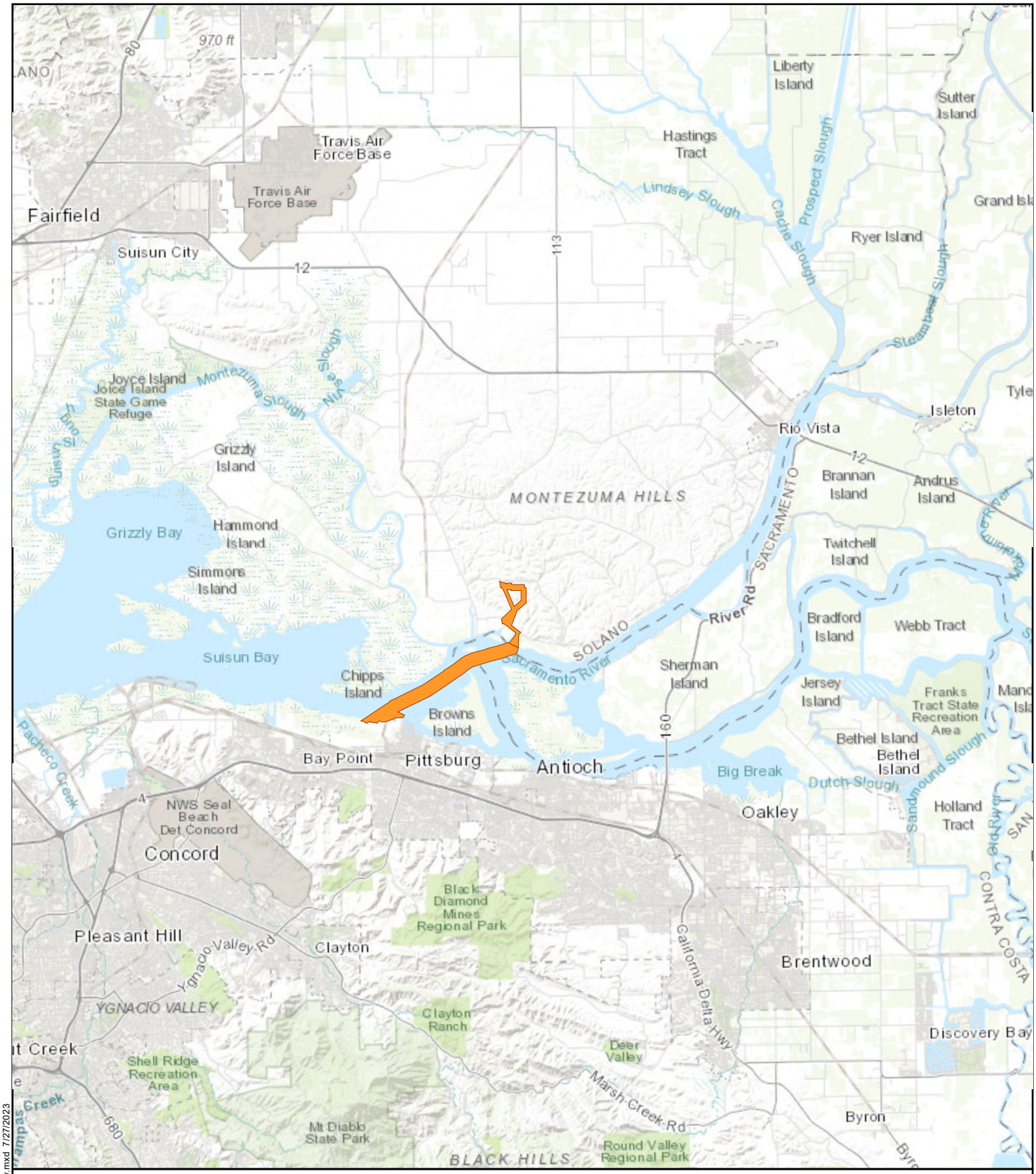

Figure 2: Project Overview Map **Collinsville 500/230 Kilovolt Substation Project**

Project/Survey Area

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- Species considered by the California Native Plant Society (CNPS) to be rare, threatened, or endangered in California (i.e., California Rare Plant Ranks [CRPRs] 1A, 1B, 2A, 2B, and 3).[2]

3.0.1 Sensitive Natural Communities and Habitats

Natural communities were considered sensitive if they met one or more of the following criteria:

- Sensitive vegetation communities/habitats identified in local or regional plans, policies, or regulations, or designated as sensitive by the California Department of Fish and Wildlife (CDFW) or United States (U.S.) Fish and Wildlife Service (USFWS) (including communities assigned a State Rarity Rank of S1-S3 under the CDFW Vegetation Classification and Mapping Program);

- Areas that provide habitat for locally unique biotic species/communities (e.g., oak woodlands, grasslands, and forests);

- Habitat that contains or supports rare, endangered, or threatened wildlife or plant species as defined by the CDFW and USFWS;

- Habitat that supports one or more CDFW Species of Special Concern;

- Areas that provide habitat for rare or endangered species and that meet the definition in CEQA Guidelines Section 15380;

- Existing game and wildlife refuges and reserves;

- Lakes, wetlands, estuaries, lagoons, streams, and rivers; or

- Riparian corridors.

3.1 RECORDS SEARCH

A literature and database review, including a geographic information system review of records from the California Natural Diversity Database (CNDDB) (CDFW 2023), was conducted of the

[2] The following keys describe the CRPR system:
1A = Presumed extirpated in California, and rare or extinct elsewhere
1B = Rare, Threatened, or Endangered in California and elsewhere
2A = Presumed extirpated in California, but common elsewhere
2B = Rare, Threatened, or Endangered in California, but more common elsewhere
3 = Need more information (Review List)
4 = Limited Distribution (Watch List)
The CRPR system can be extended using the following threat codes:
.1 = Seriously endangered in California (more than 80 percent of occurrences threatened/high degree and immediacy of threat)
.2 = Moderately threatened in California (20 to 80 percent of occurrences threatened/moderate degree and immediacy of threat)
.3 = Not very endangered in California (less than 20 percent of occurrences threatened/low degree and immediacy of threat)

U.S. Geological Survey 7.5-minute quadrangles within and adjacent to the survey area. Records for all known special-status species within 0.25 mile, 1 mile, and 5 miles of the Proposed Project were compiled and reviewed. The CNPS Inventory of Rare and Endangered Plants of California (CNPS 2023a) was reviewed to obtain additional information regarding special-status plant species. The survey area overlaps significantly with the Sacramento Municipal Utility District's Solano 4 Wind Project, for which a final Environmental Impact Report is available (Sacramento Municipal Utility District 2021); this document was also referenced during preliminary records searches. Attachment B: Special-Status Species with the Potential to Occur contains a list of rare plants and fungi with the potential to occur in the survey area.

3.2 REFERENCE POPULATION SEARCH

Reference population checks were conducted in accordance with the CDFW's Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities guidelines (2009). Known occurrences and populations of special-status plants within 5 miles of the survey area were investigated prior to conducting surveys to confirmblooming status and obtain a visual image of occurring special-status species. Further, local botanists working in areas adjacent to the Proposed Project were consulted to determine if special-status plants were observed blooming prior to field surveys.

3.3 FIELD SURVEY

The geographical boundaries of the terrestrial survey, which are depicted in Attachment A: Biological Resources Map, included land-based portions of the proposed substation site, as well as proposed transmission line routes. While the existing PG&E Pittsburg Substation, located at the southern terminus of the Proposed Project in Contra Costa County, is situated adjacent to marsh habitat suitable for marsh-dependent plant species, the facility is within fully developed land cover (e.g., graveled or paved) and rip-rap is present along much of the shoreline. Because Proposed Project activities at the Pittsburg Substation site are not anticipated to overlap with or result in direct impacts to sensitive habitats or special-status plant species, the Pittsburg Substation site was excluded from field surveys.

Insignia biologists conducted special-status plant surveys of 100 percent of the survey area. Transect spacing between surveyors was less than or equal to 10 meters. The surveys were conducted in accordance with guidelines published by the CNPS (2001), the CDFW (2009), and the USFWS (2000), which state the following:

- Surveys should be conducted at the proper time of year when locally significant plants are both evident and identifiable.
- Surveys must be floristic in nature, and the species, subspecies, or variety must be identified for every observed plant to determine the rarity status.
- Surveys must be conducted in a manner that is consistent with conservation ethics and accepted plant collection and documentation techniques.

Field surveys were conducted within the bloom period for all but four special-status plant species with the potential to occur within the survey area; these special-status species are discussed further in Section 5 – Discussion and Summary. Although surveys were conducted outside of the

typical bloom period, two of these species are perennial and observable year-round. The other two are annual species that have bloom periods that extend into April. The unusually protracted rainy season, cooler temperatures of the preceding winter, and other observations in the Proposed Project area support an extended bloom period of approximately 1 month for these species this season (Moore and Laurenroth 2017). As a result, all special-status plant species with potential to occur would have been identifiable during the surveys.

4 – RESULTS

4.0 GEOGRAPHY, CLIMATE, AND HYDROLOGY

The Proposed Project area receives an average of 23 inches of rainfall per year, with the majority of precipitation falling between November and March. Average annual temperatures range from 48 to 73 degrees Fahrenheit (National Oceanic and Atmospheric Administration [NOAA] 2023). The elevation of the Proposed Project area ranges from 3 to 250 feet above sea level.

4.1 RECORDS SEARCH

Results of the initial desktop analysis indicated that the upland areas around the proposed Collinsville Substation site and transmission line route are mainly grassland habitat and agricultural areas. Grassland habitats, in general, may provide suitable habitat for special-status plants. The southern edge of the survey area along the Sacramento River supports native riparian habitat areas and freshwater wetlands. The Pittsburg Substation site in Contra Costa County may have some fringe marsh habitat near the shoreline outside of the survey area, but the majority of the facility is developed (e.g., graveled or paved) and rip-rap is present along much of the survey area shoreline.

Insignia compiled a list of 28 special-status plant species that have the potential to occur within 5 miles of the survey area, as shown in Attachment B: Special-Status Species with the Potential to Occur. Attachment C: CNDDB Plant Occurrences Map depicts all rare plant occurrences identified from the literature search within 5 miles of the survey area. No USFWS-designated critical habitat for federally listed plants is found within or adjacent to the survey area.

4.2 REFERENCE POPULATION SEARCH

Reference checks were attempted for recorded populations of special-status plant species. Eight reference sites were visited by the botanical survey team prior to initiation of the fully floristic botanical surveys within the survey area. Many locations with historically documented occurrences of special-status plants have been converted to active agriculture use; this cover type is extensive and is the primary land use within 5 miles of the survey area. Further, reference populations for many special-status plant species were located on private property that was inaccessible to the survey team.

To supplement field reference checks, local botanists working in areas adjacent to the Proposed Project were consulted. The following four special-status plant species were confirmed to be

blooming in habitats adjacent to the Proposed Project before or during the May and July survey periods (Bartosh 2023):

- Chaparral ragwort (*Senecio aphanactis*),
- Fragrant fritillary (*Fritillaria liliacea*),
- Diablo helianthella (*Helianthella castanea*), and
- Papoose tarplant (*Centromadia parryi* ssp. *parryi*).

4.3 FIELD SURVEY

On May 23 to 26, May 30, May 31, and July 10 to 12, 2023, Insignia biologists conducted fully floristic botanical surveys within the survey area to identify occurrences of special-status plants and characterize the vegetation communities within the survey area. Approximately 325 acres of terrestrial habitat and land cover were surveyed. All sensitive natural resources observed were photographed and recorded using a submeter-accurate Global Positioning System unit. The subsections that follow describe the results of the field survey.

4.3.0 Vegetation Communities

Eleven vegetation community alliances and land cover types were identified in the survey area, as presented in Table 1: Vegetation Community Alliances and Land Cover Types. The vegetation community and land cover locations are documented in Attachment A: Biological Resources Map. Four of the nine natural communities observed are considered sensitive. The following subsections describe each vegetation community identified within the survey area.

Table 1: Vegetation Community Alliances and Land Cover Types

Vegetation Community Alliance or Land Cover Type	Approximate Size in Survey Area (acres)
Brassica nigra - Centaurea (*solstitialis*, *melitensis*) Herbaceous Semi-Natural Alliance	16.7
Distichlis spicata Herbaceous Alliance	1.6
Frankenia salina Herbaceous Alliance*	2.2
Juncus arcticus (var. *balticus*, *mexicanus*) Herbaceous Alliance	1.2
Lolium perenne Herbaceous Semi-Natural Alliance	281.0
Open Water	0.4
Road	1.9
Rosa californica Shrubland Alliance*	0.9
Salix exigua Shrubland Alliance	2.6
Schoenoplectus (*acutus*, *californicus*) Herbaceous Alliance*	14.1
Schoenoplectus acutus/*Rosa californica* Association*	2.1
Total	**324.7**

*CDFW-designated sensitive natural community (State Rarity Rank S1-S3)

Brassica nigra - Centaurea (*solstitialis*, *melitensis)* Herbaceous Semi-Natural Alliance

This community is typically associated with disturbed areas where black mustard (*Brassica nigra*) and short-pod mustard (*Hirshfeldia incana*) achieve 80 percent relative cover in the herbaceous layer. Similar ruderal forbs, such as tocolote (*Centaurea melitensis*) and yellow star thistle (*Centaurea solstitialis*), may achieve dominance or co-dominance. Within the survey area, this community was generally observed in dense colonies between stands of non-native grassland in areas where heavy cattle grazing historically occurred.

Distichilis spicata Herbaceous Alliance

The *Distichlis spicata* Herbaceous Alliance is commonly found in alkaline or saline ecosystems adjacent to estuarine marshes or other wetland habitats that may be tidally influenced. Salt grass (*Distichilis spicata*) typically contains greater than 30 percent relative cover in the herbaceous layer; however, it can be co-dominant with other halophytes, including spear-leaved orache (*Atriplex prostrata*) and alkali heath (*Frankenia salina*). The herbaceous layer is continuous and typically leaves an undeveloped or sparse shrub layer. This community was generally observed in the southern portion of the survey area within standing water in tidally influenced brackish areas.

Frankenia salina Herbaceous Alliance

The *Frankenia salina* Herbaceous Alliance is commonly found adjacent to coastal salt marshes or brackish marshes. Typically, alkali heath contains greater than 30 percent relative cover in the herbaceous layer and stands are often found in the high marsh where soils are intermittently or seasonally flooded. Pickleweed (*Salicornia pacifica*) is often found among this community in lower percentages of 5 to 10 percent. This community was observed in the southern portion of the survey area at the highest point of the marsh and adjacent to water that seasonally and tidally inundates this community.

Juncus arcticus (var. *balticus*, *mexicanus*) Herbaceous Alliance

The *Juncus arcticus* (var. *balticus*, *mexicanus*) Herbaceous Alliance varies widely in species composition based on the geographic location, but it typically includes greater than 30 percent relative cover in the shrub layer of arctic rush (*Juncus arcticus*) or Baltic rush (*Juncus balticus*). This community generally occurs in wet meadows with poor draining soils between estuarine marshes and sloughs. This community was observed in the southern portion of the survey area adjacent to the coastline and in upland areas of the marsh between sloughs.

Lolium perenne Herbaceous Semi-Natural Alliance

This community contains Italian rye grass (*Festuca perennis*) that is dominant or co-dominant with other non-natives in the herbaceous layer, including rip-gut brome (*Bromus diandrus*), sea barley (*Hordeum marinum*), and wild oat (*Avena fatua*). Typically, the herbaceous layer is continuous and often forms monocultures, which contributes to a poorly developed shrub layer. Within the survey area, this community is the most widespread and is found in upland areas that lack native species and have low species diversity. Additionally, this community shows evidence of heavy grazing, landowner maintenance, and agricultural use.

Rosa californica Shrubland Alliance

The *Rosa californica* Shrubland Alliance is commonly found in creek bottoms, stream terraces, and bordering sloughs and channels. California wild rose (*Rosa californica*) typically contains greater than 50 percent relative cover in the shrub canopy and may be co-dominant with Himalayan blackberry (*Rubus armeniacus*). The shrub layer is thick and continuous while the herbaceous layer is open. Emergent trees, including willows (*Salix* spp.), may be present in low quantities. This community is found in the southern portion of the survey area adjacent to intertidal sloughs. Himalayan blackberry was commonly observed, and in some cases co-dominant, among thick patches of California wild rose. Isolated red willows (*Salix laevigata*) were observed scattered throughout this community.

Salix exigua Shrubland Alliance

The *Salix exigua* Shrubland Alliance is widespread in California and contains significant variation when determining habitat and shrub composition. Often the shrub layer is intermittent to continuous dominated by sandbar willow (*Salix exigua*) and contains greater than 20 percent absolute cover in the shrub layer. In a high-quality habitat, sandbar willow may be co-dominant with other willow species and emergent riparian trees may be present at a low cover. Within the survey area, this community was observed between tidally influenced sloughs and estuarine marshes containing sandy soil. Heavy cattle grazing was observed to have a direct impact on this community, leading to a sparse shrub layer dominated by sandbar willows that are in the process of re-growing.

Schoenoplectus (*acutus, californicus*) Herbaceous Alliance

This community is found in a variety of wetland habitats, including brackish marshes, freshwater ponds, sloughs, swamps, and roadside ditches. The shrub layer is intermittent to continuous, forming thick stands that often result in a poorly developed herbaceous layer. Hardstem bulrush (*Schoenoplectus acutus*) or giant bulrush (*Schoenoplectus californicus*) typically contain greater than 50 percent relative cover in the herbaceous layer. Within the survey area, this community was observed adjacent to the coastline, within sloughs, and in tidally influenced areas that are semi-brackish. Species composition varied depending on the salinity of the water and proximity to the coastline, as hardstem bulrush is generally less tolerant of brackish conditions.

Schoenoplectus acutus/*Rosa californica* Association

Schoenoplectus acutus/*Rosa Californica* Association occurs on tidal sloughs that are seasonally or tidally inundated with brackish or semi-brackish water. This association contains greater than 50 percent relative cover of hardstem bulrush and giant bulrush with as low as 5 percent absolute cover of California wild rose. Within the survey area, this habitat occurred primarily on man-made earthen levees bordering sloughs adjacent to the coastline. California wild rose was observed in high quantities growing among stands of bulrush (*Schoenoplectus* spp.), sometimes achieving 20 to 30 percent relative percent cover.

4.3.1 Special-Status Plants

Insignia biologists identified 152 plant species during botanical surveys. Of these, three special-status plant species were identified within the survey area. All plants observed within the survey area during the 2023 surveys are listed in Attachment D: Plant Species Observed. Photographs of

all three species of the special-status plants observed are provided in Attachment E: Special-Status Plant Photographs. The locations of special-status plant individuals/populations are depicted in Attachment A: Biological Resources Map. A summary of each special-status plant species observed during botanical surveys is provided in the subsequent subsections.

Delta Tule Pea

Delta tule pea (*Lathyrus jepsonii* var. *jepsonii*) is a perennial herb endemic to California with a CRPR of 1B.2. Extensive populations of this species were observed along the southern edge of the survey area immediately adjacent to intertidal vegetation communities including *Rosa californica* Shrubland Alliance and *Schoenoplectus acutus*/*Rosa Californica* Association. Attachment E: Special-Status Plant Photographs provides photographs of select populations of Delta tule pea. CNDDB forms for the Delta tule pea populations identified in the survey area have been completed and are provided in Attachment F: CNDDB Submittal Forms.

Mason's Lilaeopsis

Mason's lileaopsis (*Lilaeopsis masonii*) is a perennial herb endemic to California with a CRPR of 1B.1. Extensive populations of this species were observed along the southern edge of the survey area within intertidal vegetation communities including *Schoenoplectus acutus* Herbaceous Alliance and *Juncus arcticus* (var. *balticus*, *mexicanus*) Herbaceous Alliance. Attachment E: Special-Status Plant Photographs provides photographs of select populations of Mason's lilaeopsis. CNDDB forms for the Mason's lilaeopsis populations have been completed and are provided in Attachment F: CNDDB Submittal Forms.

Welsh Mudwort

Welsh mudwort (*Limosella australis*) is a perennial herb native to California with a CRPR of 2B.1. The species was observed within the intertidal zone at the southern edge of the survey area and within the *Schoenoplectus acutus* Herbaceous Alliance. Attachment E: Special-Status Plant Photographs provides photographs of select populations of Welsh mudwort. CNDDB forms for the Welsh mudwort populations have been completed and are provided in Attachment F: CNDDB Submittal Forms.

5 – DISCUSSION AND SUMMARY

During the botanical surveys conducted in May and July 2023, three rare plant species were observed: Delta tule pea, Mason's lilaeopsis, and Welsh mudwort. As shown in Attachment A: Biological Resources Map, all occurrences of these species were observed in the southern-most portions of the survey area immediately adjacent to the estuarine/wetland habitat. The vast majority of the upland habitats within the northern portion of the survey area are dominated by non-native and invasive plant species; these areas do not likely provide habitat for special-status plants.

A supplemental survey is recommended in 2024 during the bloom period for diamond-petaled California poppy.

6 – REFERENCES

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ATTACHMENT A: BIOLOGICAL RESOURCES MAP

Attachment A:
Biological Resources Map
Map 1 of 8

Collinsville 500/230 Kilovolt Substation Project

Survey Area

Rare Plants

Individual Plant

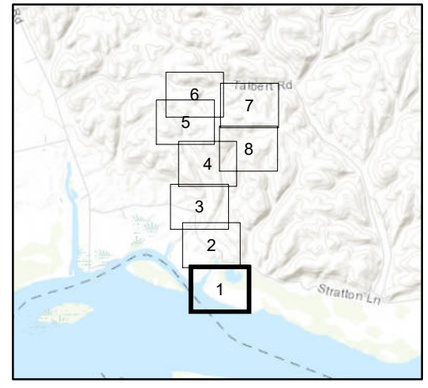
- Delta tule pea
- Mason's lilaeopsis
- Welsh mudwort

Plant Population

- Delta tule pea
- Mason's lilaeopsis
- Welsh mudwort

Vegetation Community

- *Distichlis spicata* Herbaceous Alliance
- *Frankenia salina* Herbaceous Alliance
- *Juncus arcticus (var. balticus, mexicanus)* Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Rosa californica* Shrubland Alliance
- *Salix exigua* Shrubland Alliance
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- *Schoenoplectus acutus/rosa californica* Association



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Attachment A:
Biological Resources Map
Map 2 of 8

Collinsville 500/230 Kilovolt Substation Project

Option A

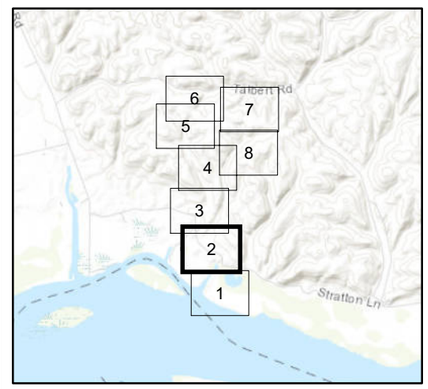
Stratton Ln

Survey Area

Potential Substation Site

Vegetation Community

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Distichlis spicata* Herbaceous Alliance
- *Frankenia salina* Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Rosa californica* Shrubland Alliance
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- Road



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Attachment A:
Biological Resources Map
Map 3 of 8

Collinsville 500/230 Kilovolt Substation Project

Survey Area

Potential Substation Site

Vegetation Community

Brassica nigra - Centaurea (solstitialis, melitensis) Herbaceous Semi-Natural Alliance

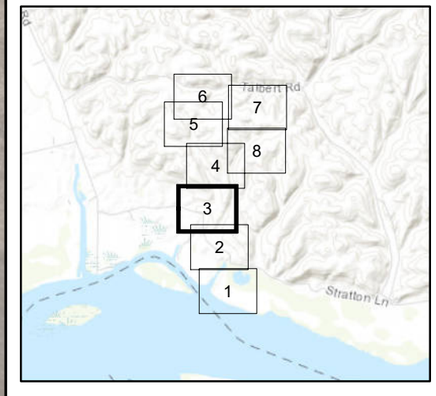
Lolium perenne Herbaceous Semi-Natural Alliance

Road

Option A

Stratton Rd

Stratton Ln



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Attachment A:
Biological Resources Map
Map 4 of 8

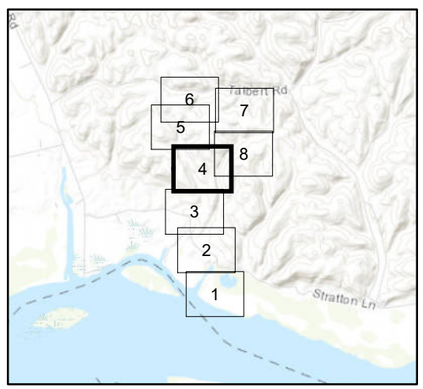
Collinsville 500/230 Kilovolt Substation Project

Survey Area

Vegetation Community

Brassica nigra - Centaurea (solstitialis, melitensis) Herbaceous Semi-Natural Alliance

Lolium perenne Herbaceous Semi-Natural Alliance



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Attachment A:
Biological Resources Map
Map 5 of 8

Collinsville 500/230 Kilovolt Substation Project

Option B

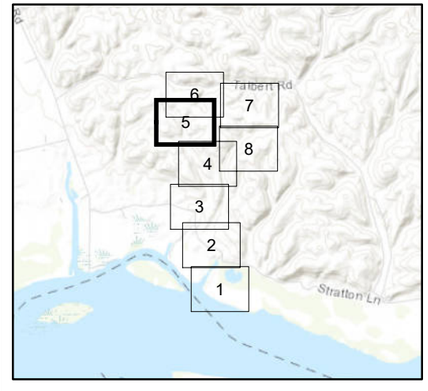
Survey Area

Potential Substation Site

Vegetation Community

Brassica nigra - Centaurea (solstitialis, melitensis) Herbaceous Semi-Natural Alliance

Lolium perenne Herbaceous Semi-Natural Alliance



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Attachment A:
Biological Resources Map
Map 6 of 8

Collinsville 500/230 Kilovolt Substation Project

Survey Area

Potential Substation Site

Vegetation Community

Brassica nigra - Centaurea (solstitialis, melitensis) Herbaceous Semi-Natural Alliance

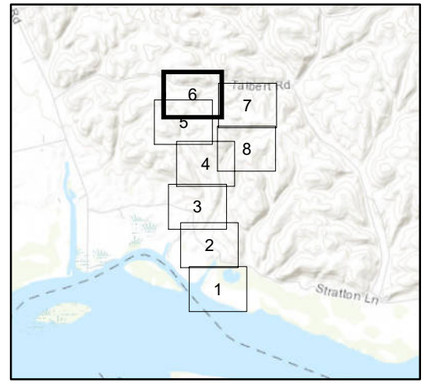
Lolium perenne Herbaceous Semi-Natural Alliance

Talbert Rd

Talbert Rd

Talbert Rd

Option B



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LS POWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

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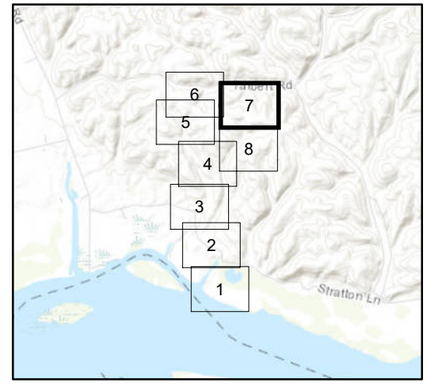
Attachment A:
Biological Resources Map
Map 7 of 8

Collinsville 500/230 Kilovolt Substation Project

Survey Area

Vegetation Community

Lolium perenne Herbaceous Semi-Natural Alliance



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LS POWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

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Attachment A:
Biological Resources Map
Map 8 of 8

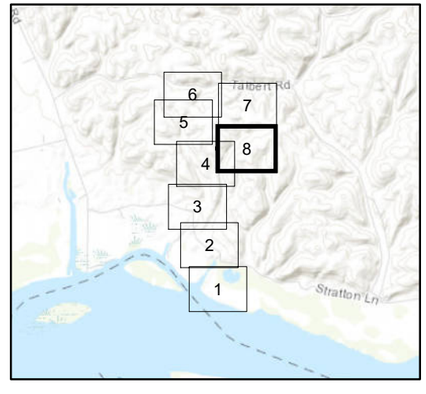
Collinsville 500/230 Kilovolt Substation Project

Survey Area

Vegetation Community

Brassica nigra - Centaurea (solstitialis, melitensis) Herbaceous Semi-Natural Alliance

Lolium perenne Herbaceous Semi-Natural Alliance



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LSPOWER GRID CALIFORNIA

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ATTACHMENT B: SPECIAL-STATUS SPECIES WITH THE POTENTIAL TO OCCUR

ATTACHMENT B: SPECIAL-STATUS PLANT SPECIES WITH THE POTENTIAL TO OCCUR

Common Name	Scientific Name	Listing Status[1]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Survey Area
Alkali Milkvetch	*Astragalus tener* var. *tener*	1B.2	This species occurs in alkali playa, valley and foothill grassland, vernal pool, and wetland habitats at elevations between 5 and 195 feet.	March to June	Annual herb	Suitable habitat and conditions for this species are present within the survey area, but no observations were recorded during fully floristic field surveys in May and July 2023. This species has been documented within 5 miles of the survey area. **Low Potential**
Antioch Dunes Buckwheat	*Eriogonum nudum* var. *psychicola*	1B.1	This species occurs in interior dune habitats at elevations up to 65 feet.	July to October	Perennial herb	Suitable habitat and conditions for this species are not present within the survey area, and no observations were recorded during fully floristic field surveys in May and July 2023. This species has been documented within 5 miles of the survey area. **No Potential**
Antioch Dunes Evening-primrose	*Oenothera deltoides* ssp. *howellii*	FE, SE, 1B.1	This species occurs in interior dunes habitats at elevations up to 100 feet.	March to September	Perennial herb	Suitable habitat and conditions for this species are not present within the survey area, and no observations were recorded during fully floristic field surveys in May and July 2023. This species has been documented within 1 mile of the survey area. **Low Potential**
Bearded Popcornflower	*Plagiobothrys hystriculus*	1B.1	This species occurs in valley and foothill grassland, vernal pool, and wetland habitats at elevations up to 900 feet.	April to May	Annual herb	Suitable habitat and conditions for this species are present within the survey area, and but observations were recorded during fully floristic field surveys in May and July 2023. This species has been documented within 5 miles of the survey area. **Low Potential**
Big Tarplant	*Blepharizonia plumosa*	1B.1	This species occurs in valley and foothill grassland habitats at elevations between 100 and 1,655 feet.	July to October	Annual herb	Suitable habitat and conditions for this species are present within the survey area, but no observations were recorded during fully floristic field surveys in May and July 2023. This species has been documented within 5 miles of the survey area **Low Potential**
Bolander's Water-hemlock	*Cicuta maculata* var. *bolanderi*	2B.1	This species occurs in marsh and swamp, salt marsh, and wetland habitats at elevations up to 655 feet.	July to September	Perennial herb	Suitable habitat and conditions for this species are present within the survey area, but no observations were recorded during fully floristic field surveys in May and July 2023. This species has been documented within 0.25 mile of the survey area. **High Potential**
Brittlescale	*Atriplex depressa*	1B.2	This species occurs in alkali playa, chenopod scrub, meadow and seep, valley and foothill grassland, vernal pool, and wetland habitats at elevations between 5 and 1,050 feet.	April to October	Annual herb	Suitable habitat and conditions for this species are present within the survey area, but no observations were recorded during fully floristic field surveys in May and July 2023. This species has been documented within 5 miles of the survey area. **Low Potential**

[1] Explanation of federal and state listing codes:

Federal listing code:
-FE: Federally listed as endangered

State listing code:
-SE: State-listed as endangered

California Native Plant Society California Rare Plant Ranks (CRPRs):
-1A: Presumed Extinct
-1B: Rare or endangered in California and elsewhere
-2B: Rare, threatened, or endangered in California, but more common elsewhere

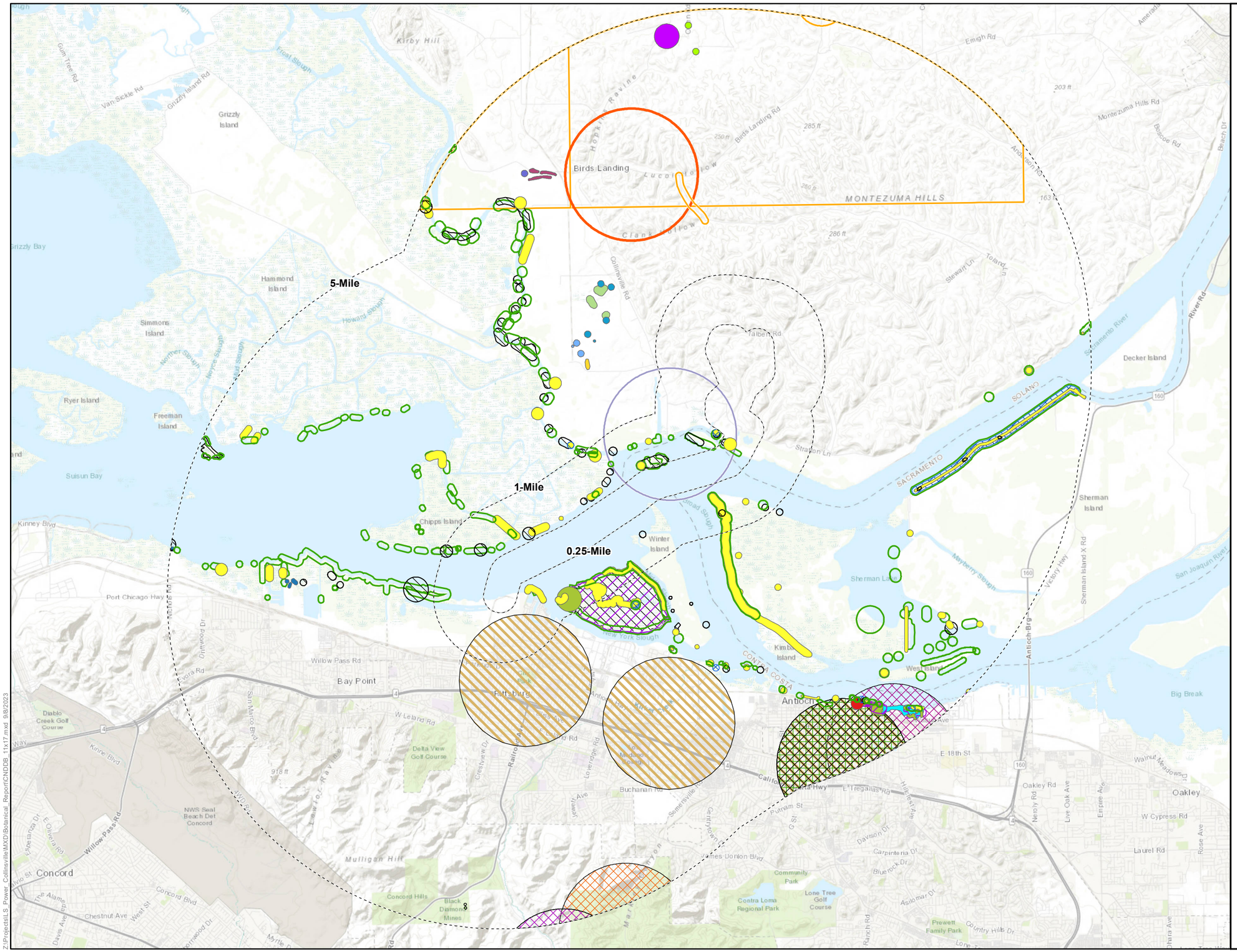
CRPR Threat Code:
-0.1: Seriously threatened in California (over 80 percent of occurrences threatened, high degree and immediacy of threat)
-0.2: Moderately threatened in California (20 to 80 percent of occurrences threatened, moderate degree and immediacy of threat)
-0.3: Not very threatened in California (less than 20 percent of occurrences threatened, low degree and immediacy of threat or no current threats known)

Common Name	Scientific Name	Listing Status[1]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Survey Area
Carquinez Goldenbush	*Isocoma arguta*	1B.1	This species occurs in valley and foothill grassland habitats at elevations between 5 and 65 feet.	August to December	Perennial shrub	Suitable habitat and conditions for this species are present within the survey area, but no observations were recorded during fully floristic field surveys in May and July 2023. Surveys occurred outside of the bloom period for this species. This species has been documented within 5 miles of the survey area. **Low Potential**
Chaparral Ragwort	*Senecio aphanactis*	2B.2	This species occurs in chaparral, cismontane woodland, and coastal scrub habitats at elevations between 50 and 2,625 feet.	January to April	Annual herb	Suitable habitat and conditions for this species are not present within the survey area, and no observations were recorded during fully floristic field surveys in May and July 2023. Surveys occurred outside of the bloom period for this species. This species has been documented within 5 miles of the survey area. **No Potential**
Contra Costa Goldfields	*Lasthenia conjugens*	FE, 1B.1	This species occurs in alkali playa, cismontane woodland, valley and foothill grassland, vernal pool, and wetland habitats at elevations up to 1,540 feet.	March to June	Annual herb	Suitable habitat and conditions for this species are present within the survey area, but no observations were recorded during fully floristic field surveys in May and July 2023. This species has been documented within 5 miles of the survey area. **Low Potential**
Contra Costa Wallflower	*Erysimum capitatum* var. *angustatum*	FE, SE, 1B.1	This species occurs in interior dunes habitats at elevations between 10 and 65 feet.	March to July	Perennial herb	Suitable habitat and conditions for this species are present within the survey area, but no observations were recorded during fully floristic field surveys in May and July 2023. This species has been documented within 5 miles of the survey area. **Low Potential**
Welsh Mudwort	*Limosella australis*	2B.1	This species occurs in brackish marsh, freshwater marsh, marsh and swamp, riparian scrub, and wetland habitats at elevations up to 10 feet.	May to August	Perennial stoloniferous herb	Suitable habitat is present within the survey area. Multiple observations of this species were made during fully floristic field surveys. **Present**
Delta Tule Pea	*Lathyrus jepsonii* var. *jepsonii*	1B.2	This species occurs in freshwater marsh, marsh and swamp, and wetland habitats at elevations up to 15 feet.	May to July	Perennial herb	Suitable habitat is present within the survey area. Multiple observations of this species were made during fully floristic field surveys. **Present**
Diablo Helianthella	*Helianthella castanea*	1B.2	This species occurs in broadleaved upland forest, chaparral, cismontane woodland, coastal scrub, and valley and foothill grassland habitats at elevations between 195 and 4,265 feet.	March to June	Perennial herb	Suitable habitat and conditions for this species are present within the survey area, but no observations were recorded during fully floristic field surveys in May and July 2023. This species has been documented within 5 miles of the survey area. **Low Potential**
Diamond-petaled California Poppy	*Eschscholzia rhombipetala*	1B.1	This species occurs in valley and foothill grassland habitats at elevations up to 3,200 feet.	March to April	Annual herb	Suitable habitat and conditions for this species are present within the survey area, but no observations were recorded during fully floristic field surveys in May and July 2023. Surveys occurred outside of the bloom period for this species. This species has been documented within 5 miles of the survey area. **Low Potential**
Dwarf Downingia	*Downingia pusilla*	2B.2	This species occurs in valley and foothill grassland, vernal pool, and wetland habitats at elevations between 5 and 1,460 feet.	March to May	Annual herb	Suitable habitat and conditions for this species are present within the survey area, but no observations were recorded during fully floristic field surveys in May and July 2023. This species has been documented within 5 miles of the survey area. **Low Potential**

Common Name	Scientific Name	Listing Status[1]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Survey Area
Fragrant Fritillary	*Fritillaria liliacea*	1B.2	This species occurs in cismontane woodland, coastal prairie, coastal scrub, ultramafic, and valley and foothill grassland habitats at elevations between 10 and 1,345 feet.	February to April	Perennial bulbiferous herb	Suitable habitat and conditions for this species are present within the survey area, but no observations were recorded during fully floristic field surveys in May and July 2023. Surveys occurred outside of the bloom period for this species. This species has been documented within 5 miles of the survey area. **Low Potential**
Hall's Bush-mallow	*Malacothamnus hallii*	1B.2	This species occurs in chaparral, coastal scrub, and ultramafic habitats at elevations between 35 and 2,495 feet.	May to September	Perennial deciduous shrub	Suitable habitat and conditions for this species are not present within the survey area, and no observations were recorded during fully floristic field surveys in May and July 2023. This species has been documented within 5 miles of the survey area. **No Potential**
Heartscale	*Atriplex cordulata* var. *cordulata*	1B.2	This species occurs in chenopod scrub, meadow and seep, and valley and foothill grassland habitats at elevations up to 1,835 feet.	April to October	Annual herb	Suitable habitat and conditions for this species are present within the survey area, but no observations were recorded during fully floristic field surveys in May and July 2023. This species has been documented within 5 miles of the survey area. **Low Potential**
Hoover's Cryptantha	*Cryptantha hooveri*	1A	This species occurs in interior dunes and valley and foothill grassland habitats at elevations between 30 to 490 feet.	April to May	Annual herb	Suitable habitat and conditions for this species are present within the survey area, but no observations were recorded during fully floristic field surveys in May and July 2023. This species has been documented within 5 miles of the survey area. **Low Potential**
Keck's Checkerbloom	*Sidalcea keckii*	FE, 1B.1	This species occurs in cismontane woodland, ultramafic, and valley and foothill grassland habitats at elevations between 245 and 2,135 feet.	April to June	Annual herb	Suitable habitat and conditions for this species are present within the survey area, but no observations were recorded during fully floristic field surveys in May and July 2023. This species has been documented within 5 miles of the survey area. **Low Potential**
Mason's Lilaeopsis	*Lilaeopsis masonii*	1B.1	This species occurs in freshwater marsh, marsh and swamp, riparian scrub, and wetland habitats at elevations up to 35 feet.	April to November	Perennial rhizomatous herb	Suitable habitat is present within the Project area. Multiple observations of this species were made during fully floristic field surveys. **Present**
Mt. Diablo Buckwheat	*Eriogonum truncatum*	1B.1	This species occurs in chaparral, coastal scrub, and valley and foothill grassland habitats at elevations between 10 and 1,150 feet.	April to September	Annual herb	Suitable habitat and conditions for this species are present within the survey area, but no observations were recorded during fully floristic field surveys in May and July 2023. This species has been documented within 5 miles of the survey area. **Low Potential**
Papoose Tarplant	*Centromadia parryi* ssp. *parryi*	1B.2	This species occurs in chaparral, coastal prairie, meadow and seep, marsh and swamp, and alley and foothill grassland habitats at elevations up to 1,380 feet.	May to November	Annual herb	Suitable habitat and conditions for this species are present within the survey area, but no observations were recorded during fully floristic field surveys in May and July 2023. This species has been documented within 5 miles of the survey area. **Low Potential**
San Joaquin Spearscale	*Extriplex joaquinana*	1B.2	This species occurs in alkali playa, chenopod scrub, meadow and seep, and valley and foothill grassland habitats at elevations between 5 and 2,740 feet.	April to October	Annual herb	Suitable habitat and conditions for this species are present within the survey area, but no observations were recorded during fully floristic field surveys in May and July 2023. This species has been documented within 5 miles of the survey area. **Low Potential**
Showy Golden Madia	*Madia radiata*	1B.1	This species occurs in cismontane woodland and valley and foothill grassland habitats at elevations between 80 and 3,985 feet.	March to May	Annual herb	Suitable habitat and conditions for this species are present within the survey area, and no observations were recorded during fully floristic field surveys in May and July 2023. This species has been documented within 5 miles of the survey area. **Low Potential**

Common Name	Scientific Name	Listing Status[1]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Survey Area
Soft Salty Bird's-beak	*Chloropyron molle* ssp. *molle*	FE, 1B.2	This species occurs in marsh and swamp, salt marsh, and wetland habitats at elevations up to 10 feet.	June to November	Annual herb (hemiparasitic)	Suitable habitat and conditions for this species are not present within the survey area, and no observations were recorded during fully floristic field surveys in May and July 2023. This species has been documented within 5 miles of the survey area. **Low Potential**
Suisun Marsh Aster	*Symphyotrichum lentum*	1B.2	This species occurs in brackish marsh, freshwater marsh, marsh and swamp, and wetland habitats at elevations up to 10 feet.	April to November	Perennial rhizomatous herb	Suitable habitat and conditions for this species are present within the survey area, but no observations were recorded during fully floristic field surveys in May and July 2023. This species has been documented within 0.25 mile of the survey area. **High Potential**

ATTACHMENT C: CNDDB PLANT OCCURRENCES MAP



Attachment C:
CNDDB Plant Occurrences Map

Collinsville 500/230 Kilovolt Substation Project

- Project Buffers

Special Status Plant Species

- Alkali milk-vetch
- Antioch Dunes buckwheat
- Antioch Dunes evening-primrose (within 1 mile)
- Bearded popcornflower
- Big tarplant (within 1 mile)
- Bolander's water-hemlock (within 1 mile)
- Brittlescale
- Carquinez goldenbush
- Chaparral ragwort
- Contra Costa goldfields
- Contra Costa wallflower (within 1 mile)
- Delta mudwort (within 1 mile)
- Delta tule pea (within 1 mile)
- Diablo helianthella
- Diamond-petaled California poppy
- Dwarf downingia
- Fragrant fritillary
- Hall's bush-mallow
- Heartscale
- Hoover's cryptantha
- Keck's checkerbloom
- Mason's lilaeopsis (within 1 mile)
- Mt. Diablo buckwheat
- Pappose tarplant
- San Joaquin spearscale
- Showy golden madia
- Suisun Marsh aster (within 1 mile)
- Soft salty bird's-beak

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ATTACHMENT D: PLANT SPECIES OBSERVED

ATTACHMENT D: PLANT SPECIES OBSERVED

Family	Scientific Name	Common Name
Aizoaceae	*Sesuvium verrucosum*	Smooth Sea-Purslane
Alismataceae	*Alisma gramineum*	Slender Water Plantain
Alismataceae	*Alisma triviale*	Northern Water Plantain
Amaranthaceae	*Atriplex prostrata*	Spreading Saltbush
Amaranthaceae	*Atriplex semibaccata*	Australian Saltbush
Amaranthaceae	*Atriplex suberecta*	Desert Holly
Amaranthaceae	*Chenopodium murale*	Nettle-leaved Goosefoot
Amaranthaceae	*Chenopodium vulvaria*	Stinking Goosefoot
Amaranthaceae	*Salicornia pacifica*	Pacific Glasswort
Amaranthaceae	*Salsola tragus*	Russian Thistle
Anacardiaceae	*Schinus molle*	California Pepper Tree
Apiaceae	*Apium graveolens*	Wild Celery
Apiaceae	*Conium maculatum*	Poison Hemlock
Apiaceae	*Foeniculum vulgare*	Sweet Fennel
Apiaceae	*Lilaeopsis masonii*	Mason's Lilaeopsis
Apiaceae	*Oenanthe sarmentosa*	Water Parsley
Apiaceae	*Sanolus parviflorus*	Small-flowered Sanolus
Apocynaceae	*Asclepias fasicularius*	Narrow-leaved Milkweed
Araliaceae	*Hydrocotyle verticillata*	Whorled Pennywort
Asparagaceae	*Asparagus officinalis*	Wild Asparagus
Asteraceae	*Achyrachaena mollis*	Soft Blow Wives
Asteraceae	*Ambrosia psilostachya*	Western Ragweed
Asteraceae	*Anthemis cotula*	Mayweed
Asteraceae	*Artemisia douglasiana*	Mugwort
Asteraceae	*Baccharis glutinosa*	Sticky Baccharis
Asteraceae	*Baccharis pilularis* ssp. *consanguinea*	Coyote Brush
Asteraceae	*Baccharis salicifolia*	Mule Fat
Asteraceae	*Carduus pycnocephalus*	Italian Thistle
Asteraceae	*Centaurea solstitialis*	Yellow Starthistle
Asteraceae	*Centromadia parryi*	Pappose Tarweed
Asteraceae	*Chondrilla juncea*	Rush Skeletonweed

Family	Scientific Name	Common Name
Asteraceae	*Cirsium vulgare*	Bull Thistle
Asteraceae	*Cotula cornopilfoila*	Brass Buttons
Asteraceae	*Erigeron philadelphicus*	Philadelphia Fleabane
Asteraceae	*Euthamia occidentalis*	Western Goldenrod
Asteraceae	*Grindelia stricta*	Gumplant
Asteraceae	*Helminthotheca echioides*	Bristly Oxtongue
Asteraceae	*Heterotheca grandiflora*	Telegraph Weed
Asteraceae	*Hoita macrostachya*	Showy Goldeneye
Asteraceae	*Hypochoeris glabra*	Smooth Cat's Ear
Asteraceae	*Iva axillaris*	Poverty Weed
Asteraceae	*Lactuca serriola*	Prickly Lettuce
Asteraceae	*Madia gracilis*	Graceful Tarweed
Asteraceae	*Matricaria occidentalis*	Valley mayweed
Asteraceae	*Senecio hydrophilus*	Marsh Ragwort
Asteraceae	*Senecio vulgaris*	Common Groundsel
Asteraceae	*Silybum marianum*	Milk Thistle
Asteraceae	*Sonchus asper*	Prickly Sowthistle
Asteraceae	*Xanthium spinosum*	Spiny Cocklebur
Asteraceae	*Xanthium strumarium*	Common Cocklebur
Boraginaceae	*Amsinckia intermedia*	Common Fiddleneck
Boraginaceae	*Eriodictyon crassifolium*	Thick-leaved Yerba Santa
Boraginaceae	*Heliotropium curassavicum*	Salt Heliotrope
Brassicaceae	*Brassica nigra*	Black Mustard
Brassicaceae	*Lepidium latifolium*	Broadleaf Pepperweed
Brassicaceae	*Raphanus sativus*	Radish
Caryophyllaceae	*Spergula marina*	Salt Sandspurry
Caryophyllaceae	*Spergularia arvensis*	Corn Spurry
Convolvulaceae	*Calystegia silvatica*	Chaparral Dodder
Convolvulaceae	*Convolvulus arvensis*	Field Bindweed
Convolvulaceae	*Cressa truxillensis*	Alkaliweed
Cucurbitaceae	*Marah fabacea*	Wild Cucumber
Cyperaceae	*Bolboschoenus robustus*	California Bulrush

Family	Scientific Name	Common Name
Cyperaceae	*Carex barbarae*	Santa Barbara Sedge
Cyperaceae	*Eleocharis acicularis* var. *acicularis*	Needle Spikerush
Cyperaceae	*Eleocharis macrostachya*	Tall Spike-rush
Cyperaceae	*Isolepis cernua*	Nodding Centaury
Cyperaceae	*Schoenoplectus acutus* var. *occidentalis*	Common Tule
Cyperaceae	*Schoenoplectus americanus*	Three Square Bulrush
Cyperaceae	*Schoenoplectus californicus*	California Bulrush
Cyperaceae	*Schoenoplectus pungens*	Common Threesquare
Equisetaceae	*Equistem hyemale* ssp. *affine*	Scouring Rush
Euphorbiaceae	*Croton setiger*	Dove Weed
Fabaceae	*Acmispon americanus* var. *americanus*	American Bird's-foot
Fabaceae	*Acmispon glaber* var. *glaber*	Deerweed
Fabaceae	*Acmispon strigosus*	Strigose Bird's-foot Trefoil
Fabaceae	*Lathyrus jepsonii* var. *jepsonii*	Delta Tule Pea
Fabaceae	*Lotus corniculatus*	Bird's-foot Trefoil
Fabaceae	*Lotus tenuis*	Slender Lotus
Fabaceae	*Lupinus bicolor*	Miniature Lupine
Fabaceae	*Lupinus succulentus*	Arroyo Lupine
Fabaceae	*Medicago polymorpha*	California Burr Medic
Fabaceae	*Melilotus indicus*	Annual Yellow Sweetclover
Fabaceae	*Sesbania punicea*	Red Sesbania
Fabaceae	*Trifolium hirtum*	Rose Clover
Fabaceae	*Trifolium hybridum*	Alsike Clover
Fabaceae	*Trifolium wormskioldii*	Cow Clover
Fabaceae	*Vicia sativa*	Common Vetch
Fabaceae	*Vicia villosa*	Hairy Vetch
Frankeniaceae	*Frankenia salina*	Alkali Heath
Geraniaceae	*Erodium botrys*	Long-beaked Filaree
Geraniaceae	*Erodium cicutarium*	Redstem Filaree
Geraniaceae	*Geranium dissectum*	Cutleaf Geranium
Iridaceae	*Iris pseudacorus*	Yellow Flag Iris
Juncaceae	*Juncus balticus*	Baltic Rush

Family	Scientific Name	Common Name
Juncaceae	*Juncus bufonius*	Toad Rush
Juncaceae	*Juncus gerardii* ssp. *gerardii*	Salt Marsh Rush
Juncaceae	*Juncus mexicanus*	Mexican Rush
Lamiaceae	*Marrubium vulgare*	White Horehound
Lamiaceae	*Mentha spicata*	Spearmint
Lamiaceae	*Pterostegia drymariodes*	Fairy Mist
Lythraceae	*Lythrum hyssopifolia*	Hyssop Loosestrife
Malvaceae	*Malva parviflora*	Small-flowered Mallow
Malvaceae	*Malvella leprosa*	Round-leaved Mallow
Montiaceae	*Claytonia perfoliata*	Miner's Lettuce
Onagraceae	*Epilobium ciliatum*	Fringed Willowherb
Orobanchaceae	*Castilleja exserta* ssp. *exserta*	Purple Owl's Clover
Orobanchaceae	*Bellardia trixago*	Mediterranean Lineseed
Plantaginaceae	*Plantago coronopus*	Buckshorn Plantain
Plantaginaceae	*Plantago lanceolata*	English Plantain
Poaceae	*Agrostis stolonifera*	Creeping Bentgrass
Poaceae	*Arundo donax*	Giant Reed
Poaceae	*Avena fatua*	Wild Oat
Poaceae	*Bromus berteroanus*	Chilean Brome
Poaceae	*Bromus diandrus*	Ripgut Brome
Poaceae	*Bromus hordeaceus*	Soft Brome
Poaceae	*Bromus madritensis* ssp. *rubens*	Red Brome
Poaceae	*Bromus tectorum*	Cheatgrass
Poaceae	*Cortaderia jubata*	Purple Pampas Grass
Poaceae	*Cynodon dactylon*	Bermuda Grass
Poaceae	*Cynosurus echinatus*	Coast Bur Grass
Poaceae	*Distichlis spicata*	Saltgrass
Poaceae	*Elymus triticoides*	Beardless Wildrye
Poaceae	*Festuca bromoides*	Red Fescue
Poaceae	*Festuca perennis*	Meadow Fescue
Poaceae	*Hordeum jubatum*	Foxtail Barley
Poaceae	*Hordeum murinum*	Wall Barley

Family	Scientific Name	Common Name
Poaceae	*Hordeum vulgare*	Common Barley
Poaceae	*Phalaris canariensis*	Canary Grass
Poaceae	*Phalaris paradoxa*	Hairy Canarygrass
Poaceae	*Phragmites australis*	Common Reed
Polygonaceae	*Persicaria* spp.	Smartweeds
Polygonaceae	*Polygonum argyrocoleon*	Silverweed Knotweed
Polygonaceae	*Polygonum aviculare*	Prostrate Knotweed
Polygonaceae	*Rumex acetosella*	Sheep Sorrel
Polygonaceae	*Rumex californicus*	California Dock
Polygonaceae	*Rumex crispus*	Curly Dock
Ranunculaceae	*Ranunculus sceleratus*	Cursed Buttercup
Rosaceae	*Potentilla anseriana* ssp. *pacifica*	Silverweed
Rosaceae	*Rosa californica*	California Wild Rose
Rosaceae	*Rubus armeniacus*	Himalayan Blackberry
Salicaceae	*Salix exigua*	Narrowleaf Willow
Salicaceae	*Salix exigua* var. *hindsiana*	Sandbar Willow
Salicaceae	*Salix gooddingii*	Goodding's Willow
Salicaceae	*Salix laevigata*	Red Willow
Salviniaceae	*Azolla filiculoides*	Water Fern
Scrophulariaceae	*Limosella australis*	Delta Mudwort
Scrophulariaceae	*Zeltnera muehlenbergii*	Little Redstem
Solanaceae	*Solanum americanum*	American Nightshade
Themidaceae	*Brodiaea elegans* ssp. *elegans*	Elegant Brodiaea
Typhaceae	*Typha latifolia*	Common Cattail
Verbenaceae	*Phyla nodiflora*	Turkey Tangle Fogfruit

ATTACHMENT E: SPECIAL-STATUS PLANT PHOTOGRAPHS

ATTACHMENT E: SPECIAL-STATUS PLANT PHOTOGRAPHS

Photograph 1: Delta tule pea (*Lathyrus jepsonii* var. *jepsonii*).

Photograph 2: Mason's lilaeopsis (*Lilaeopsis masonii*).

Photograph 3: Welsh mudwort (*Limosella australis*).

ATTACHMENT F: CNDDB SUBMITTAL FORMS

CNDDB Online Field Survey Form Report

California Natural Diversity Database
Department of Fish and Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: 916.324.0475
cnddb@wildlife.ca.gov
www.dfg.ca.gov/biogeodata/cnddb/

This data has been reported to the CNDDB, but may not have been evaluated by the CNDDB staff

Source code CRO23F0003
Quad code 3812117
Occ. no.
EO index no.
Map index no.

Scientific name: *Limosella australis*

Common name: Delta mudwort

Date of field work (mm-dd-yyyy): 05-24-2023

Comment about field work date(s):

OBSERVER INFORMATION

Observer: Brian Cropper

Affiliation: Insignia Environmental

Address: 3028 Juniper St Apt 3

Email: bcropper@insigniaenv.com

Phone: (920) 544-7989

Other observers: Deanna Giuliano

DETERMINATION

Keyed in: Jepson Manual

Compared w/ specimen at:

Compared w/ image in: Jepson Herbarium, Calflora

By another person: Deanna Giuliano

Other:

Identification explanation:

Identification confidence: Very confident

Species found: Yes **If not found, why not?**

Level of survey effort: Fully botanical survey

Total number of individuals: 150-250

Collection? No **Collection number:**

Museum/Herbarium:

PLANT INFORMATION

Phenology:

vegetative	flowering	fruiting
90 %	10 %	0 %

SITE INFORMATION

Habitat description: Species were found in tidally influenced saturated soils directly adjacent to riprap along the coastline. Associated species included predominantly Juncus.

Slope: 1-2 percent

Land owner/manager:

Aspect:

Site condition + population viability:

Immediate & surrounding land use: Potential grazing

Visible disturbances: Trash/debris, man-made berms, riprap.

Threats: Trash accumulation, grazing.

General comments:

MAP INFORMATION

ID	County	24K Quadrangle	Elev. (ft)	Latitude NAD83	Longitude NAD83	UTM E NAD83	UTM N NAD83	UTM Zone
	Solano	Antioch North	-9999	38.06929	-121.82582	602994	4214154	10
1	**Public Land Survey**	**Feature Comment**						
	M T03N R01E 26	Spreads via rhizomes consistent along coast						

ID	County	24K Quadrangle	Elev. (ft)	Latitude NAD83	Longitude NAD83	UTM E NAD83	UTM N NAD83	UTM Zone
	Solano	Antioch North	-9999	38.06990	-121.82799	602803	4214219	10
2	**Public Land Survey**	**Feature Comment**						
	M T03N R01E 26							

The mapped feature is accurate within: 10 m

Source of mapped feature: Handheld submeter GPS unit

Mapping notes: Species spreads along coast in between mapped points.

Location/directions comments:

Attachment(s):

CNDDB Online Field Survey Form Report

California Natural Diversity Database
Department of Fish and Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: 916.324.0475
cnddb@wildlife.ca.gov
www.dfg.ca.gov/biogeodata/cnddb/

This data has been reported to the CNDDB, but may not have been evaluated by the CNDDB staff

Source code CRO23F0001
Quad code 3812117
Occ. no.
EO index no.
Map index no.

Scientific name: *Lathyrus jepsonii var. jepsonii*

Common name: Delta tule pea

Date of field work (mm-dd-yyyy): 05-24-2023

Comment about field work date(s):

OBSERVER INFORMATION

Observer: Brian Cropper

Affiliation: Insignia Environmental

Address: 3028 Juniper St Apt 3

Email: bcropper@insigniaenv.com

Phone: (920) 544-7989

Other observers: Deanna Giuliano

DETERMINATION

Keyed in: Jepson Manual

Compared w/ specimen at:

Compared w/ image in: Jepson Herbarium, Calflora

By another person: Deanna Giuliano

Other:

Identification explanation:

Identification confidence: Very confident

Species found: Yes **If not found, why not?**

Level of survey effort: Fully botanical survey

Total number of individuals: 150-200

Collection? No **Collection number:**

Museum/Herbarium:

PLANT INFORMATION

Phenology:

vegetative	flowering	fruiting
70 %	25 %	5 %

SITE INFORMATION

Habitat description: Rosa californica and Schoenoplectus dominated habitat and associations. Delta tule pea was commonly found climbing up upland shrubs adjacent to sloughs approximately 15-20 feet from the coast.

Slope: 5 to 10%

Land owner/manager:

Aspect:

Site condition + population viability: Fair

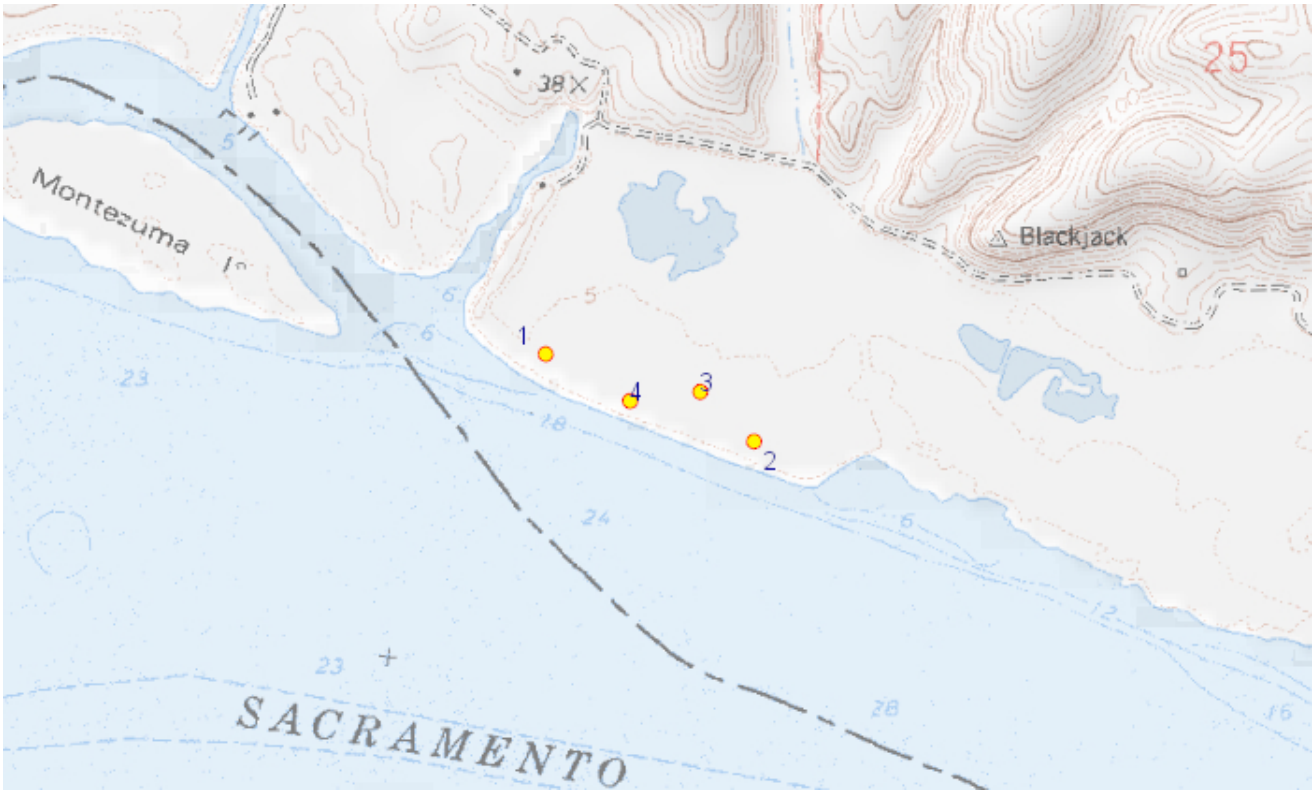
Immediate & surrounding land use: Agriculture/grazing

Visible disturbances: evidence of grazing, man-made berms, riprap along coastline.

Threats: Grazing, development

General comments:

MAP INFORMATION



ID	County	24K Quadrangle	Elev. (ft)	Latitude NAD83	Longitude NAD83	UTM E NAD83	UTM N NAD83	UTM Zone
	Solano	Antioch North	14	38.07143	-121.83111	602527	4214386	10
1	**Public Land Survey**	**Feature Comment**						
	M T03N R01E 26							

ID	County	24K Quadrangle	Elev. (ft)	Latitude NAD83	Longitude NAD83	UTM E NAD83	UTM N NAD83	UTM Zone
	Solano	Antioch North	20	38.06985	-121.82633	602949	4214216	10
2	**Public Land Survey**	**Feature Comment**						
	M T03N R01E 26	Large polygon with 25+ individuals						

ID	County	24K Quadrangle	Elev. (ft)	Latitude NAD83	Longitude NAD83	UTM E NAD83	UTM N NAD83	UTM Zone
	Solano	Antioch North	20	38.07074	-121.82756	602839	4214314	10
3	**Public Land Survey**	**Feature Comment**						
	M T03N R01E 26	Large polygon with 20+ individuals						

ID	County	24K Quadrangle	Elev. (ft)	Latitude NAD83	Longitude NAD83	UTM E NAD83	UTM N NAD83	UTM Zone
	Solano	Antioch North	9	38.07058	-121.82917	602698	4214294	10
4	**Public Land Survey**	**Feature Comment**						
	M T03N R01E 26	Large polygon with 75+ individuals						

The mapped feature is accurate within: 20 m

Source of mapped feature: Submeter handheld GPS device

Mapping notes:

Location/directions comments:

Attachment(s):

CNDDB Online Field Survey Form Report

California Natural Diversity Database
Department of Fish and Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: 916.324.0475
cnddb@wildlife.ca.gov
www.dfg.ca.gov/biogeodata/cnddb/

This data has been reported to the CNDDB, but may not have been evaluated by the CNDDB staff

Source code CRO23F0002
Quad code 3812117
Occ. no.
EO index no.
Map index no.

Scientific name: *Lilaeopsis masonii*

Common name: Mason's lilaeopsis

Date of field work (mm-dd-yyyy): 05-24-2023

Comment about field work date(s):

OBSERVER INFORMATION

Observer: Brian Cropper

Affiliation: Insignia Environmental

Address: 3028 Juniper St Apt 3

Email: bcropper@insigniaenv.com

Phone: (920) 544-7989

Other observers: Deanna Giuliano

DETERMINATION

Keyed in: Jepson Manual

Compared w/ specimen at:

Compared w/ image in: Jepson Herbarium, Calflora

By another person: Deanna Giuliano

Other:

Identification explanation:

Identification confidence: Very confident

Species found: Yes **If not found, why not?**

Level of survey effort: Fully botanical survey

Total number of individuals: 200-500

Collection? No **Collection number:**

Museum/Herbarium:

PLANT INFORMATION

Phenology:

vegetative	flowering	fruiting
15 %	85 %	0 %

SITE INFORMATION

Habitat description: Species were observed approximately 2-5 feet from the coast in tidally influenced saturated soils adjacent to riprap along coast. Dominant species and habitat included primarily Juncus.

Slope: 1-2 percent

Land owner/manager:

Aspect:

Site condition + population viability: Good

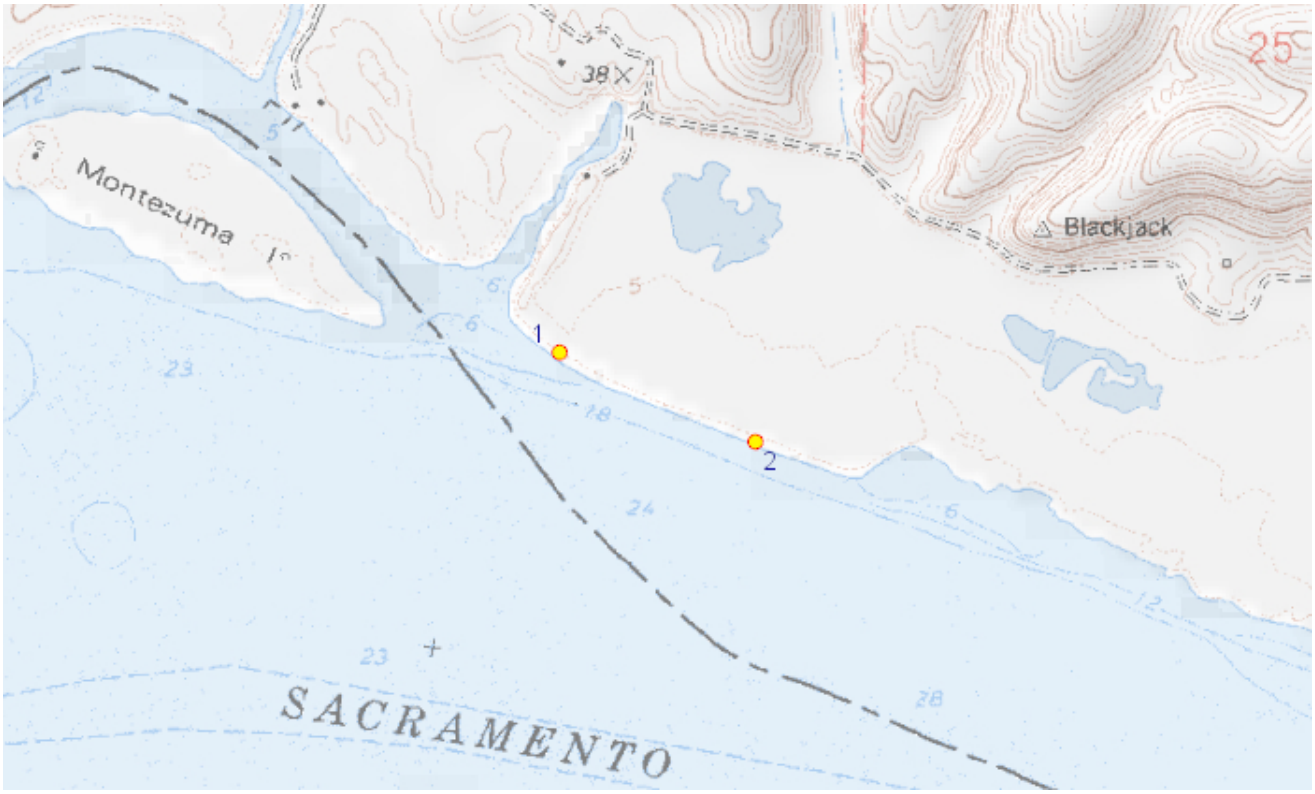
Immediate & surrounding land use: N/A

Visible disturbances: Riprap along coast, trash/debris, man-made berms.

Threats: Trash accumulation, potential grazing

General comments:

MAP INFORMATION



ID	County	24K Quadrangle	Elev. (ft)	Latitude NAD83	Longitude NAD83	UTM E NAD83	UTM N NAD83	UTM Zone
	Solano	Antioch North	-9999	38.07129	-121.83182	602465	4214370	10
1	**Public Land Survey**	**Feature Comment**						
	M T03N R01E 26	rhizomatous spreading aprox. 5 ft from coast						

ID	County	24K Quadrangle	Elev. (ft)	Latitude NAD83	Longitude NAD83	UTM E NAD83	UTM N NAD83	UTM Zone
	Solano	Antioch North	-9999	38.06968	-121.82733	602861	4214196	10
2	**Public Land Survey**	**Feature Comment**						
	M T03N R01E 26	Rhizomatous spreading along coast						

The mapped feature is accurate within: 10 m

Source of mapped feature: Handheld submeter GPS unit

Mapping notes: Species spreads along the coast and was found consistently between the two mapped points.

Location/directions comments:

Attachment(s):

ATTACHMENT D: COLLINSVILLE 500/230 KILOVOLT SUBSTATION PROJECT BOTANICAL SURVEY REPORT ADDENDUM

INSIGNIA ENVIRONMENTAL

LS POWER GRID CALIFORNIA, LLC

COLLINSVILLE 500/230 KILOVOLT SUBSTATION PROJECT

BOTANICAL SURVEY REPORT ADDENDUM

NOVEMBER 2024

PREPARED FOR:

LS POWER GRID CALIFORNIA

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1 – INTRODUCTION

LS Power Grid California, LLC (LSPGC) retained Insignia Environmental (Insignia) to conduct fully floristic botanical surveys for the Collinsville 500/230 Kilovolt (kV) Substation Project (Proposed Project). As depicted in Figure 1: Project Overview Map, the Proposed Project includes the construction of a new 500/230 kV substation (Collinsville Substation), the construction of two new 500 kV single-circuit transmission line segments that would loop Pacific Gas and Electric Company's (PG&E's) existing Vaca Dixon-Tesla 500 kV Transmission Line into the proposed LSPGC Collinsville Substation, and the construction of one new 230 kV double-circuit transmission line that would connect the proposed Collinsville Substation to PG&E's existing Pittsburg Substation. The Proposed Project has been designed to address overloads on the existing Contra Costa-Newark 230 kV corridor and provide an additional supply into the northern greater San Francisco Bay Area to increase reliability to the area and advance additional renewable generation.

The Botanical Survey Report (Report) (Insignia 2023) was prepared in October 2023 to identify special-status plant species that may be present within or adjacent to the Proposed Project's terrestrial survey area.[1] The terrestrial survey area has since been expanded by approximately 184 acres, and fully floristic botanical surveys were required within the revised terrestrial survey area. Additionally, the 2023 surveys were conducted outside the blooming period for four special-status plant species. Therefore, 2024 surveys included fully floristic botanical surveys in the revised terrestrial survey area and targeted botanical surveys for four special-status plant species in the terrestrial survey area. This Botanical Survey Report Addendum (Report Addendum) details the findings of the 2024 targeted and fully floristic surveys within the terrestrial survey area and revised terrestrial survey area, respectively.

2 – PROJECT LOCATION

The location of the Proposed Project has not changed since the submission of the 2023 Report. As depicted in Figure 1: Project Overview Map, the proposed LSPGC Collinsville Substation would be located near the unincorporated community of Collinsville, located in the southwestern portion of Solano County. The revised terrestrial survey area is bordered on the south and southwest by the Sacramento River, where it debouches into Suisun Bay; on the west by the Montezuma Hills and Suisun Marsh; and to the north and east by agricultural lands. The Proposed Project would create a connection to PG&E's existing Pittsburg Substation, which is located in the City of Pittsburg in the northern portion of Contra Costa County.

[1] The terrestrial survey area primarily consists of all terrestrial areas of the Proposed Project north of the Sacramento River, as well as an approximately 10-acre buffer. Terrestrial areas south of Suisun Bay, in the vicinity of PG&E's existing Pittsburg Substation, comprise a small portion of the terrestrial survey area.

3 – METHODS

3.0 DEFINITIONS

The following definitions were used to define special-status resources within the terrestrial survey area and revised terrestrial survey area.

3.0.0 Special-Status Plants

Plant species are considered special-status if they met one or more of the following criteria:

- Species listed or candidates for listing as threatened or endangered under the federal Endangered Species Act;
- Species listed or candidates for listing as threatened or endangered under the California Endangered Species Act;
- Species meeting the definition of endangered, rare, or threatened under the California Environmental Quality Act (CEQA) (14 California Code of Regulations Section 15380), which may include species not found on the federal or state endangered species lists; or
- Species considered by the California Native Plant Society (CNPS) to be rare, threatened, or endangered in California (i.e., California Rare Plant Ranks [CRPRs] 1A, 1B, 2A, 2B, and 3).

3.0.1 Sensitive Natural Communities and Habitats

Natural communities are considered sensitive if they met one or more of the following criteria:

- Sensitive vegetation communities/habitats identified in local or regional plans, policies, or regulations, or designated as sensitive by the California Department of Fish and Wildlife (CDFW) or United States (U.S.) Fish and Wildlife Service (USFWS) (including communities assigned a State Rarity Rank of S1 to S3 under the CDFW Vegetation Classification and Mapping Program);
- Areas that provide habitat for locally unique biotic species/communities (e.g., oak woodlands, grasslands, and forests);
- Habitat that contains or supports rare, endangered, or threatened wildlife or plant species as defined by the CDFW and USFWS;
- Habitat that supports one or more CDFW Species of Special Concern;
- Areas that provide habitat for rare or endangered species and that meet the definition in CEQA Guidelines Section 15380;
- Existing game and wildlife refuges and reserves;

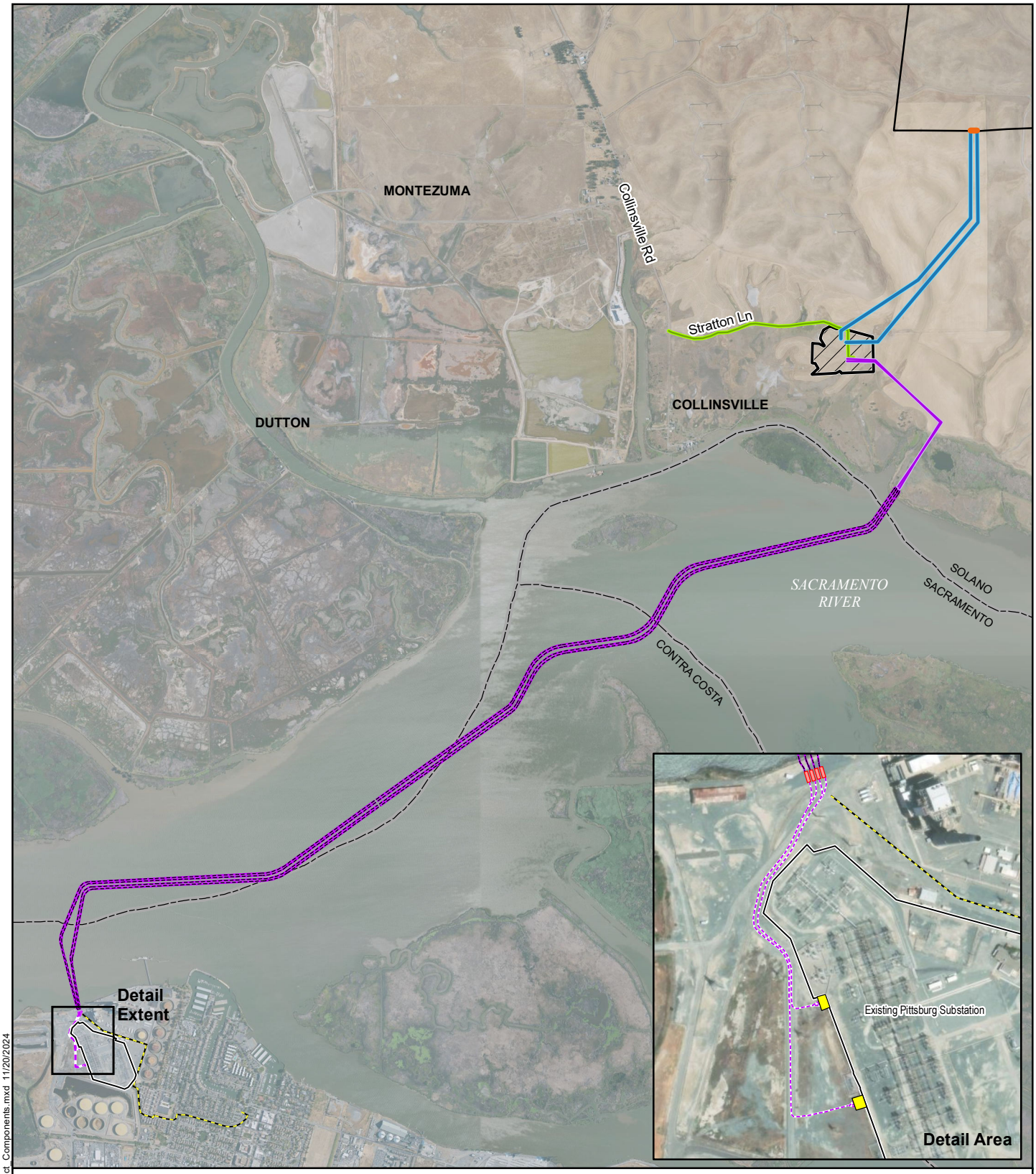

Figure 1: Project Overview Map

Collinsville 500/230 Kilovolt Substation Project

- Proposed LSPGC 230 kV Overhead Segment
- Proposed LSPGC 230 kV Submarine Segment
- Proposed LSPGC 230 kV Underground Segment
- Proposed PG&E 500 kV Interconnection
- Proposed PG&E 12 kV Distribution Line
- Existing PG&E 500 kV Transmission Line to be Removed
- County Boundary
- Existing PG&E Vaca Dixon-Tesla Transmission Line
- Existing Pittsburg Substation
- Proposed LSPGC Collinsville Substation Site
- Proposed LSPGC Telecommunications Line
- Proposed Riser
- Proposed Utility Vault

1:38,000

0 2,000 4,000 Feet

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Z:\Projects\LS_Power_Collinsville\MXD\Permitting\Project_Components.mxd 11/20/2024

- Lakes, wetlands, estuaries, lagoons, streams, and rivers; or
- Riparian corridors.

3.1 DESKTOP REVIEW

A literature and database review was conducted to identify special-status plant species with the potential to occur within the terrestrial survey area and revised terrestrial survey area. A geographic information system review of records from the California Natural Diversity Database (CNDDB) (CDFW 2023b), was conducted in the U.S. Geological Survey 7.5-minute quadrangles within and adjacent to the terrestrial survey area. Records for all known special-status plant species within 0.25 mile, 1 mile, and 5 miles of the Proposed Project were compiled and reviewed. The CNPS Inventory of Rare and Endangered Plants of California (CNPS 2023a) was reviewed with a nine-quadrangle search to obtain additional information regarding special-status plant species. The terrestrial survey area overlaps significantly with the Sacramento Municipal Utility District's (SMUD's) Solano 4 Wind Project, for which a final Environmental Impact Report is available (SMUD 2021); this document was referenced during the preliminary desktop review to identify special-status plant species and their potential to occur within the terrestrial survey area. Attachment B: Special-Status Species with the Potential to Occur in the 2023 Report contains a list of special-status plants with the potential to occur in the terrestrial survey area. Aerial imagery (Google Earth 2024) and the Vegetation Community and Mapping Program (VegCAMP) (CDFW 2023c) were used to assess land cover and habitat types within the terrestrial survey area and revised terrestrial survey area.

3.2 REFERENCE POPULATION SEARCH

Reference population checks were conducted in accordance with the CDFW's Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities guidelines (CDFW 2018). Known occurrences and populations of special-status plants within 12 miles of the revised terrestrial survey area were investigated concurrent with the botanical surveys to confirm the blooming status and obtain a visual image of the special-status plant species. Further, local botanists working in areas adjacent to the Proposed Project were consulted to determine if special-status plants were observed to be blooming prior to field surveys dates.

3.3 FIELD SURVEY

3.3.0 Fully Floristic Survey

The geographical boundaries of the fully floristic survey, as depicted in Attachment A: Biological Resources Map, were limited to the revised terrestrial survey area and included approximately 184 acres of previously unsurveyed land associated with the land-based portions of the Proposed LSPGC Collinsville Substation Site, the Proposed LSPGC 230 kV Overhead Segment, the Proposed PG&E 500 kV Interconnection, and the Proposed PG&E 12 kV Distribution Line. While PG&E's existing Pittsburg Substation, located at the southern terminus of the Proposed Project in Contra Costa County, is situated adjacent to marsh habitat suitable for marsh-dependent special-status plant species, the substation site does not provide suitable habitat for special-status plant species because the facility is located entirely within developed land (e.g.,

graveled or paved), and unvegetated rip-rap is present along much of the shoreline. Because Proposed Project activities at PG&E's existing Pittsburg Substation site are not anticipated to occur within or result in impacts to suitable habitat for special-status plant species, the revised terrestrial survey area in the vicinity of PG&E's existing Pittsburg Substation site was excluded from fully floristic surveys.

Insignia biologists conducted fully floristic plant surveys that covered 100 percent of the revised terrestrial survey area. Transect spacing between surveyors was less than or equal to 10 meters. The surveys were conducted in accordance with guidelines published by the CNPS (2001), the CDFW (2018), and the USFWS (2000), which state the following:

- Surveys should be conducted at the proper time of year when locally significant plants are both evident and identifiable.
- Surveys must be floristic in nature, and the species, subspecies, or variety must be identified for every observed plant to determine the rarity status.
- Surveys must be conducted in a manner that is consistent with conservation ethics and accepted plant collection and documentation techniques.

3.3.1 Targeted Survey

The geographical boundaries of the targeted survey, depicted as the terrestrial survey area in Attachment A: Biological Resources Map of the 2023 Report, were limited to the terrestrial survey area from the 2023 Report and include the land-based portions of the Proposed LSPGC Collinsville Substation Site, the Proposed LSPGC 230 kV Overhead Segment, the Proposed PG&E 500 kV Interconnection, and the Proposed PG&E 12 kV Distribution Line. As described in Section 3.3.0 Fully Floristic Survey, PG&E's existing Pittsburg Substation site was excluded from the targeted surveys.

Insignia biologists conducted targeted surveys during appropriate blooming periods for three of four special-status plant species that covered 100 percent of the terrestrial survey area. The fourth species, Carquinez goldenbush, is a perennial shrub and is identifiable year-round.

Transect spacing between surveyors was less than or equal to 10 meters. The targeted surveys were focused on the following special-status plant species:

- diamond-petaled California poppy (*Eschscholzia rhombipetala*),
- fragrant fritillary (*Fritillaria liliacea*),
- Carquinez goldenbush (*Isocoma arguta*), and
- chaparral ragwort (*Senecio aphanactisii*).

4 – RESULTS

4.0 GEOGRAPHY, CLIMATE, AND HYDROLOGY

The Proposed Project area receives an average of 16.6 inches of rainfall per year, with the majority of precipitation falling between November and March (Weather Spark 2024). Average annual temperatures range from 48 to 73 degrees Fahrenheit (National Oceanic and Atmospheric

Administration [NOAA] 2023). The elevation of the Proposed Project area ranges from 3 to 250 feet above sea level.

4.1 DESKTOP REVIEW

Similar to the results of the initial desktop analysis, upland areas around the proposed LSPGC Collinsville Substation site and transmission line route within the revised terrestrial survey area are mainly composed of grassland habitat and agricultural areas. The southern edge of the revised terrestrial survey area along the Sacramento River appeared to support native riparian habitat areas and freshwater wetlands.[2] No special-status plant species were observed in portions of the terrestrial survey area and the revised terrestrial survey area that overlap with the Solano 4 Winds Project. PG&E's existing Pittsburg Substation site in Contra Costa County may have some fringe marsh habitat near the shoreline outside of the revised terrestrial survey area, but the majority of the facility appeared to be developed (e.g., graveled or paved) with rip-rap present along much of the revised terrestrial survey area shoreline.

Insignia compiled a list of 28 special-status plant species that have potential to occur within 5 miles of the revised terrestrial survey area and terrestrial survey area. A list of these species and further details about their listing status, life history, blooming period, and a brief assessment of their potential to occur within the terrestrial survey area and revised terrestrial survey area are described in Attachment B: Special-Status Species with the Potential to Occur of the Report. Attachment B: CNDDB Plant Occurrences Map depicts the locations of all special-status plant occurrences in the CNDDB within 5 miles of the terrestrial survey area and the revised terrestrial survey area. No USFWS-designated critical habitat for federally listed plants was found within or adjacent to the terrestrial survey area or the revised terrestrial survey area.

4.2 REFERENCE POPULATION SEARCH

Prior to fully floristic botanical surveys in 2023, reference checks were attempted at eight locations within 5 miles of the terrestrial survey area. Many of these locations have historically documented occurrences of special-status plants but have since been converted to active agriculture use. This cover type is extensive and is the primary land use within 5 miles of the terrestrial survey area. Further, the reference populations for many special-status plant species in the Report were located on private property and were inaccessible to the survey team. None of the eight reference sites checked in 2023 were revisited in 2024.

To increase the chances of observing reference populations of special-status plant species, three additional locations up to 12 miles from the revised terrestrial survey area were assessed. Two of the three reference sites visited in 2024 were located on private property with limited access; however, one special-status plant species, Contra Costa goldfields (*Lasthenia conjugens*), was observed blooming abundantly at the third reference site.

To supplement field reference checks, local botanists working in areas adjacent to the Proposed Project were consulted. The following six special-status plant species were observed in leaf or in

[2] Formal wetland and waters delineations were conducted between May 6, 2024 and July 10, 2024 in the Proposed Project area. Attachment A: Biological Resources Map depicts wetland boundaries from the formal delineations.

bloom in habitats adjacent to the Proposed Project before or during the April survey period (Bartosh 2024):

- Alkali milk-vetch (*Astralagus tener* var. *tener*) was observed in bloom during April.
- Mt. Diablo buckwheat (*Eriogonum truncatum*) was observed in leaf before April.
- Diamond-petaled California poppy was observed in leaf before April.
- San Joaquin spearscale (*Extriplex joaquinana*) was observed in leaf during April.
- Fragrant fritillary was observed in bloom before April.
- Diablo helianthella (*Helianthella castanea*) was observed in bloom during April.

Findings from reference population checks and additional outreach with local botanists prompted the initiation of the field surveys and confirmed that they would be conducted within the appropriate blooming periods for the applicable species.

4.3 FIELD SURVEY

From April 22 to 26, 2024, Insignia biologists conducted fully floristic botanical surveys and targeted surveys within the revised terrestrial survey area and terrestrial survey area, respectively. All observed special-status plant species were photographed and recorded using a submeter-accurate Global Positioning System unit. The following subsections describe the results of the field surveys.

4.3.0 Vegetation Communities

The following 11 vegetation community alliances and land cover types were identified within the terrestrial survey area and revised terrestrial survey area:

- *Brassica nigra - Centaurea* (*solstitialis, melitensis*) Herbaceous Semi-Natural Alliance
- *Distichlis spicata* Herbaceous Alliance
- *Frankenia salina* Herbaceous Alliance*[3]
- *Juncus arcticus* (var. *balticus, mexicanus*) Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- Open water
- Road
- *Rosa californica* Shrubland Alliance*
- *Salix exigua* Shrubland Alliance
- *Schoenoplectus* (*acutus, californicus*) Herbaceous Alliance*
- *Schoenoplectus acutus/Rosa californica* Association*

The vegetation community and land cover locations are documented in Attachment A: Biological Resources Map. Four of the nine natural communities observed are considered sensitive natural communities by the CDFW (CDFW 2023a). Descriptions of each vegetation community identified within the terrestrial survey area and revised terrestrial survey area are provided in the 2023 Report.

[3] The asterisks refer to a CDFW-designated sensitive natural community (State Rarity Rank S1-S3).

4.3.1 Special-Status Plants

Insignia biologists identified a total of 208 plant species during the 2023 and 2024 fully floristic botanical surveys in the terrestrial survey area and revised terrestrial survey area. An additional 56 plant species were identified within the revised terrestrial survey area that had not been previously observed within the terrestrial survey area. The addition of the revised terrestrial survey area did not change any determinations on Attachment B: Special-Status Plant Species with the Potential to Occur in the 2023 Report because there were no changes in suitable habitat within the revised terrestrial survey area and the terrestrial survey area. One special-status plant species—Delta tule pea (*Lathyrus jepsonii* var. *jepsonii*)—was identified within the revised terrestrial survey area. Several new populations of Delta mudwort (*Limosella australis*) were observed within the terrestrial survey area. All plants observed within the terrestrial survey area and revised terrestrial survey area are listed in Attachment C: Plant Species Observed; species not previously observed within the terrestrial survey area are noted with asterisks. Photographs of the special-status plants observed within the revised terrestrial survey area are provided in Attachment D: Special-Status Plant Photographs. The locations of all special-status plants observed within the terrestrial survey area and revised terrestrial survey area are depicted in Attachment A: Biological Resources Map. A summary of the special-status plant species observed during fully floristic surveys and targeted surveys is provided in the following subsections.

Delta Tule Pea

Delta tule pea is a perennial herb endemic to California with a CRPR of 1B.2. Two populations of this species were observed within the revised terrestrial survey area. One of the two populations is located adjacent to an inlet along the north shore of the Sacramento River within *Rosa californica* Shrubland Alliance and *Schoenoplectus acutus*/*Rosa Californica* Association vegetation communities. The second population is located on the south shore of the Sacramento River within *Schoenoplectus* (*acutus*, *californicus*) Herbaceous Alliance nearby Delta tule pea populations found during 2023 surveys. Populations found in 2023 were observed and confirmed to be present in 2024. These areas are depicted on maps 1 and 13 in Attachment A: Biological Resources Map. Attachment D: Special-Status Plant Photographs provides photographs of select populations of Delta tule pea. CNDDB forms for the Delta tule pea populations identified in the terrestrial survey area have been completed and are provided in Attachment E: CNDDB Submittal Forms.

Mason's Lilaeopsis

Mason's lilaeopsis (*Lilaeopsis masonii*) is a perennial herb endemic to California with a CRPR of 1B.1. During the 2023 surveys, extensive populations of this species were observed along the southern edge of the terrestrial survey area within intertidal vegetation communities, including the *Schoenoplectus acutus* Herbaceous Alliance and *Juncus arcticus* (var. *balticus*, *mexicanus*) Herbaceous Alliance. During the 2024 surveys, this species was observed in bloom and confirmed to be present within the same areas of the terrestrial survey area mapped in 2023. These areas are depicted in map 1 of Attachment A: Biological Resources Map. No additional populations were observed during the 2024 surveys.

Welsh Mudwort

Welsh mudwort is a perennial herb native to California with a CRPR of 2B.1. During the 2023 surveys, this species was observed within the intertidal zone at the southern edge of the terrestrial survey area and within the *Schoenoplectus acutus* Herbaceous Alliance. During the 2024 surveys, this species was observed in bloom and confirmed to be present within the areas of the terrestrial survey area mapped in 2023. Additional populations of this species were observed and recorded within the same intertidal zone in 2024. These areas are depicted in map 1 of Attachment A: Biological Resources Map.

5 – DISCUSSION AND SUMMARY

During the fully floristic surveys conducted in April 2024, one special-status plant species—Delta tule pea—was observed in the revised terrestrial survey area on both the north and south shores of the Sacramento River, as shown in Attachment A: Biological Resources Map. Additionally, during targeted surveys, incidental observations of Delta mudwort and Mason's lilaeopsis were mapped in the terrestrial survey area adjacent to the populations that were previously mapped during the 2023 surveys. These populations are depicted in Attachment A: Biological Resources Map. No additional special-status species were observed in the terrestrial survey area or the revised terrestrial survey area during the 2024 surveys.

The vast majority of the upland habitats in the northern portions of the terrestrial survey area and revised terrestrial survey area are dominated by non-native and invasive plant species and therefore likely do not provide suitable habitat for the special-status plants with potential to occur. Additionally, some upland habitat in the northern portion of the terrestrial survey area and revised terrestrial survey area was observed to have been disturbed and subsequently hydroseeded with a native seed mix as a part of construction on the Solano 4 Wind Project.

6 – REFERENCES

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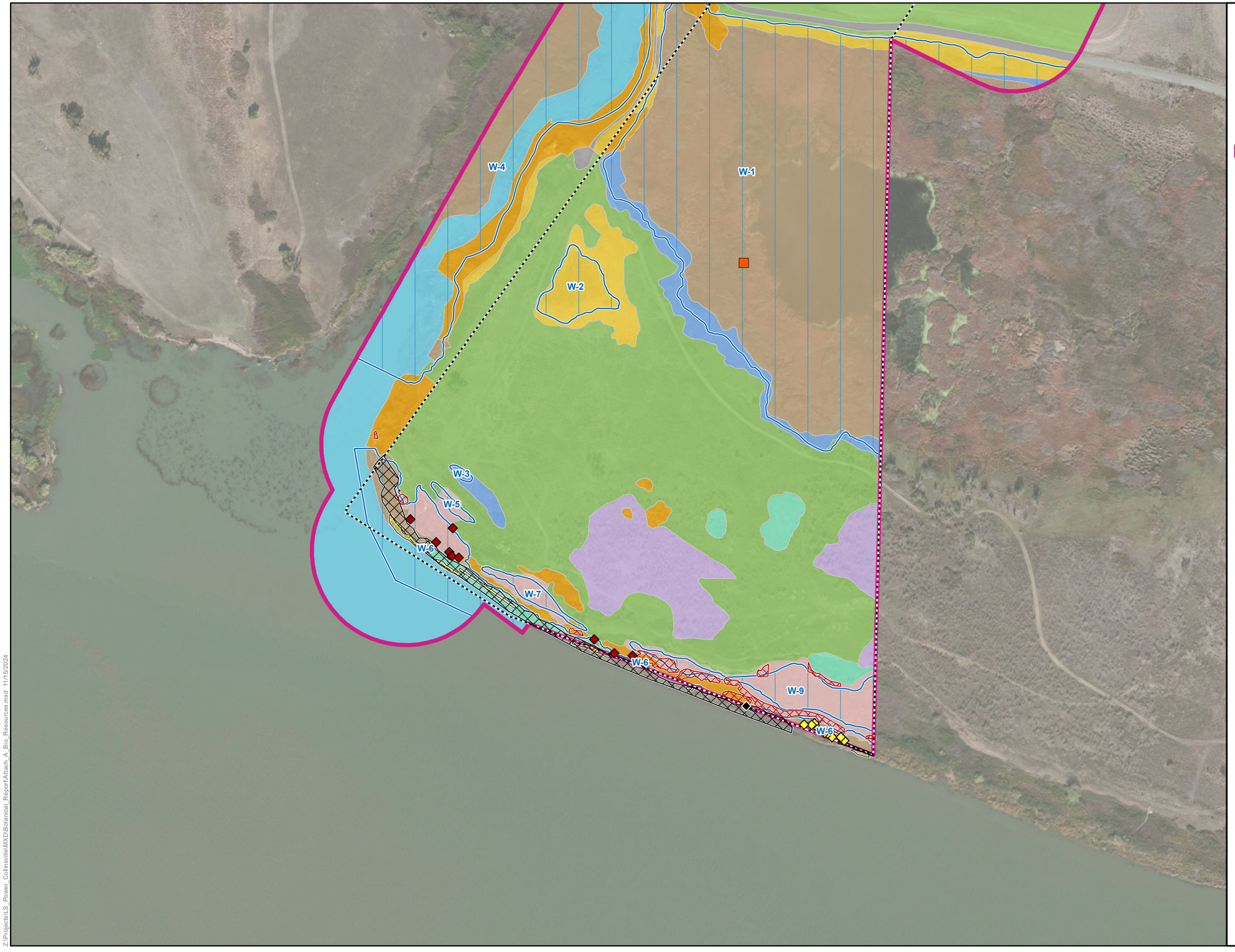
ATTACHMENT A: BIOLOGICAL RESOURCES MAP



Attachment A:
Biological Resources Map
Map 1 of 15

Collinsville 500/230 Kilovolt Substation Project

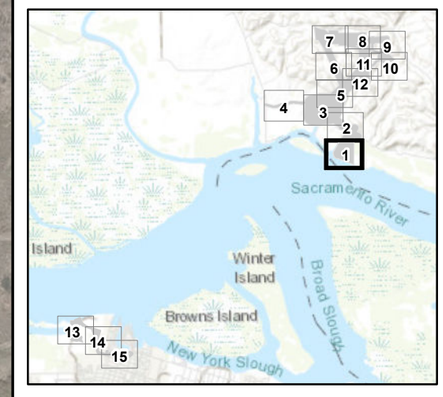
- Terrestrial Survey Area
- Revised Terrestrial Survey Area
- Wetland
- Northern Harrier Nest

Rare Plants

- Delta tule pea
- Mason's lilaeopsis
- Welsh mudwort
- Delta tule pea
- Mason's lilaeopsis
- Welsh mudwort

Vegetation Community

- *Distichlis spicata* Herbaceous Alliance
- *Frankenia salina* Herbaceous Alliance
- *Juncus arcticus (var. balticus, mexicanus)* Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Rosa californica* Shrubland Alliance
- *Salix exigua* Shrubland Alliance
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- *Schoenoplectus acutus/rosa californica* Association
- Road/Bare Ground
- Open Water



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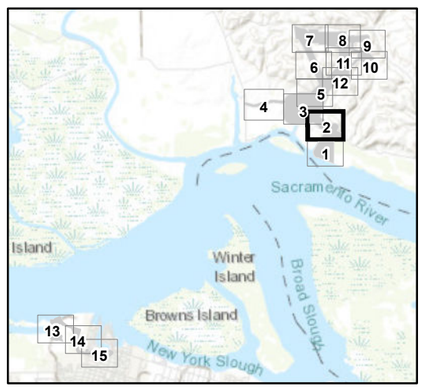
Attachment A:
Biological Resources Map
Map 2 of 15

Collinsville 500/230 Kilovolt Substation Project

- Terrestrial Survey Area
- Revised Terrestrial Survey Area
- Wetland

Vegetation Community

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Distichlis spicata* Herbaceous Alliance
- *Frankenia salina* Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Polygonum lapathifolium - Xanthium strumarium* Herbaceous Alliance
- *Rosa californica* Shrubland Alliance
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- Road/Bare Ground
- Open Water



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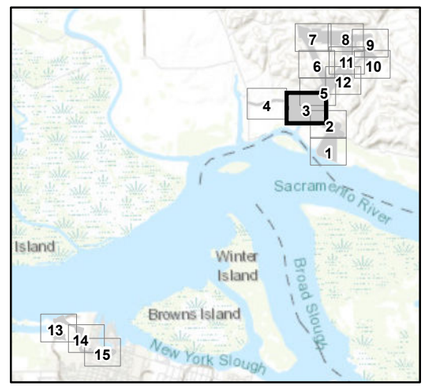
Attachment A:
Biological Resources Map
Map 3 of 15

Collinsville 500/230 Kilovolt Substation Project

- Terrestrial Survey Area
- Revised Terrestrial Survey Area
- Wetland

Vegetation Community

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Distichlis spicata* Herbaceous Alliance
- *Frankenia salina* Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Polygonum lapathifolium - Xanthium strumarium* Herbaceous Alliance
- *Sarcocornia pacifica* Herbaceous Alliance
- *Rosa californica* Shrubland Alliance
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- *Schoenoplectus americanus* Herbaceous Alliance
- *Typha (angustifolia, domingensis, latifolia)* Herbaceous Alliance
- Road/Bare Ground



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Attachment A:
Biological Resources Map
Map 4 of 15

Collinsville 500/230 Kilovolt Substation Project

Revised Terrestrial Survey Area

Wetland

Vegetation Community

Brassica nigra - Centaurea (solstitialis, melitensis) Herbaceous Semi-Natural Alliance

Distichlis spicata Herbaceous Alliance

Frankenia salina Herbaceous Alliance

Lolium perenne Herbaceous Semi-Natural Alliance

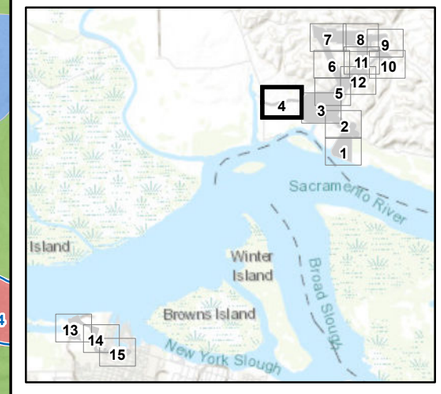
Sarcocornia pacifica Herbaceous Alliance

Schoenoplectus (acutus, californicus) Herbaceous Alliance

Road/Bare Ground

Developed

W-23
W-22
W-29
W-28
W-13
W-14
W-12



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Attachment A:
Biological Resources Map
Map 5 of 15

Collinsville 500/230 Kilovolt Substation Project

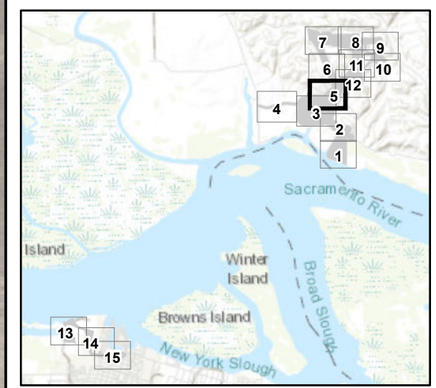
- Terrestrial Survey Area
- Revised Terrestrial Survey Area
- Ephemeral Stream
- Wetland

Vegetation Community

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Distichlis spicata* Herbaceous Alliance
- *Frankenia salina* Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Typha (angustifolia, domingensis, latifolia)* Herbaceous Alliance
- Road/Bare Ground

D-1

W-16



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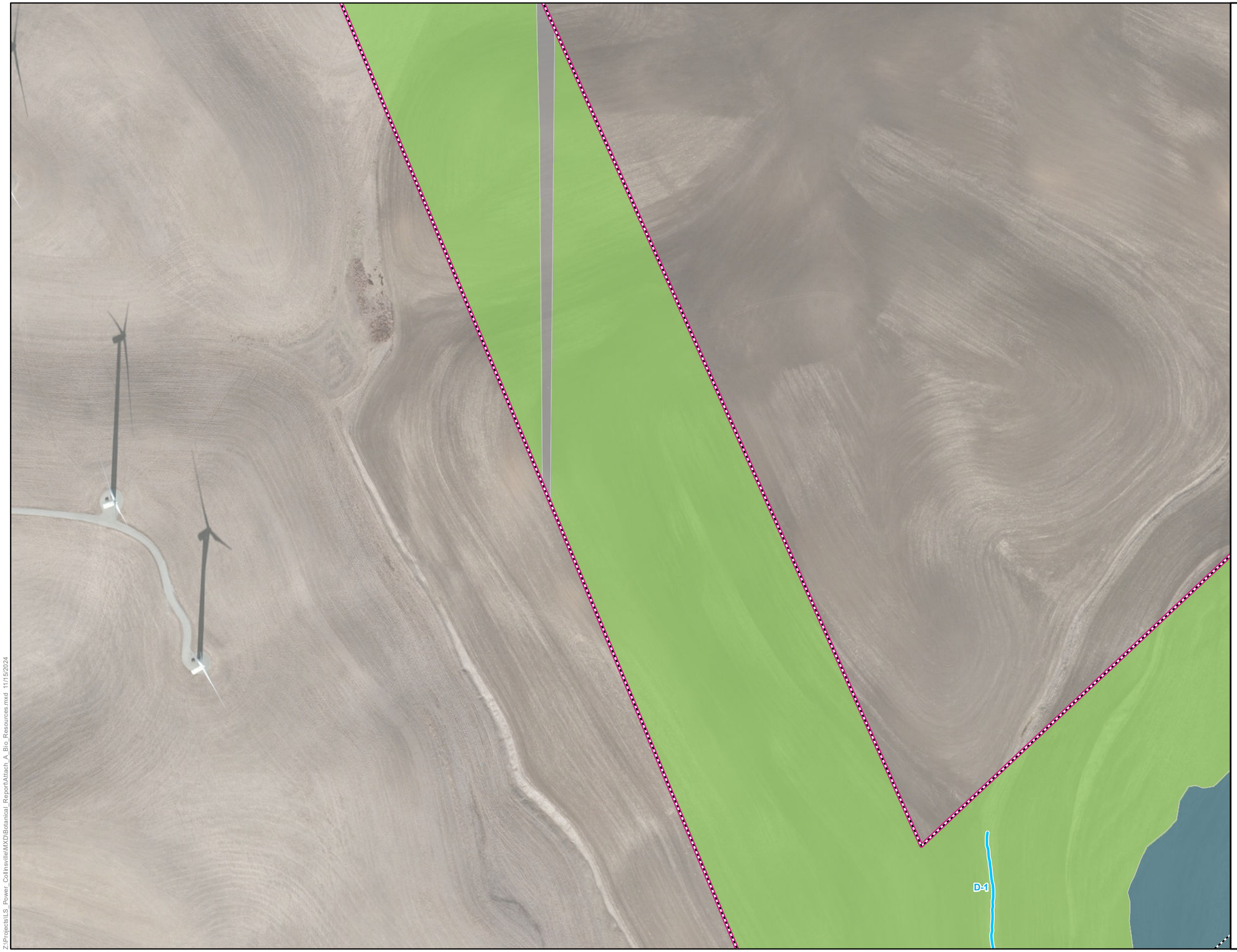


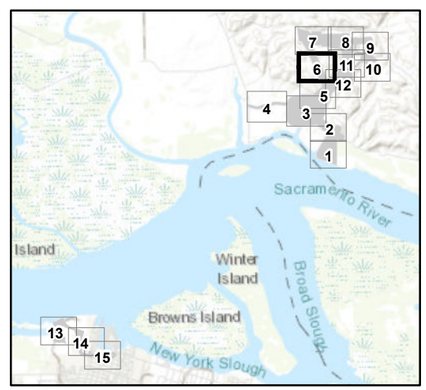
Attachment A:
Biological Resources Map
Map 6 of 15

Collinsville 500/230 Kilovolt Substation Project

Terrestrial Survey Area
Revised Terrestrial Survey Area
Ephemeral Stream

Vegetation Community

Brassica nigra - Centaurea (solstitialis, melitensis) Herbaceous Semi-Natural Alliance
Lolium perenne Herbaceous Semi-Natural Alliance
Road/Bare Ground



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Attachment A:
Biological Resources Map
Map 7 of 15

Collinsville 500/230 Kilovolt Substation Project

Terrestrial Survey Area

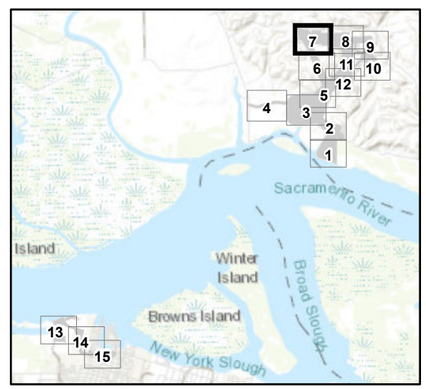
Revised Terrestrial Survey Area

Vegetation Community

Brassica nigra - Centaurea (solstitialis, melitensis) Herbaceous Semi-Natural Alliance

Lolium perenne Herbaceous Semi-Natural Alliance

Road/Bare Ground



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Attachment A:
Biological Resources Map
Map 8 of 15

Collinsville 500/230 Kilovolt Substation Project

Terrestrial Survey Area

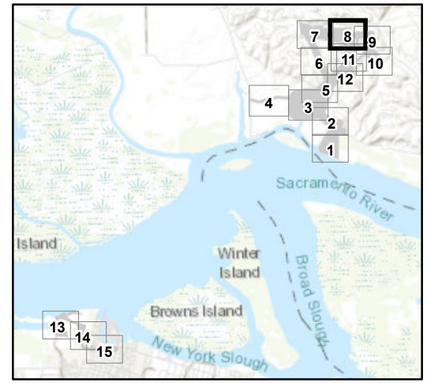
Revised Terrestrial Survey Area

Vegetation Community

Brassica nigra - Centaurea (solstitialis, melitensis) Herbaceous Semi-Natural Alliance

Lolium perenne Herbaceous Semi-Natural Alliance

Road/Bare Ground



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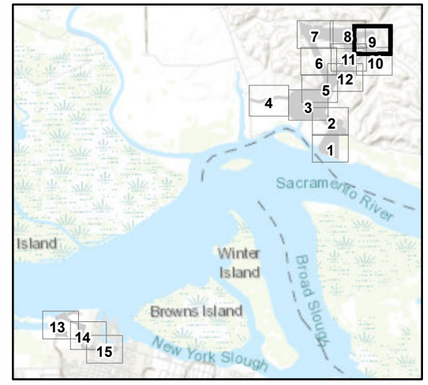
Attachment A:
Biological Resources Map
Map 9 of 15

Collinsville 500/230 Kilovolt Substation Project

- Terrestrial Survey Area
- Revised Terrestrial Survey Area

Vegetation Community

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- Road/Bare Ground



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Attachment A:
Biological Resources Map
Map 10 of 15

Collinsville 500/230 Kilovolt Substation Project

Terrestrial Survey Area

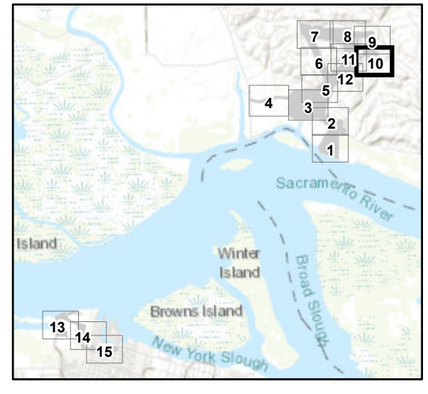
Revised Terrestrial Survey Area

Vegetation Community

Brassica nigra - Centaurea (solstitialis, melitensis) Herbaceous Semi-Natural Alliance

Lolium perenne Herbaceous Semi-Natural Alliance

Road/Bare Ground



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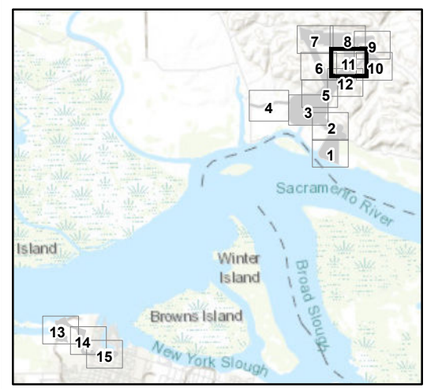
Attachment A:
Biological Resources Map
Map 11 of 15

Collinsville 500/230 Kilovolt Substation Project

- Terrestrial Survey Area
- Revised Terrestrial Survey Area
- Ephemeral Stream

Vegetation Community

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- Road/Bare Ground



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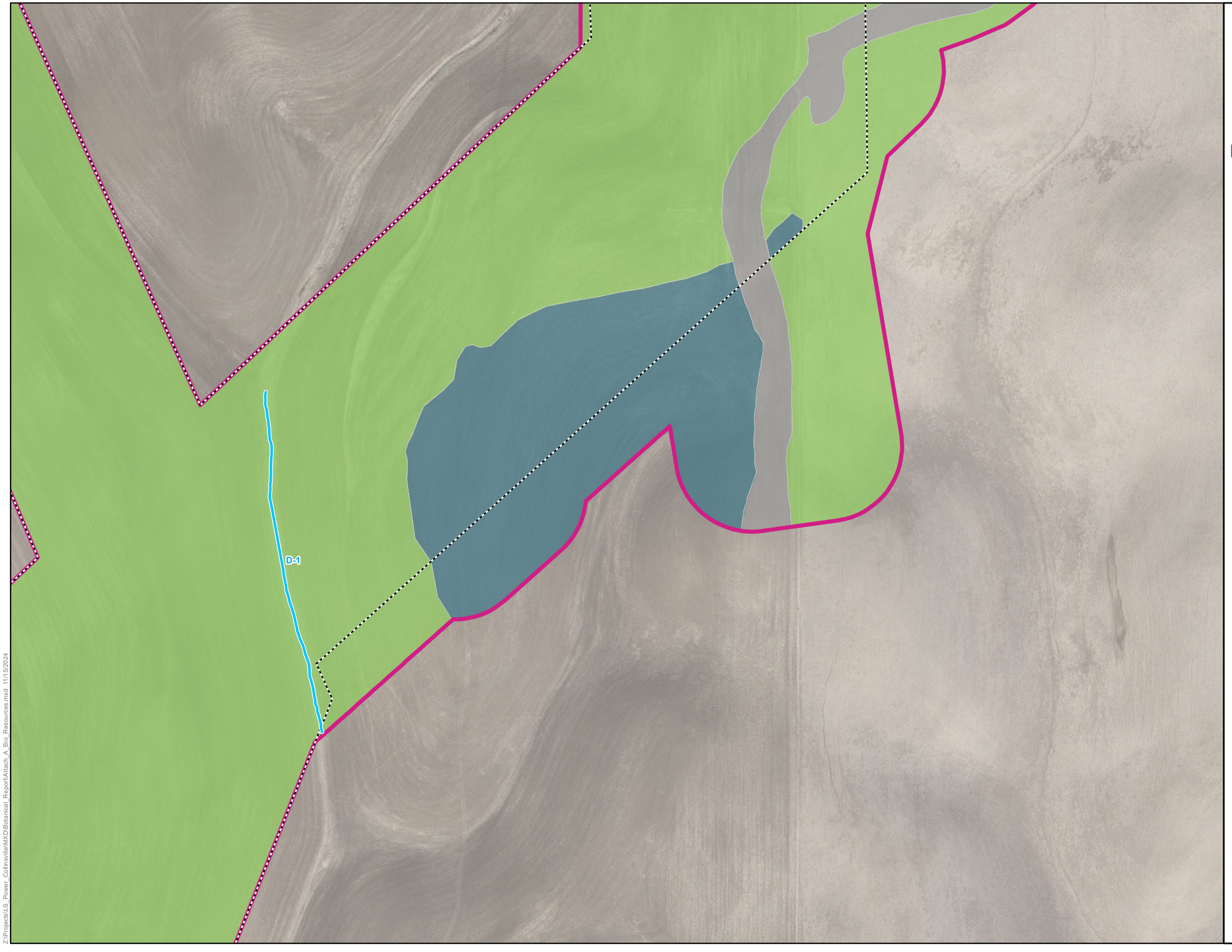


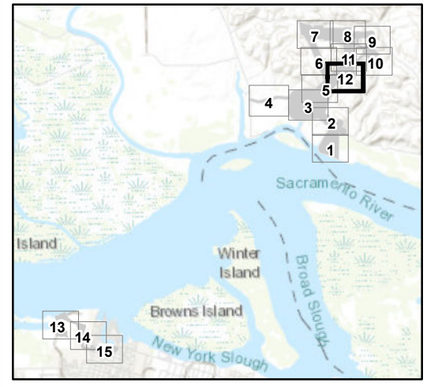
Attachment A:
Biological Resources Map
Map 12 of 15

Collinsville 500/230 Kilovolt Substation Project

Terrestrial Survey Area
Revised Terrestrial Survey Area
Ephemeral Stream

Vegetation Community

Brassica nigra - Centaurea (solstitialis, melitensis) Herbaceous Semi-Natural Alliance
Lolium perenne Herbaceous Semi-Natural Alliance
Road/Bare Ground



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LSPOWER GRID CALIFORNIA
INSIGNIA ENVIRONMENTAL

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Attachment A:
Biological Resources Map
Map 13 of 15

Collinsville 500/230 Kilovolt Substation Project

Revised Terrestrial Survey Area

Rare Plants

Delta tule pea

Vegetation Community

Lepidium latifolium – Lactuca serriola Herbaceous Alliance

Ornamental Vegetation

Juncus arcticus (var. balticus, mexicanus) Herbaceous Alliance

Schoenoplectus (acutus, californicus) Herbaceous Alliance

Baccharis pilularis Shrubland Alliance

Disturbed

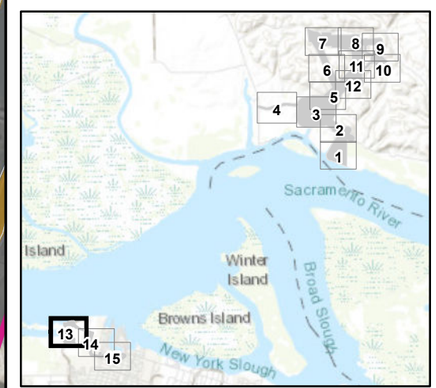
Road/Bare Ground

Rip Rap

Open Water

Developed

Not Surveyed



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LS POWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

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Attachment A:
Biological Resources Map
Map 14 of 15

Collinsville 500/230 Kilovolt Substation Project

Revised Terrestrial Survey Area

Vegetation Community

Lepidium latifolium – Lactuca serriola Herbaceous Alliance

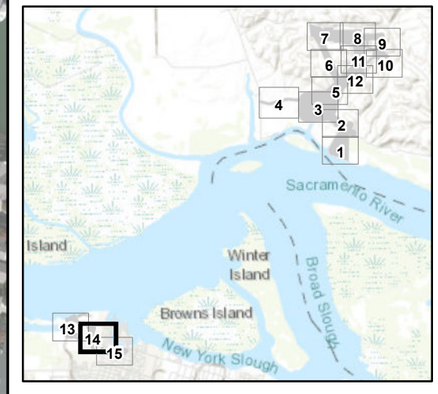
Ornamental Vegetation

Baccharis pilularis Shrubland Alliance

Disturbed

Developed

Not Surveyed



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LS POWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

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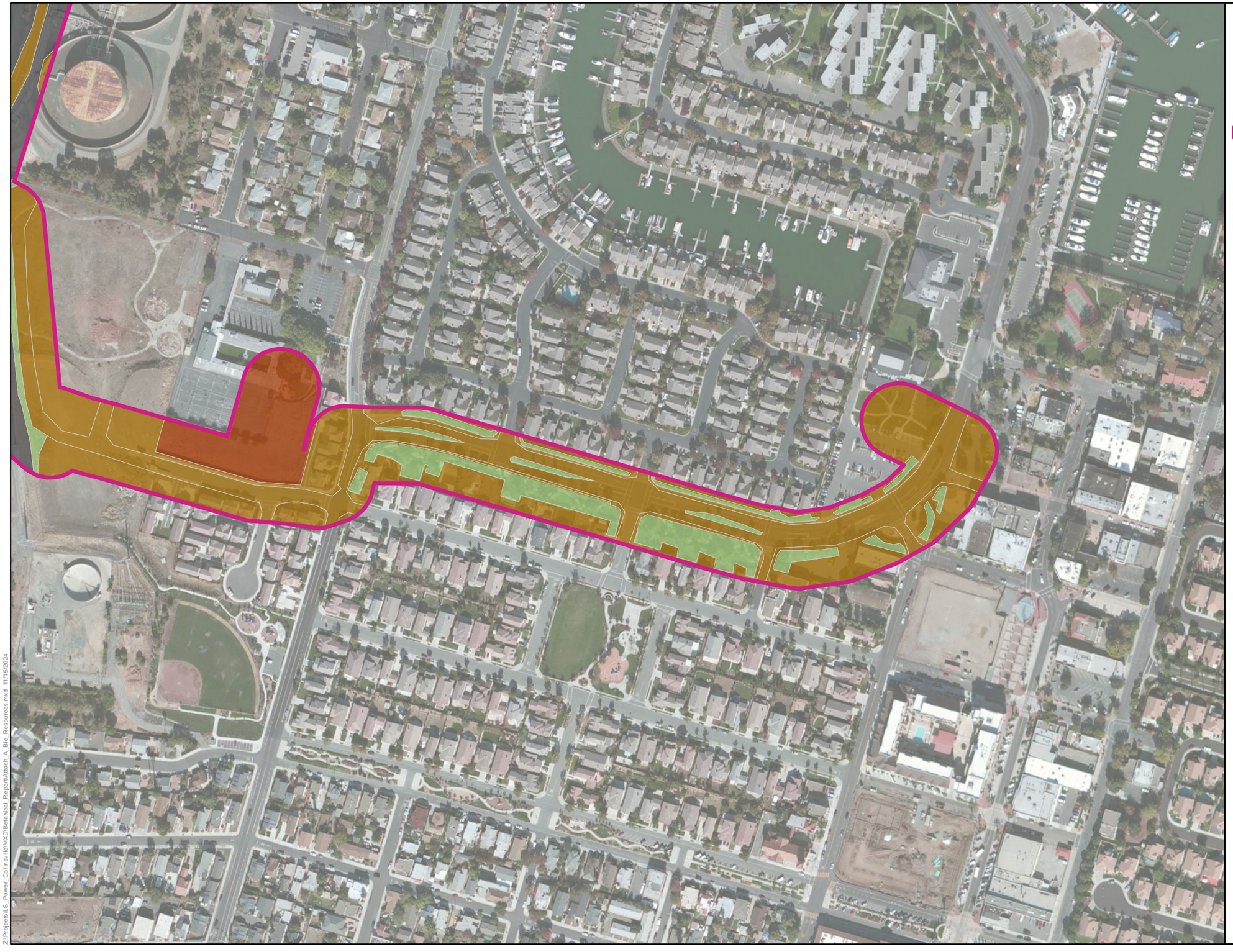


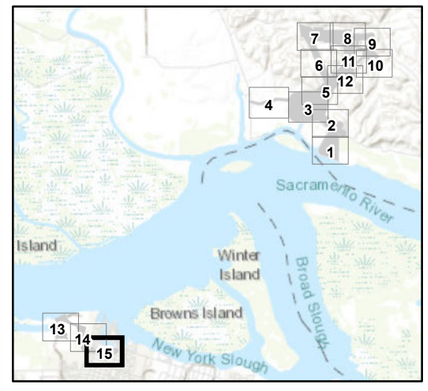
Attachment A:
Biological Resources Map
Map 15 of 15

Collinsville 500/230 Kilovolt Substation Project

Revised Terrestrial Survey Area

Vegetation Community

- Ornamental Vegetation
- Disturbed
- Developed
- Not Surveyed



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LS POWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

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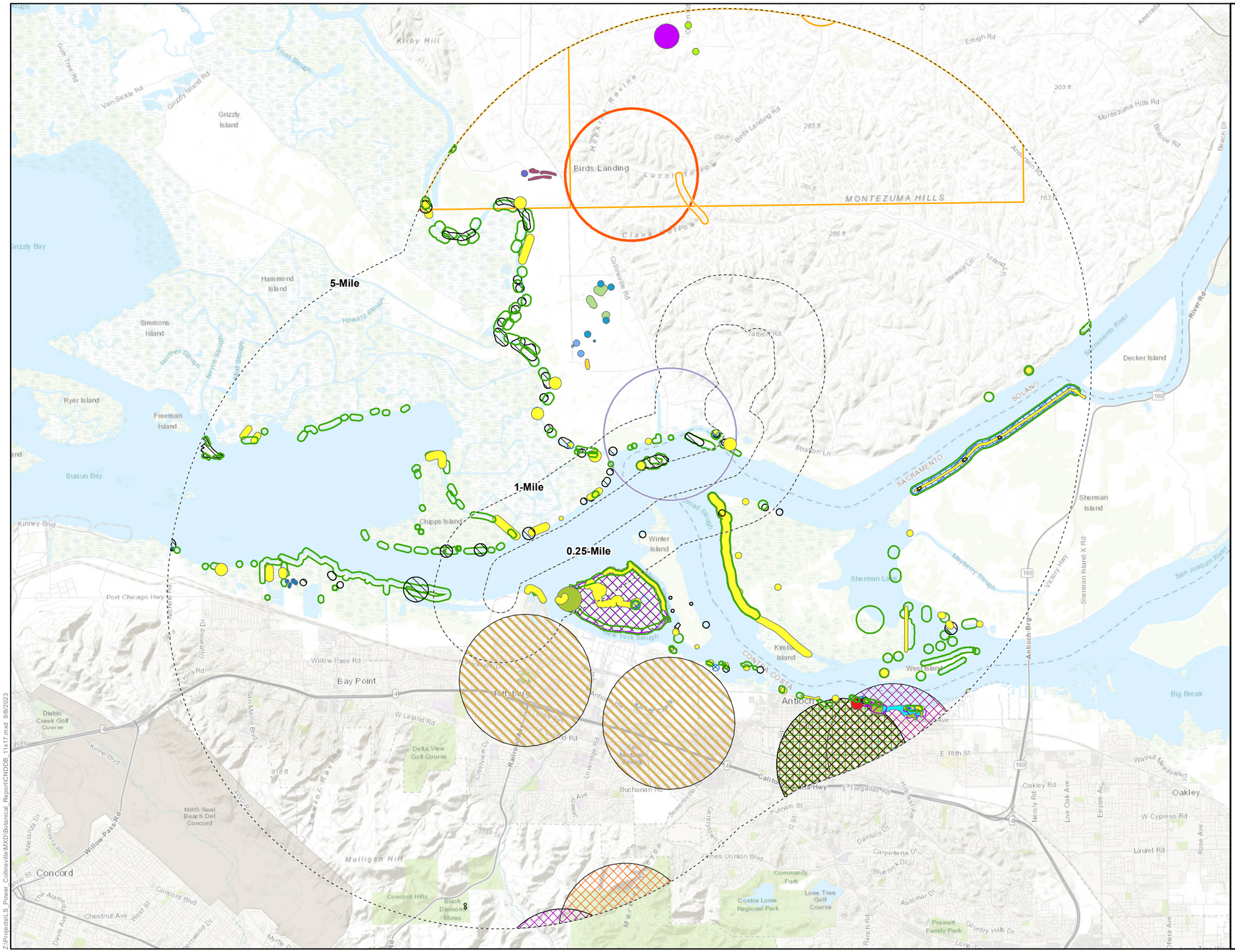
ATTACHMENT B: CNDDB PLANT OCCURRENCES MAP


5-Mile
1-Mile
0.25-Mile
Birds Landing
MONTEZUMA HILLS
Kirby Hill
Grizzly Island
Grizzly Bay
Hammond Island
Simmons Island
Ryer Island
Freeman Island
Suisun Bay
Chipps Island
Winter Island
Sherman Island
Decker Island
Sherman Lake
Kimball Island
West Island
Big Break
Antioch
Bay Point
Pittsburg
Concord
Mulligan Hill
Oakley
Collinsville Rd
Montezuma Hills Rd
Birds Landing Rd
Emigh Rd
Willow Pass Rd
Port Chicago Hwy
Kinney Blvd
Van Sickle Rd
Gum Tree Rd
Grizzly Island Rd
Frost Slough
Howard Slough
Horner Slough
Morrow Slough
Hunt Slough
Broad Slough
New York Slough
Meyberry Slough
Suisun Slough
Sacramento River
San Joaquin River
SACRAMENTO
SOLANO
CONTRA COSTA
Diablo Creek Golf Course
Delta View Golf Course
NWS Seal Beach Det Concord
Contra Loma Regional Park
Lone Tree Golf Course
Prewett Family Park
Community Park
Black Diamond Mines
Concord Hills
Walnut Meadows
Laurel Rd
Oakley Rd
E 18th St
W Cypress Rd
Antioch Bridge
Sherman Island X Rd
Victory Hwy
Montezuma Hills Rd
Beacon Rd
Beach Dr
River Rd
Collinsville Rd
Stewart Ln
Toland Ln
Talbert Rd
Straton Ln
Birds Landing Rd
Anderson Rd
Lucon Hollow
Clark Hollow
Hopkins Ravine
Railroad Ave
Loveridge Rd
Somersville Rd
Hillcrest Ave
Empire Ave
Live Oak Ave
Nerely Rd
Rose Ave
Davison Dr
Carpinteria Dr
Bluerock Dr
Asilomar Dr
James Donlon Blvd
Buchanan Rd
E Tregallas Rd
Putnam St
G St
Jewett Ave
Crestview Dr
San Marco Blvd
Low Tide Ravine
Olivera Rd
Esperanza Dr
Davis Ave
The Alameda
Chestnut Ave
West St
Concord Blvd
Myrtle Rd
Bonifacio St
Evora Rd
W Leland Rd
Kinne Blvd
Delta Fair Blvd
Railroad Ave
Antioch Ave
Fulton Shipyard Rd
Somersville Rd
Contra Costa Canal
Ranch Rd
Country Hills Dr
Lone Tree Way
Deer Valley Rd
Sand Creek Rd
Cypress Rd
Main St
Hillcrest Ave

ATTACHMENT C: PLANT SPECIES OBSERVED

ATTACHMENT C: PLANT SPECIES OBSERVED

Family	Scientific Name	Common Name
Aizoaceae	*Sesuvium verrucosum*	Smooth Sea-Purslane
Alismataceae	*Alisma gramineum*	Slender Water Plantain
Alismataceae	*Alisma triviale*	Northern Water Plantain
Amaranthaceae	*Alternanthera philoxeroides** [1]	Alligator Weed
Amaranthaceae	*Atriplex prostrata**	Spreading Saltbush
Amaranthaceae	*Atriplex semibaccata*	Australian Saltbush
Amaranthaceae	*Atriplex suberecta*	Desert Holly
Amaranthaceae	*Chenopodium murale*	Nettle-leaved Goosefoot
Amaranthaceae	*Chenopodium vulvaria*	Stinking Goosefoot
Amaranthaceae	*Salicornia pacifica*	Pacific Glasswort
Amaranthaceae	*Salsola tragus*	Russian Thistle
Anacardiaceae	*Schinus molle*	California Pepper Tree
Anacardiaceae	*Pistacia atlantica**	Pistachio
Apiaceae	*Anthriscus caucalis**	Bur Parsley
Apiaceae	*Apium graveolens*	Wild Celery
Apiaceae	*Conium maculatum*	Poison Hemlock
Apiaceae	*Foeniculum vulgare*	Sweet Fennel
Apiaceae	*Lilaeopsis masonii*	Mason's Lilaeopsis
Apiaceae	*Oenanthe sarmentosa*	Water Parsley
Apiaceae	*Sanolus parviflorus*	Small-Flowered Sanolus
Apiaceae	*Torilis nodosa*	Wild Parsley
Apocynaceae	*Asclepias fasicularius*	Narrow-Leaved Milkweed
Araliaceae	*Hydrocotyle verticillata*	Whorled Pennywort
Arecaceae	*Phoenix canariensis**	Canary Island Date Palm
Asparagaceae	*Asparagus officinalis*	Wild Asparagus
Asteraceae	*Achillea millefolium**	Common Yarrow
Asteraceae	*Achyrachaena mollis*	Soft Blow Wives
Asteraceae	*Ambrosia psilostachya*	Western Ragweed

[1] Species that were observed in the revised terrestrial survey area and were not observed in the terrestrial survey area during 2023 surveys are marked with an asterisk.

Family	Scientific Name	Common Name
Asteraceae	*Anaphalis margaritacea**	Pearly Everlasting
Asteraceae	*Anthemis cotula*	Mayweed
Asteraceae	*Artemisia douglasiana*	Mugwort
Asteraceae	*Baccharis glutinosa*	Sticky Baccharis
Asteraceae	*Baccharis pilularis* ssp. *consanguinea*	Coyote Brush
Asteraceae	*Baccharis salicifolia*	Mule Fat
Asteraceae	*Carduus pycnocephalus*	Italian Thistle
Asteraceae	*Centaurea calcitrapa**	Purple Star Thistle
Asteraceae	*Centaurea solstitialis*	Yellow Starthistle
Asteraceae	*Centromadia parryi*	Pappose Tarweed
Asteraceae	*Centromadia pungens* ssp. *pungens**	Common Tarweed
Asteraceae	*Chondrilla juncea*	Rush Skeletonweed
Asteraceae	*Cirsium vulgare*	Bull Thistle
Asteraceae	*Cotula cornopilfoila*	Brass Buttons
Asteraceae	*Cynara cardunculus* ssp. *cardunculus**	Artichoke
Asteraceae	*Erigeron philadelphicus*	Philadelphia Fleabane
Asteraceae	*Euthamia occidentalis*	Western Goldenrod
Asteraceae	*Grindelia camporum**	Common Gumplant
Asteraceae	*Grindelia stricta*	Gumplant
Asteraceae	*Helenium puberulum**	Sneezeweed
Asteraceae	*Helminthotheca echioides*	Bristly Oxtongue
Asteraceae	*Heterotheca grandiflora*	Telegraph Weed
Asteraceae	*Hoita macrostachya*	Showy Goldeneye
Asteraceae	*Hypochoeris glabra*	Smooth Cat's Ear
Asteraceae	*Iva axillaris*	Poverty Weed
Asteraceae	*Lactuca serriola*	Prickly Lettuce
Asteraceae	*Madia gracilis*	Graceful Tarweed
Asteraceae	*Matricaria discoidea**	Pineapple Weed
Asteraceae	*Matricaria occidentalis*	Valley Mayweed
Asteraceae	*Pseudognaphalium stramineum**	Cottonbatting Plant
Asteraceae	*Senecio hydrophilus*	Marsh Ragwort
Asteraceae	*Senecio vulgaris*	Common Groundsel

Family	Scientific Name	Common Name
Asteraceae	*Silybum marianum*	Milk Thistle
Asteraceae	*Sonchus asper*	Prickly Sowthistle
Asteraceae	*Tragopogon porrifolius**	Purple Salsify
Asteraceae	*Xanthium spinosum*	Spiny Cocklebur
Asteraceae	*Xanthium strumarium*	Common Cocklebur
Bataceae	*Batis maritima**	Saltwort
Betulaceae	*Alnus rhombifolia**	White Alder
Boraginaceae	*Amsinckia intermedia*	Common Fiddleneck
Boraginaceae	*Eriodictyon crassifolium*	Thick-leaved Yerba Santa
Boraginaceae	*Heliotropium curassavicum*	Salt Heliotrope
Brassicaceae	*Brassica nigra*	Black Mustard
Brassicaceae	*Cakile edentula**	Sea Rocket
Brassicaceae	*Capsella bursa-pastoris**	Shepherd's Purse
Brassicaceae	*Lepidium latifolium*	Broadleaf Pepperweed
Brassicaceae	*Raphanus sativus*	Radish
Caryophyllaceae	*Silene gallica**	Common Catchfly
Caryophyllaceae	*Spergula marina*	Salt Sandspurry
Caryophyllaceae	*Spergularia arvensis*	Corn Spurry
Caryophyllaceae	*Stellaria media**	Chickweed
Chenopodiaceae	*Bassia scoparia**	Burningbush
Chenopodiaceae	*Salicornia depressa**	Annual Pickleweed
Convolvulaceae	*Calystegia silvatica*	Chaparral Dodder
Convolvulaceae	*Convolvulus arvensis*	Field Bindweed
Convolvulaceae	*Cressa truxillensis*	Alkaliweed
Crassulaceae	*Crassula tillaea**	Mediterranean Pygmy Weed
Cucurbitaceae	*Marah fabacea*	Wild Cucumber
Cyperaceae	*Bolboschoenus maritimus**	Alkali Bulrush
Cyperaceae	*Bolboschoenus maritimus* ssp. *paludosus**	Saltmarsh Bulrush
Cyperaceae	*Bolboschoenus robustus*	California Bulrush
Cyperaceae	*Carex barbarae*	Santa Barbara Sedge
Cyperaceae	*Eleocharis acicularis* var. *acicularis*	Needle Spikerush
Cyperaceae	*Eleocharis macrostachya*	Tall Spike-rush

Family	Scientific Name	Common Name
Cyperaceae	*Isolepis cernua*	Nodding Centaury
Cyperaceae	*Schoenoplectus acutus* var. *occidentalis*	Common Tule
Cyperaceae	*Schoenoplectus americanus*	Three Square Bulrush
Cyperaceae	*Schoenoplectus californicus*	California Bulrush
Cyperaceae	*Schoenoplectus pungens*	Common Threesquare
Equisetaceae	*Equistem hyemale* ssp. *affine*	Scouring Rush
Euphorbiaceae	*Croton setiger*	Dove Weed
Fabaceae	*Acmispon americanus* var. *americanus*	American Bird's-Foot
Fabaceae	*Acmispon glaber* var. *glaber*	Deerweed
Fabaceae	*Acmispon strigosus*	Strigose Bird's-Foot Trefoil
Fabaceae	*Lathyrus jepsonii* var. *jepsonii*	Delta Tule Pea
Fabaceae	*Lotus corniculatus*	Bird's-Foot Trefoil
Fabaceae	*Lotus tenuis*	Slender Lotus
Fabaceae	*Lupinus bicolor*	Miniature Lupine
Fabaceae	*Lupinus microcarpus**	Chick Lupine
Fabaceae	*Lupinus succulentus*	Arroyo Lupine
Fabaceae	*Medicago polymorpha*	California Burr Medic
Fabaceae	*Melilotus indicus*	Annual Yellow Sweetclover
Fabaceae	*Sesbania punicea*	Red Sesbania
Fabaceae	*Trifolium hirtum*	Rose Clover
Fabaceae	*Trifolium hybridum*	Alsike Clover
Fabaceae	*Trifolium incarnatum**	Crimson Clover
Fabaceae	*Trifolium wormskioldii*	Cow Clover
Fabaceae	*Vicia sativa*	Common Vetch
Fabaceae	*Vicia villosa*	Hairy Vetch
Frankeniaceae	*Frankenia salina*	Alkali Heath
Gentianaceae	*Centaurium tenuiflorum**	Slender Centaury
Geraniaceae	*Erodium botrys*	Long-Beaked Filaree
Geraniaceae	*Erodium cicutarium*	Redstem Filaree
Geraniaceae	*Geranium dissectum*	Cutleaf Geranium
Hydrocharitaceae	*Limnobium laevigatum**	West Indian Spongeplant
Iridaceae	*Iris pseudacorus*	Yellow Flag Iris

Family	Scientific Name	Common Name
Juglandaceae	*Juglans hindsii**	Northern California Black Walnut
Juncaceae	*Juncus balticus*	Baltic Rush
Juncaceae	*Juncus bufonius*	Toad Rush
Juncaceae	*Juncus effusus**	Common Bog Rush
Juncaceae	*Juncus gerardii* ssp. *gerardii*	Salt Marsh Rush
Juncaceae	*Juncus mexicanus*	Mexican Rush
Juncaginaceae	*Triglochin striata**	Three Ribbed Arrow Grass
Lamiaceae	*Lamium amplexicaule**	Giraffe Head
Lamiaceae	*Marrubium vulgare*	White Horehound
Lamiaceae	*Mentha spicata*	Spearmint
Lamiaceae	*Pterostegia drymariodes*	Fairy Mist
Lythraceae	*Lythrum hyssopifolia*	Hyssop Loosestrife
Malvaceae	*Malva multiflora**	Cretan Mallow
Malvaceae	*Malva parviflora*	Small-Flowered Mallow
Malvaceae	*Malvella leprosa*	Round-Leaved Mallow
Montiaceae	*Calandrinia menziesii**	Red Maids
Montiaceae	*Claytonia perfoliata*	Miner's Lettuce
Onagraceae	*Epilobium brachycarpum**	Annual Fireweed
Onagraceae	*Epilobium ciliatum*	Fringed Willowherb
Onagraceae	*Ludwigia grandiflora**	Large-Flowered Primrose-Willow
Onagraceae	*Ludwigia peploides**	Floating Primrose Willow
Orobanchaceae	*Castilleja exserta* ssp. *exserta*	Purple Owl's Clover
Orobanchaceae	*Bellardia trixago*	Mediterranean Lineseed
Oxalidaceae	*Oxalis pes-caprae**	Bermuda Buttercup
Papaveraceae	*Eschscholzia californica**	California Poppy
Phrymaceae	*Erythranthe grandis**	Magnificent Seep Monkeyflower
Plantaginaceae	*Plantago coronopus*	Buckshorn Plantain
Plantaginaceae	*Plantago lanceolata*	English Plantain
Plantaginaceae	*Veronica persica**	Birdeye Speedwell
Poaceae	*Agrostis stolonifera*	Creeping Bentgrass
Poaceae	*Arundo donax*	Giant Reed
Poaceae	*Avena fatua*	Wild Oat

Family	Scientific Name	Common Name
Poaceae	*Bromus berteroanus*	Chilean Brome
Poaceae	*Bromus diandrus*	Ripgut Brome
Poaceae	*Bromus hordeaceus*	Soft Brome
Poaceae	*Bromus madritensis* ssp. *rubens*	Red Brome
Poaceae	*Bromus tectorum*	Cheatgrass
Poaceae	*Cortaderia jubata*	Purple Pampas Grass
Poaceae	*Cynodon dactylon*	Bermuda Grass
Poaceae	*Cynosurus echinatus*	Coast Bur Grass
Poaceae	*Distichlis spicata*	Saltgrass
Poaceae	*Elymus triticoides*	Beardless Wildrye
Poaceae	*Festuca bromoides*	Red Fescue
Poaceae	*Festuca perennis*	Meadow Fescue
Poaceae	*Hordeum jubatum*	Foxtail Barley
Poaceae	*Hordeum marinum*	Seaside Barley
Poaceae	*Hordeum murinum*	Wall Barley
Poaceae	*Hordeum vulgare*	Common Barley
Poaceae	*Phalaris canariensis*	Canary Grass
Poaceae	*Phalaris paradoxa*	Hairy Canarygrass
Poaceae	*Phragmites australis*	Common Reed
Poaceae	*Polypogon monspeliensis**	Rabbitsfoot Grass
Poaceae	*Triticum aestivum**	Common Wheat
Polygonaceae	*Persicaria* spp.	Smartweeds
Polygonaceae	*Polygonum argyrocoleon*	Silverweed Knotweed
Polygonaceae	*Polygonum aviculare*	Prostrate Knotweed
Polygonaceae	*Rumex acetosella*	Sheep Sorrel
Polygonaceae	*Rumex californicus*	California Dock
Polygonaceae	*Rumex crispus*	Curly Dock
Polygonaceae	*Rumex pulcher**	Fiddle Dock
Pontederiaceae	*Eichhornia crassipes**	Common Water Hyacinth
Portulacaceae	*Portulaca oleracea**	Common Purslane
Ranunculaceae	*Ranunculus sceleratus*	Cursed Buttercup
Rosaceae	*Potentilla anseriana* ssp. *pacifica*	Silverweed

Family	Scientific Name	Common Name
Rosaceae	*Rosa californica*	California Wild Rose
Rosaceae	*Rubus armeniacus*	Himalayan Blackberry
Rosaceae	*Rubus ursinus**	California Blackberry
Salicaceae	*Salix exigua*	Narrowleaf Willow
Salicaceae	*Salix exigua* var. *hindsiana*	Sandbar Willow
Salicaceae	*Salix gooddingii*	Goodding's Willow
Salicaceae	*Salix laevigata*	Red Willow
Salicaceae	*Salix lasiolepis**	Arroyo Willow
Salviniaceae	*Azolla filiculoides*	Water Fern
Scrophulariaceae	*Limosella australis*	Delta Mudwort
Scrophulariaceae	*Zeltnera muehlenbergii*	Little Redstem
Simaroubaceae	*Ailanthus altissima**	Tree of Heaven
Solanaceae	*Solanum americanum*	American Nightshade
Tamaricaceae	*Tamarix parviflora**	Fourstamen Tamarisk
Themidaceae	*Brodiaea elegans* ssp. *elegans*	Elegant Brodiaea
Themidaceae	*Triteleia laxa**	Ithuriel's Spear
Typhaceae	*Sparganium erectum**	Simplestem Bur Reed
Typhaceae	*Typha latifolia*	Common Cattail
Urticaceae	*Urtica urens**	Annual Stinging Nettle
Verbenaceae	*Phyla nodiflora*	Turkey Tangle Fogfruit

ATTACHMENT D: SPECIAL-STATUS PLANT PHOTOGRAPHS

ATTACHMENT D: SPECIAL-STATUS PLANT PHOTOGRAPHS

Photograph 1: Delta tule pea (*Lathyrus jepsonii* var. *jepsonii*).

ATTACHMENT E: CNDDB SUBMITTAL FORMS

CNDDB Online Field Survey Form Report

California Natural Diversity Database
Department of Fish and Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: 916.324.0475
cnddb@wildlife.ca.gov
www.dfg.ca.gov/biogeodata/cnddb/

This data has been reported to the CNDDB, but may not have been evaluated by the CNDDB staff

Source code CRO23F0003
Quad code 3812117
Occ. no.
EO index no.
Map index no.

Scientific name: *Limosella australis*

Common name: Delta mudwort

Date of field work (mm-dd-yyyy): 05-24-2023

Comment about field work date(s):

OBSERVER INFORMATION

Observer: Brian Cropper

Affiliation: Insignia Environmental

Address: 3028 Juniper St Apt 3

Email: bcropper@insigniaenv.com

Phone: (920) 544-7989

Other observers: Deanna Giuliano

DETERMINATION

Keyed in: Jepson Manual

Compared w/ specimen at:

Compared w/ image in: Jepson Herbarium, Calflora

By another person: Deanna Giuliano

Other:

Identification explanation:

Identification confidence: Very confident

Species found: Yes **If not found, why not?**

Level of survey effort: Fully botanical survey

Total number of individuals: 150-250

Collection? No **Collection number:**

Museum/Herbarium:

PLANT INFORMATION

Phenology:

vegetative	flowering	fruiting
90 %	10 %	0 %

SITE INFORMATION

Habitat description: Species were found in tidally influenced saturated soils directly adjacent to riprap along the coastline. Associated species included predominantly Juncus.

Slope: 1-2 percent

Land owner/manager:

Aspect:

Site condition + population viability:

Immediate & surrounding land use: Potential grazing

Visible disturbances: Trash/debris, man-made berms, riprap.

Threats: Trash accumulation, grazing.

General comments:

MAP INFORMATION

ID	County	24K Quadrangle	Elev. (ft)	Latitude NAD83	Longitude NAD83	UTM E NAD83	UTM N NAD83	UTM Zone
	Solano	Antioch North	-9999	38.06929	-121.82582	602994	4214154	10
1	**Public Land Survey**	**Feature Comment**						
	M T03N R01E 26	Spreads via rhizomes consistent along coast						

ID	County	24K Quadrangle	Elev. (ft)	Latitude NAD83	Longitude NAD83	UTM E NAD83	UTM N NAD83	UTM Zone
	Solano	Antioch North	-9999	38.06990	-121.82799	602803	4214219	10
2	**Public Land Survey**	**Feature Comment**						
	M T03N R01E 26							

The mapped feature is accurate within: 10 m

Source of mapped feature: Handheld submeter GPS unit

Mapping notes: Species spreads along coast in between mapped points.

Location/directions comments:

Attachment(s):

CNDDB Online Field Survey Form Report

California Natural Diversity Database
Department of Fish and Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: 916.324.0475
cnddb@wildlife.ca.gov
www.dfg.ca.gov/biogeodata/cnddb/

This data has been reported to the CNDDB, but may not have been evaluated by the CNDDB staff

Source code CRO23F0001
Quad code 3812117
Occ. no.
EO index no.
Map index no.

Scientific name: *Lathyrus jepsonii var. jepsonii*

Common name: Delta tule pea

Date of field work (mm-dd-yyyy): 05-24-2023

Comment about field work date(s):

OBSERVER INFORMATION

Observer: Brian Cropper

Affiliation: Insignia Environmental

Address: 3028 Juniper St Apt 3

Email: bcropper@insigniaenv.com

Phone: (920) 544-7989

Other observers: Deanna Giuliano

DETERMINATION

Keyed in: Jepson Manual

Compared w/ specimen at:

Compared w/ image in: Jepson Herbarium, Calflora

By another person: Deanna Giuliano

Other:

Identification explanation:

Identification confidence: Very confident

Species found: Yes **If not found, why not?**

Level of survey effort: Fully botanical survey

Total number of individuals: 150-200

Collection? No **Collection number:**

Museum/Herbarium:

PLANT INFORMATION

Phenology:

vegetative	flowering	fruiting
70 %	25 %	5 %

SITE INFORMATION

Habitat description: Rosa californica and Schoenoplectus dominated habitat and associations. Delta tule pea was commonly found climbing up upland shrubs adjacent to sloughs approximately 15-20 feet from the coast.

Slope: 5 to 10%

Land owner/manager:

Aspect:

Site condition + population viability: Fair

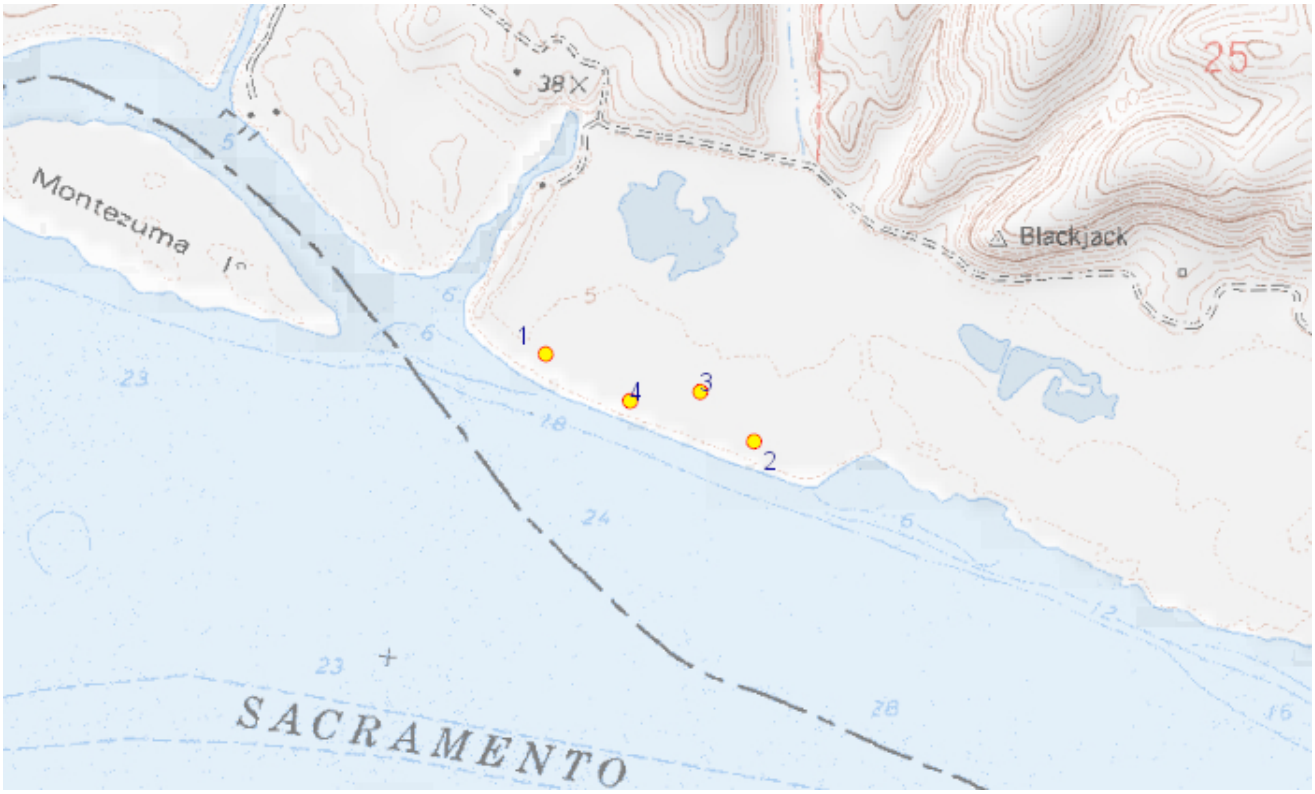
Immediate & surrounding land use: Agriculture/grazing

Visible disturbances: evidence of grazing, man-made berms, riprap along coastline.

Threats: Grazing, development

General comments:

MAP INFORMATION



ID	County	24K Quadrangle	Elev. (ft)	Latitude NAD83	Longitude NAD83	UTM E NAD83	UTM N NAD83	UTM Zone
	Solano	Antioch North	14	38.07143	-121.83111	602527	4214386	10
1	**Public Land Survey**	**Feature Comment**						
	M T03N R01E 26							

ID	County	24K Quadrangle	Elev. (ft)	Latitude NAD83	Longitude NAD83	UTM E NAD83	UTM N NAD83	UTM Zone
	Solano	Antioch North	20	38.06985	-121.82633	602949	4214216	10
2	**Public Land Survey**	**Feature Comment**						
	M T03N R01E 26	Large polygon with 25+ individuals						

ID	County	24K Quadrangle	Elev. (ft)	Latitude NAD83	Longitude NAD83	UTM E NAD83	UTM N NAD83	UTM Zone
	Solano	Antioch North	20	38.07074	-121.82756	602839	4214314	10
3	**Public Land Survey**	**Feature Comment**						
	M T03N R01E 26	Large polygon with 20+ individuals						

ID	County	24K Quadrangle	Elev. (ft)	Latitude NAD83	Longitude NAD83	UTM E NAD83	UTM N NAD83	UTM Zone
	Solano	Antioch North	9	38.07058	-121.82917	602698	4214294	10
4	**Public Land Survey**	**Feature Comment**						
	M T03N R01E 26	Large polygon with 75+ individuals						

The mapped feature is accurate within: 20 m

Source of mapped feature: Submeter handheld GPS device

Mapping notes:

Location/directions comments:

Attachment(s):

CNDDB Online Field Survey Form Report

California Natural Diversity Database
Department of Fish and Wildlife
1416 9th Street, Suite 1266
Sacramento, CA 95814
Fax: 916.324.0475
cnddb@wildlife.ca.gov
www.dfg.ca.gov/biogeodata/cnddb/

This data has been reported to the CNDDB, but may not have been evaluated by the CNDDB staff

Source code CRO23F0002
Quad code 3812117
Occ. no.
EO index no.
Map index no.

Scientific name: *Lilaeopsis masonii*

Common name: Mason's lilaeopsis

Date of field work (mm-dd-yyyy): 05-24-2023

Comment about field work date(s):

OBSERVER INFORMATION

Observer: Brian Cropper

Affiliation: Insignia Environmental

Address: 3028 Juniper St Apt 3

Email: bcropper@insigniaenv.com

Phone: (920) 544-7989

Other observers: Deanna Giuliano

DETERMINATION

Keyed in: Jepson Manual

Compared w/ specimen at:

Compared w/ image in: Jepson Herbarium, Calflora

By another person: Deanna Giuliano

Other:

Identification explanation:

Identification confidence: Very confident

Species found: Yes **If not found, why not?**

Level of survey effort: Fully botanical survey

Total number of individuals: 200-500

Collection? No **Collection number:**

Museum/Herbarium:

PLANT INFORMATION

Phenology:

vegetative	flowering	fruiting
15 %	85 %	0 %

SITE INFORMATION

Habitat description: Species were observed approximately 2-5 feet from the coast in tidally influenced saturated soils adjacent to riprap along coast. Dominant species and habitat included primarily Juncus.

Slope: 1-2 percent

Land owner/manager:

Aspect:

Site condition + population viability: Good

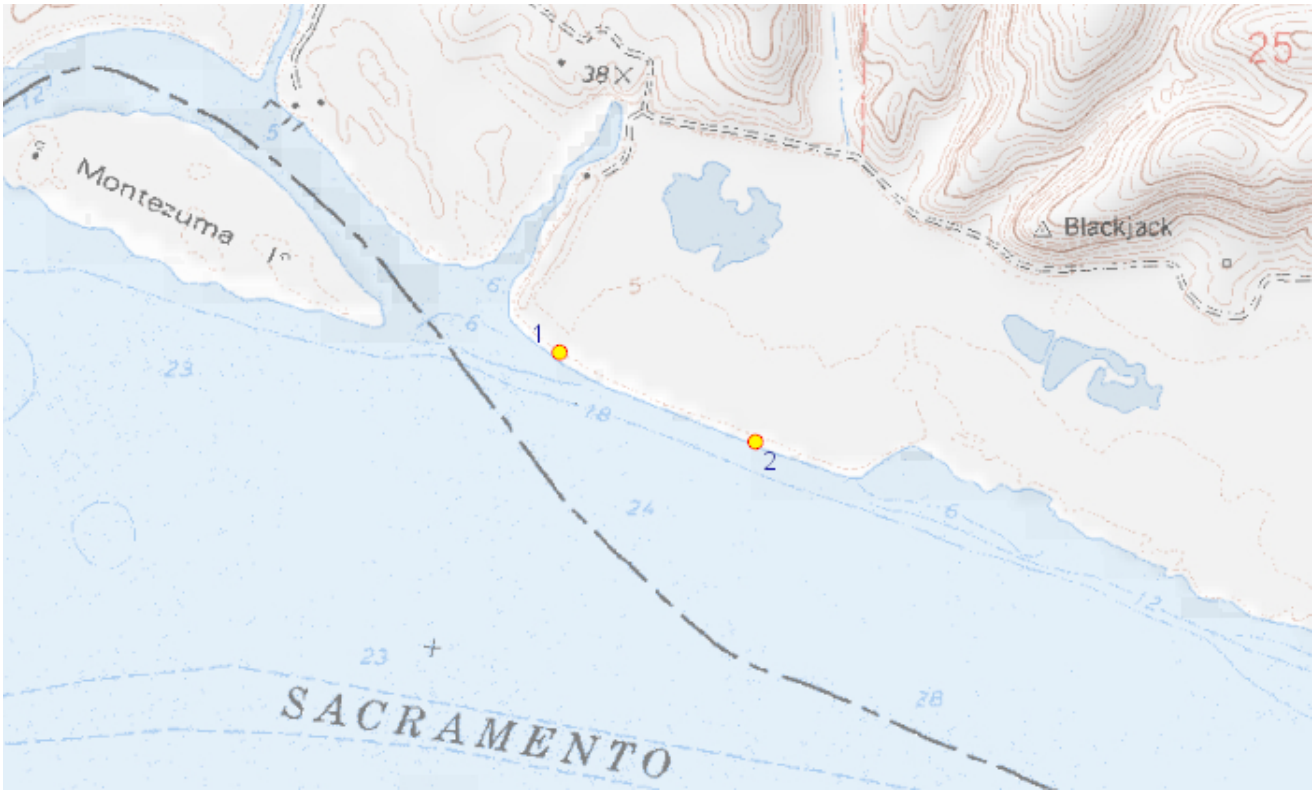
Immediate & surrounding land use: N/A

Visible disturbances: Riprap along coast, trash/debris, man-made berms.

Threats: Trash accumulation, potential grazing

General comments:

MAP INFORMATION



ID	County	24K Quadrangle	Elev. (ft)	Latitude NAD83	Longitude NAD83	UTM E NAD83	UTM N NAD83	UTM Zone
	Solano	Antioch North	-9999	38.07129	-121.83182	602465	4214370	10
1	**Public Land Survey**	**Feature Comment**						
	M T03N R01E 26	rhizomatous spreading aprox. 5 ft from coast						

ID	County	24K Quadrangle	Elev. (ft)	Latitude NAD83	Longitude NAD83	UTM E NAD83	UTM N NAD83	UTM Zone
	Solano	Antioch North	-9999	38.06968	-121.82733	602861	4214196	10
2	**Public Land Survey**	**Feature Comment**						
	M T03N R01E 26	Rhizomatous spreading along coast						

The mapped feature is accurate within: 10 m

Source of mapped feature: Handheld submeter GPS unit

Mapping notes: Species spreads along the coast and was found consistently between the two mapped points.

Location/directions comments:

Attachment(s):

ATTACHMENT E: BIOLOGICAL RESOURCES MAP

Attachment E:
Biological Resources Map
Map 1 of 15

Collinsville 500/230 Kilovolt Substation Project

W-1

W-2

W-1

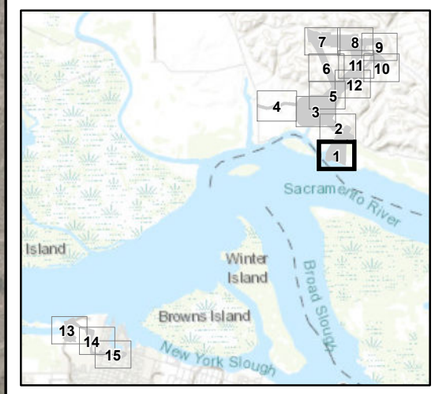
- Original Survey Area
- Expanded Survey Area
- Potential Wetland
- Northern Harrier Nest

Rare Plant

- Delta tule pea
- Mason's lilaeopsis
- Welsh mudwort
- Delta tule pea
- Mason's lilaeopsis
- Welsh mudwort

Vegetation Community

- *Distichlis spicata* Herbaceous Alliance
- *Frankenia salina* Herbaceous Alliance
- *Juncus arcticus (var. balticus, mexicanus)* Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Rosa californica* Shrubland Alliance
- *Salix exigua* Shrubland Alliance
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- *Schoenoplectus acutus/rosa californica* Association
- Road/Bare Ground
- Open Water



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0 125 250 500 Feet

LS POWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

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Attachment E:
Biological Resources Map
Map 2 of 15

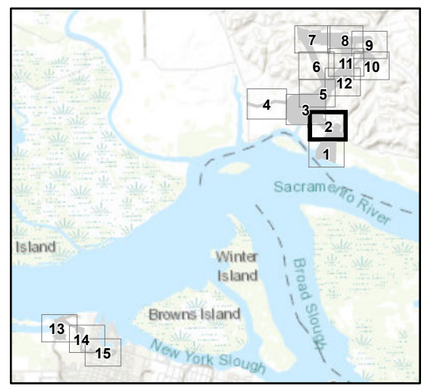
Collinsville 500/230 Kilovolt Substation Project

- Original Survey Area
- Expanded Survey Area
- Potential Wetland

Vegetation Community

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Distichlis spicata* Herbaceous Alliance
- *Frankenia salina* Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Polygonum lapathifolium - Xanthium strumarium* Herbaceous Alliance
- *Rosa californica* Shrubland Alliance
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- Road/Bare Ground
- Open Water

W-1
W-2
W-3
W-4



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LS POWER GRID CALIFORNIA
INSIGNIA ENVIRONMENTAL

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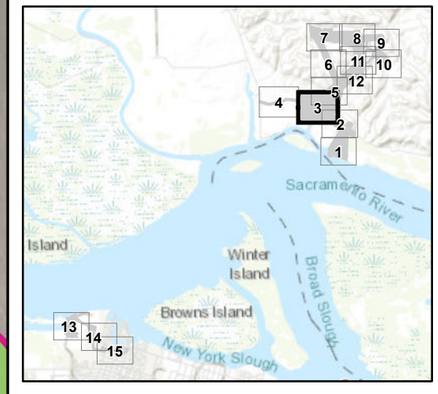
Attachment E:
Biological Resources Map
Map 3 of 15

Collinsville 500/230 Kilovolt Substation Project

- Original Survey Area
- Expanded Survey Area
- Potential Wetland

Vegetation Community

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Distichlis spicata* Herbaceous Alliance
- *Frankenia salina* Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Polygonum lapathifolium - Xanthium strumarium* Herbaceous Alliance
- *Sarcocornia pacifica* Herbaceous Alliance
- *Rosa californica* Shrubland Alliance
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- *Schoenoplectus americanus* Herbaceous Alliance
- *Typha (angustifolia, domingensis, latifolia)* Herbaceous Alliance
- Road/Bare Ground



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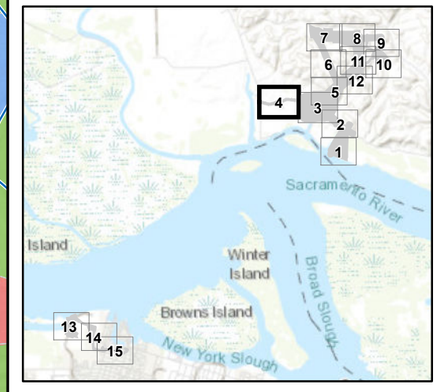
Attachment E:
Biological Resources Map
Map 4 of 15

Collinsville 500/230 Kilovolt Substation Project

- Expanded Survey Area
- Potential Wetland

Vegetation Community

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Distichlis spicata* Herbaceous Alliance
- *Frankenia salina* Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Sarcocornia pacifica* Herbaceous Alliance
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- Road/Bare Ground
- Developed



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Attachment E:
Biological Resources Map
Map 5 of 15

Collinsville 500/230 Kilovolt Substation Project

- Original Survey Area
- Expanded Survey Area
- Ephemeral Stream
- Potential Wetland

Vegetation Community

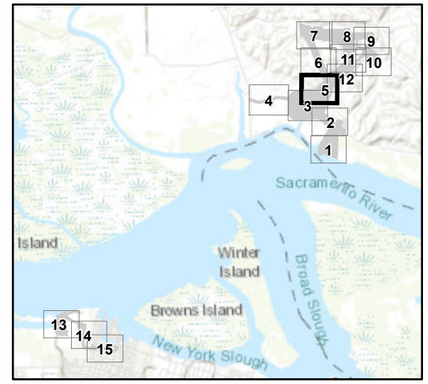
- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Distichlis spicata* Herbaceous Alliance
- *Frankenia salina* Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Typha (angustifolia, domingensis, latifolia)* Herbaceous Alliance
- Road/Bare Ground

D-1

W-6

W-6

W-6



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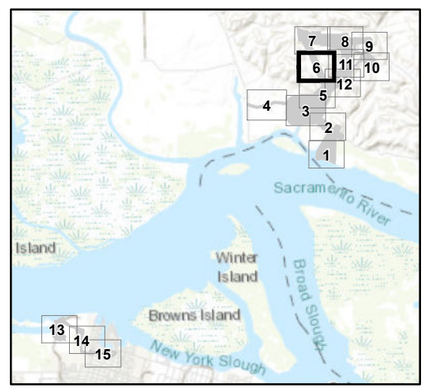
Attachment E:
Biological Resources Map
Map 6 of 15

Collinsville 500/230 Kilovolt Substation Project

- Original Survey Area
- Expanded Survey Area
- Ephemeral Stream

Vegetation Community

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- Road/Bare Ground



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LS POWER GRID CALIFORNIA
INSIGNIA ENVIRONMENTAL

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Attachment E:
Biological Resources Map
Map 7 of 15

Collinsville 500/230 Kilovolt Substation Project

Original Survey Area

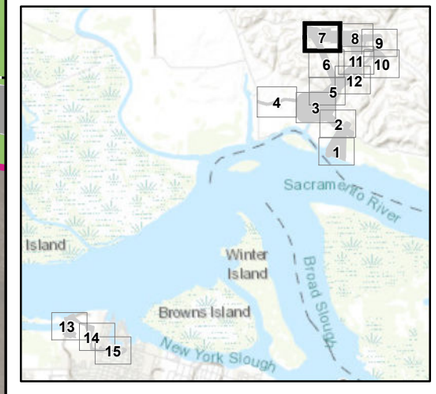
Expanded Survey Area

Vegetation Community

Brassica nigra - Centaurea (solstitialis, melitensis) Herbaceous Semi-Natural Alliance

Lolium perenne Herbaceous Semi-Natural Alliance

Road/Bare Ground



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LSPOWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

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Attachment E:
Biological Resources Map
Map 8 of 15

Collinsville 500/230 Kilovolt Substation Project

Original Survey Area

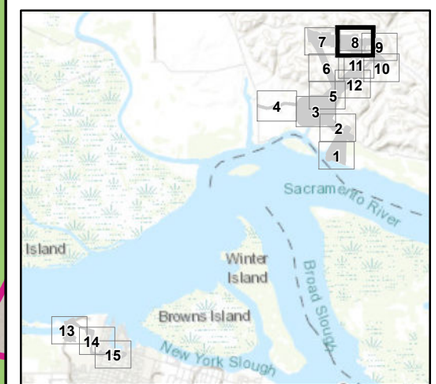
Expanded Survey Area

Vegetation Community

Brassica nigra - Centaurea (solstitialis, melitensis) Herbaceous Semi-Natural Alliance

Lolium perenne Herbaceous Semi-Natural Alliance

Road/Bare Ground



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LS POWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

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Attachment E:
Biological Resources Map
Map 9 of 15

Collinsville 500/230 Kilovolt Substation Project

Original Survey Area

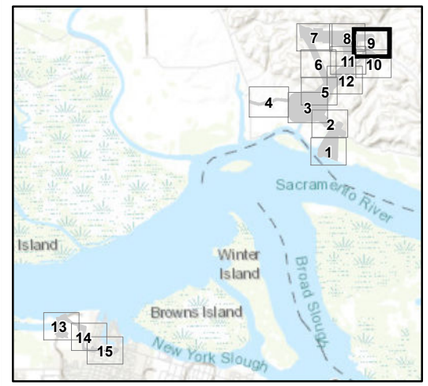
Expanded Survey Area

Vegetation Community

Brassica nigra - Centaurea (solstitialis, melitensis) Herbaceous Semi-Natural Alliance

Lolium perenne Herbaceous Semi-Natural Alliance

Road/Bare Ground



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LS POWER GRID CALIFORNIA

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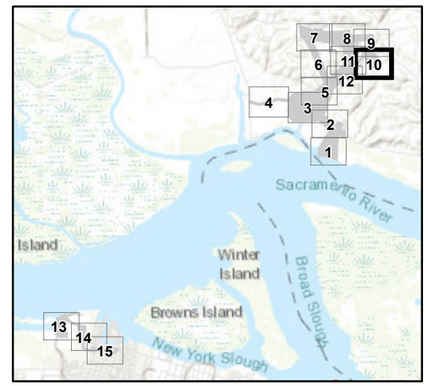
Attachment E:
Biological Resources Map
Map 10 of 15

Collinsville 500/230 Kilovolt Substation Project

- Original Survey Area
- Expanded Survey Area

Vegetation Community

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- Road/Bare Ground



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LS POWER GRID CALIFORNIA

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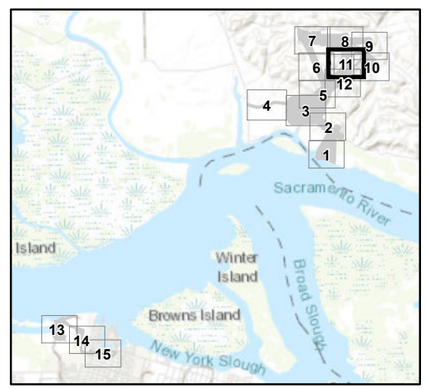
Attachment E:
Biological Resources Map
Map 11 of 15

Collinsville 500/230 Kilovolt Substation Project

- Original Survey Area
- Expanded Survey Area
- Ephemeral Stream

Vegetation Community

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- Road/Bare Ground



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0 125 250 500 Feet

LS POWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

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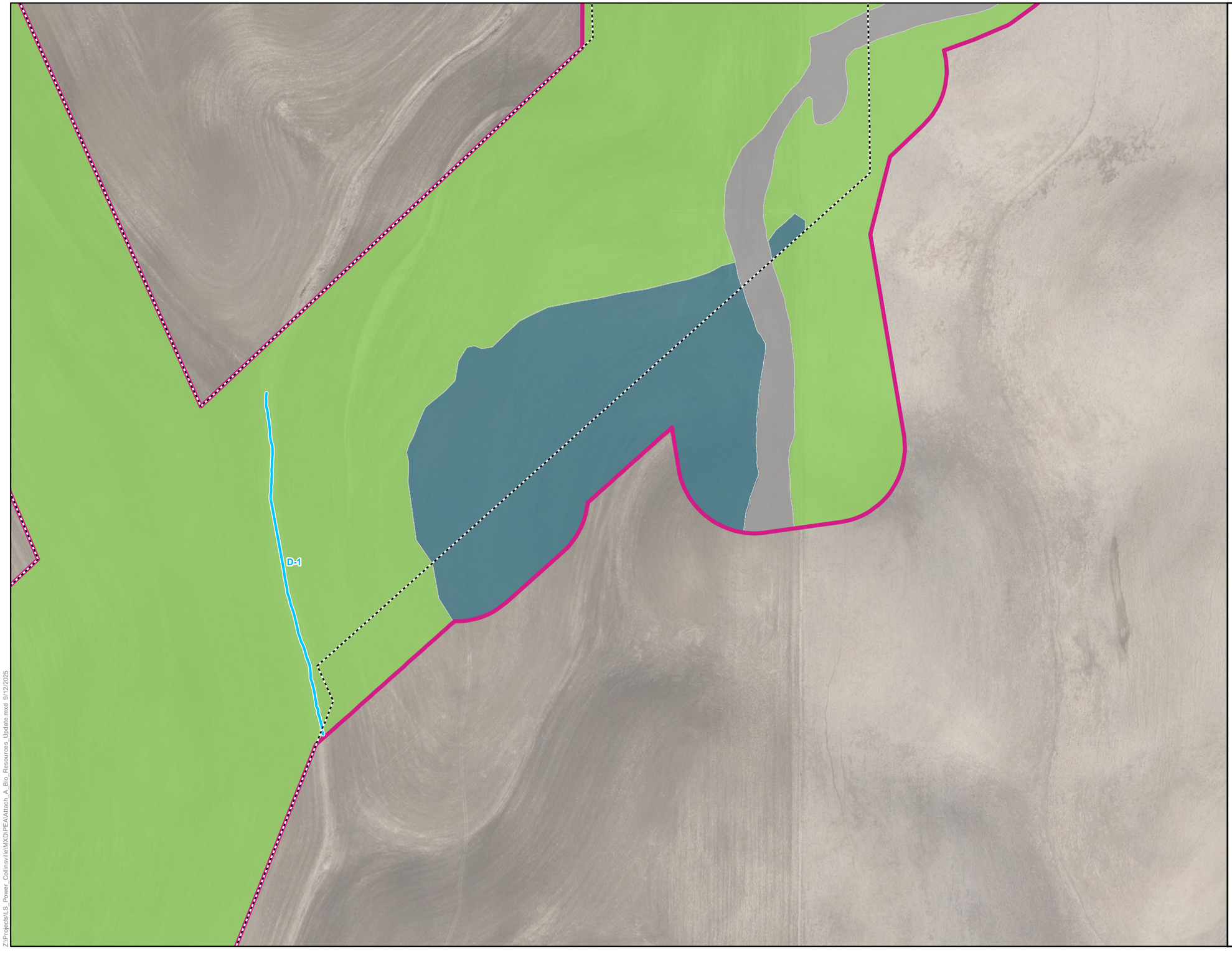


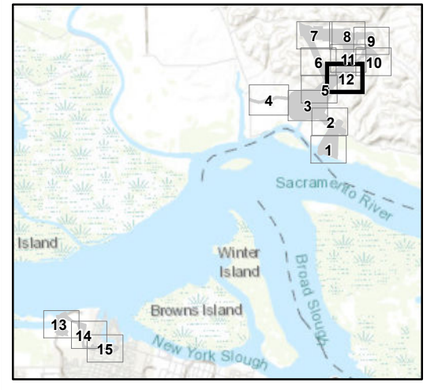
Attachment E:
Biological Resources Map
Map 12 of 15

Collinsville 500/230 Kilovolt Substation Project

- Original Survey Area
- Expanded Survey Area
- Ephemeral Stream

Vegetation Community

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- Road/Bare Ground



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0 125 250 500 Feet

LS POWER GRID CALIFORNIA
INSIGNIA ENVIRONMENTAL

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Attachment E:
Biological Resources Map
Map 13 of 15

Collinsville 500/230 Kilovolt Substation Project

Expanded Survey Area

Rare Plant

Delta tule pea

Vegetation Community

Lepidium latifolium – Lactuca serriola Herbaceous Alliance

Ornamental Vegetation

Juncus arcticus (var. balticus, mexicanus) Herbaceous Alliance

Schoenoplectus (acutus, californicus) Herbaceous Alliance

Baccharis pilularis Shrubland Alliance

Disturbed

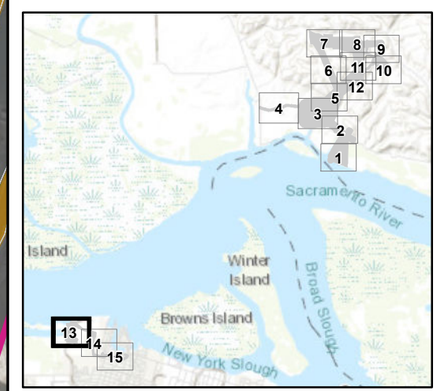
Road/Bare Ground

Rip Rap

Open Water

Developed

Not Surveyed



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0 125 250 500 Feet

LS POWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

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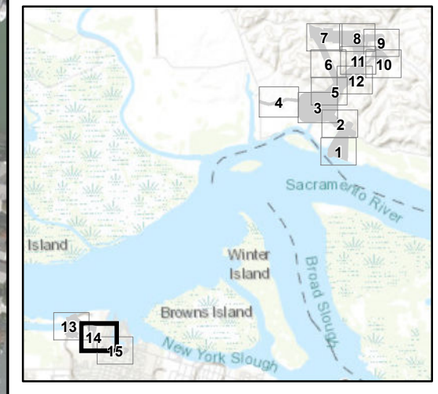
Attachment E:
Biological Resources Map
Map 14 of 15

Collinsville 500/230 Kilovolt Substation Project

Expanded Survey Area

Vegetation Community

- *Lepidium latifolium – Lactuca serriola* Herbaceous Alliance
- Ornamental Vegetation
- *Baccharis pilularis* Shrubland Alliance
- Disturbed
- Developed
- Not Surveyed



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0 125 250 500 Feet

LS POWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

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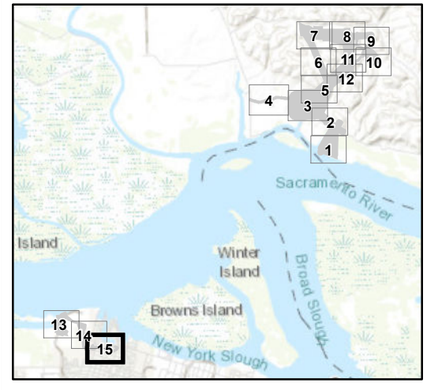
Attachment E:
Biological Resources Map
Map 15 of 15

Collinsville 500/230 Kilovolt Substation Project

Expanded Survey Area

Vegetation Community

- Ornamental Vegetation
- Disturbed
- Developed
- Not Surveyed



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0 125 250 500 Feet

LS POWER GRID CALIFORNIA

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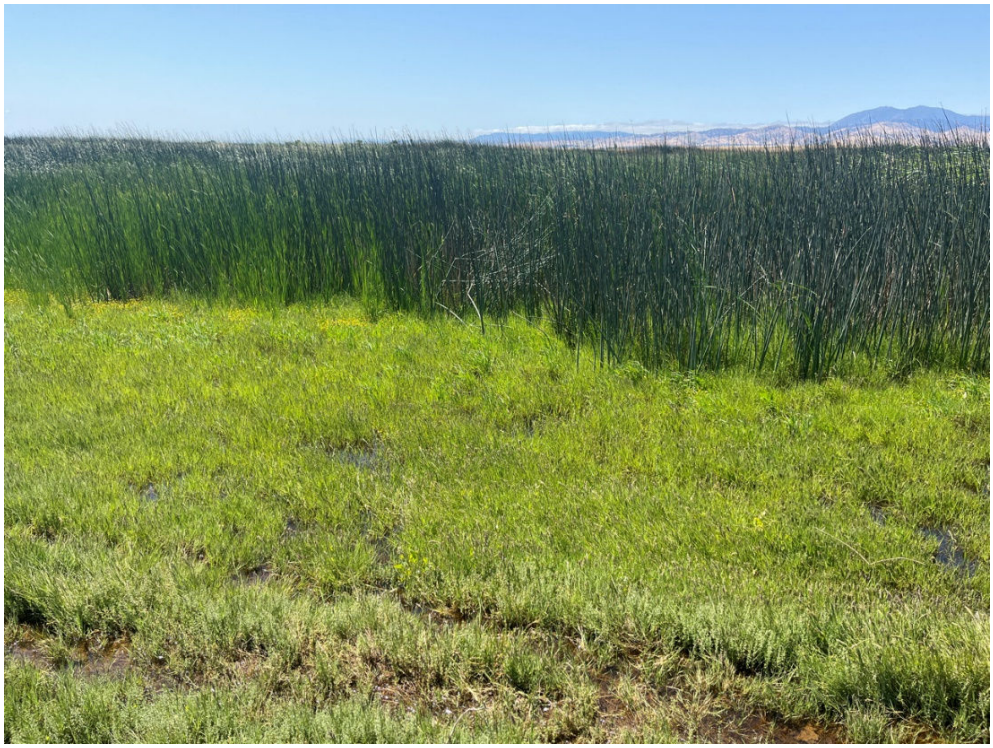
ATTACHMENT F: HABITAT ASSESSMENT PHOTOGRAPHS

ATTACHMENT F: HABITAT ASSESSMENT PHOTOGRAPHS

Photograph 1: *Lolium perenne* Herbaceous Semi-Natural Alliance, facing west.

Photograph 2: *Rosa Californica* Shrubland Alliance, facing east.

Photograph 3: *Brassica nigra - Centaurea* (*solstitialis*, *melitensis*) Herbaceous Semi-Natural Alliance, facing east.

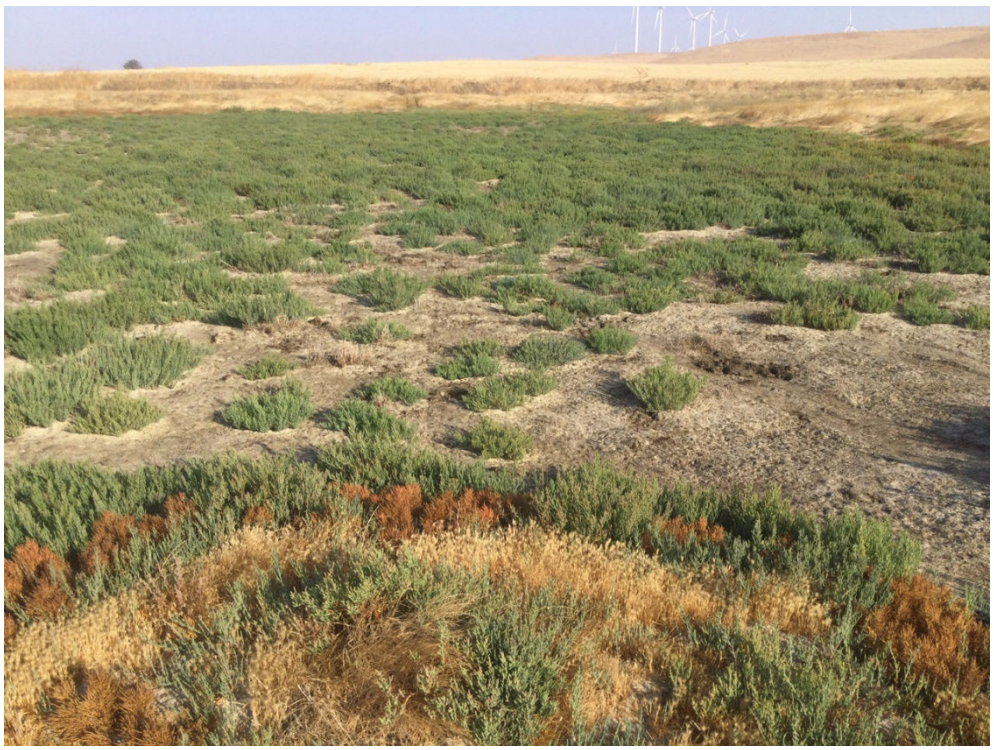


Photograph 4: *Juncus Arcticus* (var. *balticus*, *mexicanus*) Herbaceous Alliance, facing south.

Photograph 5: *Frankenia Salina* Herbaceous Alliance, facing south.

Photograph 6: *Distichlis Spicata* Herbaceous Alliance, facing northeast.

Photograph 7: *Salix Exigua* Shrubland Alliance, facing east.

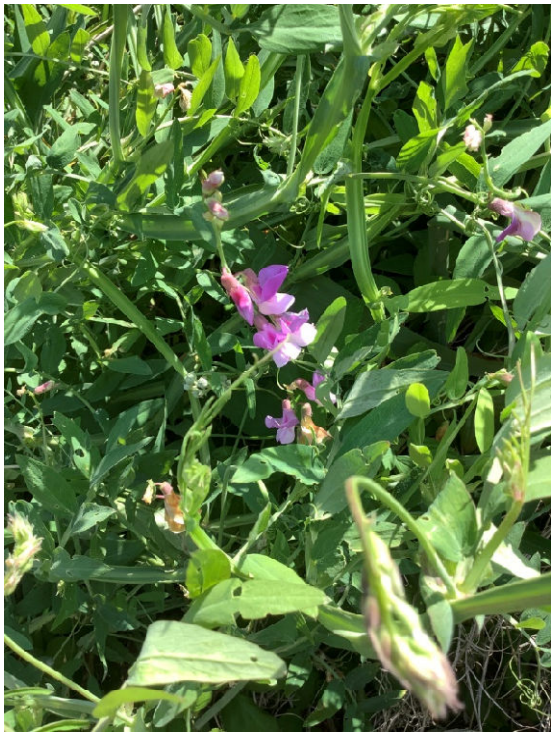


Photograph 8: Sarcocornia pacifica (*Salicornia depressa*) Herbaceous Alliance, facing northwest.

Photograph 9: *Schoenoplectus* (*acutus*, *californicus*) Herbaceous Alliance, facing east.

Photograph 10: *Schoenoplectus Acutus/Rosa Californica* Association, facing west.

Photograph 11: *Lepidium latifolium – Lactuca serriola* Herbaceous Semi-Natural Alliance, facing northeast.



Photograph 12: Delta tule pea (*Lathyrus jepsonii jepsonii*).

Photograph 13: Mason's lilaeopsis (*Lilaeopsis masonii*).

Photograph 14: Welsh mudwort (*Limosella australis*).

ATTACHMENT G: CNDDB OCCURRENCES OF SPECIAL-STATUS PLANT SPECIES

Attachment G:
CNDDB Occurrences of Special-Status Plant Species

Collinsville 500/230 Kilovolt Substation Project

- Proposed Project Buffers

Special Status Plant Species

- Alkali milk-vetch
- Antioch Dunes buckwheat
- Antioch Dunes evening-primrose
- Bearded popcornflower
- Big tarplant
- Bolander's water-hemlock
- Brittlescale
- Carquinez goldenbush
- Chaparral ragwort
- Contra Costa goldfields
- Contra Costa wallflower
- Delta mudwort
- Delta tule pea
- Diablo helianthella
- Diamond-petaled California poppy
- Dwarf downingia
- Fragrant fritillary
- Hall's bush-mallow
- Heartscale
- Hoover's cryptantha
- Keck's checkerbloom
- Mason's lilaeopsis
- Mt. Diablo buckwheat
- Pappose tarplant
- San Joaquin spearscale
- Showy golden madia
- Suisun Marsh aster
- Soft salty bird's-beak

1:96,000

0 1 2 Miles

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ATTACHMENT H: CNDDB OCCURRENCES OF SPECIAL-STATUS WILDLIFE SPECIES

Attachment H:
CNDDB Occurrences of Special-Status Wildlife Species
Amphibians - Map 1 of 6

Collinsville 500/230 Kilovolt Substation Project

- Proposed Project buffers
- California red-legged frog
- California tiger salamander - central California DPS

5-Mile
1-Mile
0.25-Mile

1:101,000
0 1 2 Miles

LS POWER GRID CALIFORNIA
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Attachment G:
CNDDB Occurrences of Special-Status Wildlife Species
Birds - Map 2 of 6

Collinsville 500/230 Kilovolt Substation Project

- Proposed Project buffers
- American peregrine falcon
- Burrowing owl
- California Ridgway's rail
- California black rail
- California least tern
- Saltmarsh common yellowthroat
- Short-eared owl
- Song sparrow ("Modesto" population)
- Suisun song sparrow
- Swainson's hawk
- Tricolored blackbird
- White-tailed kite
- Yellow rail

5-Mile

1-Mile

0.25-Mile

1:101,000

0 1 2 Miles

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Attachment G:
CNDDB Occurrences of Special-Status Wildlife Species Crustaceans/Insects - Map 3 of 6

Collinsville 500/230 Kilovolt Substation Project

- Proposed Project buffers
- Conservancy fairy shrimp
- Lange's metalmark butterfly
- Vernal pool fairy shrimp
- Vernal pool tadpole shrimp

5-Mile

1-Mile

0.25-Mile

1:101,000

0 1 2 Miles

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Attachment G:
CNDDB Occurrences of Special-Status Wildlife Species Mammals - Map 4 of 6

Collinsville 500/230 Kilovolt Substation Project

- Proposed Project buffers
- Salt-marsh harvest mouse
- San Joaquin kit fox
- Western red bat

5-Mile

1-Mile

0.25-Mile

1:101,000

0 1 2 Miles

LS POWER GRID CALIFORNIA

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Attachment G:
CNDDB Occurrences of Special-Status Wildlife Species
Reptiles - Map 5 of 6

Collinsville 500/230 Kilovolt Substation Project

- Proposed Project buffers
- Alameda whipsnake
- California glossy snake
- Giant gartersnake
- Northern California legless lizard
- Western pond turtle

5-Mile
1-Mile
0.25-Mile

1:101,000
0 1 2 Miles

LS POWER GRID CALIFORNIA
INSIGNIA ENVIRONMENTAL

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Attachment G:
CNDDB Occurrences of Special-Status Wildlife Species
Fish - Map 6 of 6

Collinsville 500/230 Kilovolt Substation Project

- Proposed Project buffers
- Delta smelt
- Green sturgeon - southern DPS
- Longfin smelt
- Steelhead - Central Valley DPS

5-Mile
1-Mile
0.25-Mile

1:101,000
0 1 2 Miles

LS POWER GRID CALIFORNIA
INSIGNIA ENVIRONMENTAL

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ATTACHMENT I: LINEAR WATER FEATURE PHOTOGRAPHS

ATTACHMENT I: LINEAR WATER FEATURE PHOTOGRAPHS

Photograph 1: D-1, facing upstream and northwest.

Photograph 2: D-1, facing downstream and south.

ATTACHMENT J: WETLAND FEATURE PHOTOGRAPHS

ATTACHMENT J: WETLAND FEATURE PHOTOGRAPHS

Photograph 1: W-1, facing south.

Photograph 2: W-2, facing southeast.

Photograph 3: W-3, facing southwest.

Photograph 4: W-4, facing northeast.

Photograph 5: W-5, facing southwest.

Photograph 6: W-6, facing northeast.

Photograph 7: W-7, facing west.

ATTACHMENT K: POTENTIALLY JURISDICTIONAL WATER FEATURES TABLE

ATTACHMENT K: POTENTIALLY JURISDICTIONAL WATER FEATURES TABLES

Table K-1: Potentially Jurisdictional Wetland Features

Wetland Identification Number	Vegetation Type	Cowardin Classification	Page Number in Attachment A	Potential USACE and RWQCB Jurisdictional Area within Survey Area (acres)	Potential CDFW Jurisdictional Area within Survey Area (acres)
W-1	*Schoenoplectus* (*acutus, californicus*) Herbaceous Alliance, *Juncus arcticus* (var. *balticus, mexicanus*) Herbaceous Alliance, *Rosa californica* Shrubland Alliance, and *Schoenoplectus acutus*/*Rosa californica* Association	E2EM1	1, 2	7.43	7.43
W-2	*Schoenoplectus* (*acutus, californicus*) Herbaceous Alliance, *Distichlis spicata* Herbaceous Alliance, and *Frankenia salina* Herbaceous Alliance	PEM1	1, 2	22.43	22.43
W-3	*Distichlis spicata* Herbaceous Alliance	PEM1	2	0.25	0
W-4	*Frankenia salina* Herbaceous Alliance and *Schoenoplectus* (*acutus, californicus*) Herbaceous Alliance	PEM1	2	1.22	0
W-5	*Distichlis spicata* Herbaceous Alliance and *Juncus arcticus* (var. *balticus, mexicanus*) Herbaceous Alliance	PEM1	3, 4	15.16	15.16
W-6	*Distichlis spicata* Herbaceous Alliance and *Juncus arcticus* (var. *balticus, mexicanus*) Herbaceous Alliance	PEM1	5, 6	10.02	11.85
W-7	*Distichlis spicata* Herbaceous Alliance	PEM1	4	1.55	0
Total	**--**	**--**	**--**	**58.06**	**55.04**

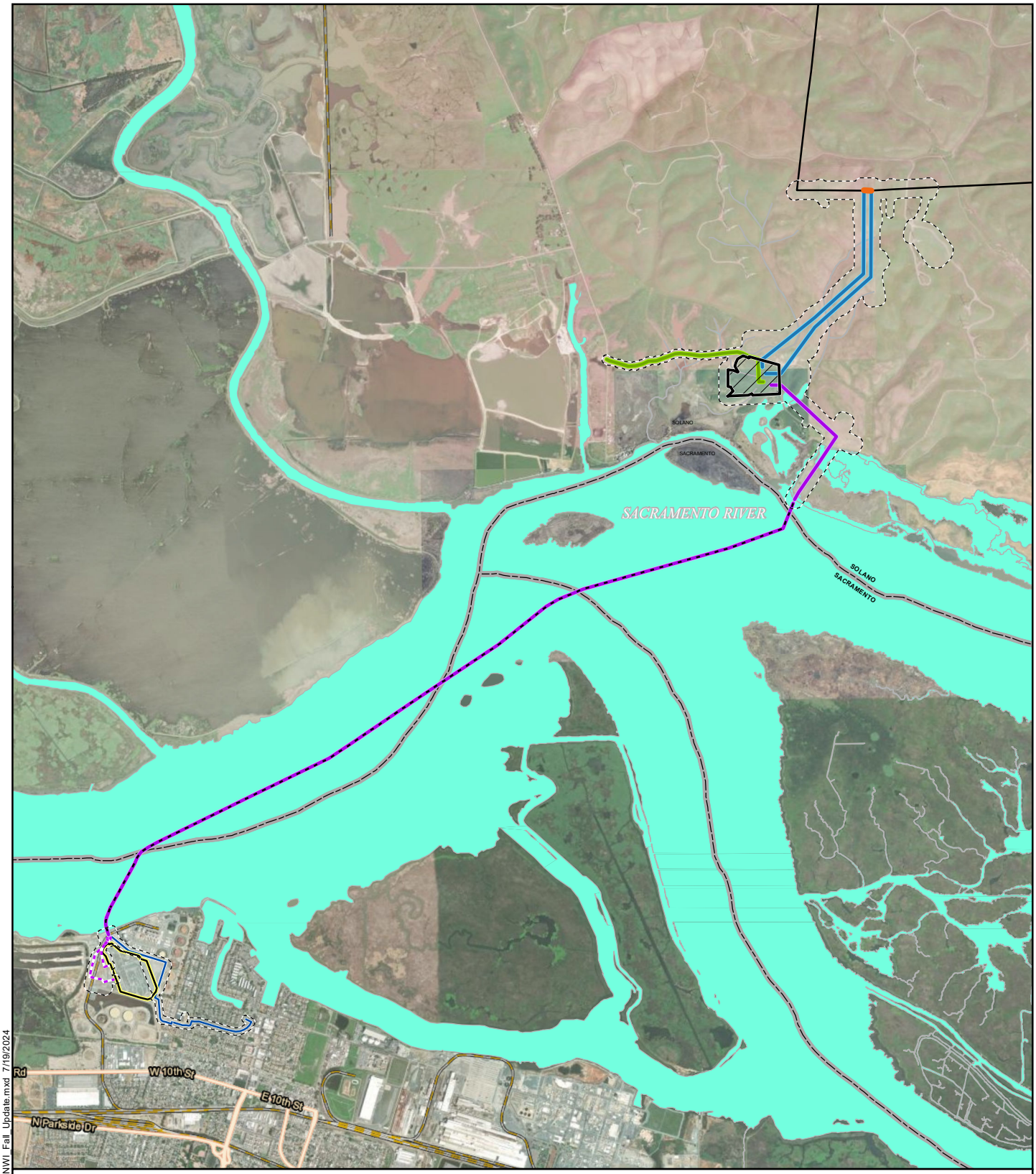
Notes: USACE = United States Army Corps of Engineers; RWQCB = Regional Water Quality Control Board; CDFW = California Department of Fish and Wildlife

Table K-2: Potentially Jurisdictional Linear Water Features

		Length	OHWM Width	OHWM Depth	TOB Width	TOB Depth	USACE	RWQCB	CDFW
D-1	Ephemeral	926.12	3.00	0.10	4.90	2.20	0.06	0.06	0.10

Notes: OHWM = ordinary high water mark; TOB = top of bank

ATTACHMENT L: NATIONAL WETLANDS INVENTORY MAP



Attachment L: National Wetlands Inventory Map

Collinsville 500/230 Kilovolt Substation Project

- Proposed LSPGC 230 kV Overhead Segment
- Proposed LSPGC 230 kV Submarine Segment
- Proposed LSPGC 230 kV Underground Segment
- Proposed PG&E 500 kV Interconnection
- Proposed PG&E 12 kV Distribution Line
- Existing PG&E 500 kV Transmission Line to be Removed
- Survey Area
- Proposed Collinsville Substation
- Existing PG&E Pittsburg Substation
- National Wetlands Inventory Feature
- County Boundary
- Existing PG&E Vaca Dixon-Tesla Transmission Line
- Proposed LSPGC Telecommunications Line

1:45,000

0 2,000 4,000 Feet

LS POWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

Z:\Projects\LS_Power_Collinsville\MXD\BRTR\AttachH_NWI_Fall_Update.mxd 7/19/2024

APPENDIX F.3

Aquatic Resources Technical Report

Collinsville 500/230 Kilovolt Substation Project

Aquatic Resources Technical Report

Collinsville, Solano County, California

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List of Acronyms

AMM	Avoidance and Minimization Measure
BCDC	San Francisco Bay Conservation and Development Commission
ARTR	Aquatic Resources Technical Report
CAISO	California Independent System Operator
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CFGC	California Fish and Game Code
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
Corps	U.S. Army Corps of Engineers
CWA	Clean Water Act
Delta	Sacramento-San Joaquin Delta
DMMO	San Francisco Bay Dredge Material Management Office
EFH	Essential Fish Habitat
ESA	Federal Endangered Species Act
Estuary	Combined Areas of Delta, Suisun Bay, San Pablo Bay, and San Francisco Bay
HAPC	Habitat Areas of Particular Concern
HTL	High Tide Line
LSPGC	LS Power Grid California, LLC
MMPA	Marine Mammal Protection Act
NCCP	Natural Community Conservation Plan
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NTU	Nephelometric Turbidity Units
PG&E	Pacific Gas and Electric
PEA	Proponents Environmental Assessment
PPT	Parts Per Thousand
PTS	Post-traumatic stress
Project	LS Power's Collinsville 500/230 Kilovolt Substation Project
RHA	Rivers and Harbors Act
RMS	Root mean square
RWQCB	Regional Water Quality Control Board
SAV	Submerged Aquatic Vegetation
Study Area	Area where aquatic resources are evaluated for the Project
SWRCB	State Water Resource Control Board
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WRA	WRA, Inc.

1.0 INTRODUCTION

This Aquatic Resources Technical Report (ARTR) reviews existing fisheries biological resources, evaluates potential impacts associated with installation of sub-marine cables, as well as structures to support cables and Avoidance and Minimization Measures (AMMs) for the LS Power Grid California, LLC's (LSPGC) Collinsville 500/230 Kilovolt Substation Project (Proposed Project) located within the Sacramento-San Joaquin Delta (Delta) between Collinsville and Pittsburg (Appendix A - Figure 1). LSPGC proposes to complete construction of a new substation in Collinsville, which will then send electricity through an upland portion of the new transmission line, to an upland location on the northern shore where four transmission lines will then pass beneath the Delta, to resurface at PG&E's Pittsburg Substation in the City of Pittsburg, where the lines will be tied into the existing grid. This ARTR specifically evaluates the aquatic components, fisheries related resources and marine mammals potentially affected by the Proposed Project (Study Area, Appendix A – Figure 2).

1.1 Overview and Purpose

This report provides an assessment of biological resources within aquatic portions of the Study Area and immediate vicinity as they pertain to fisheries and marine mammals. The purpose of the assessment is to support an evaluation of the Proposed Project for the Proponent's Environmental Assessment (PEA). This report evaluates (1) the presence of regulated fisheries habitats, and (2) the potential for the site to support special-status fish and wildlife species. Based on the results of the site assessment, potential impacts to sensitive habitat types and special-status species resulting from the Proposed Project were evaluated. If the project has the potential to result in significant impacts to these biological resources, measures to avoid, minimize, or mitigate those significant impacts are described.

An ARTR provides general information on the presence, or potential presence, of sensitive species and habitats. Additional focused studies including follow up submerged aquatic vegetation (SAV) surveys may be required to support regulatory permit applications or to implement mitigation measures included in this report. This assessment is based on information available at the time of the study and on-site conditions that were observed when the site was visited. Conclusions are based on currently available information used in combination with the professional judgement of the biologists completing this study.

1.2 Location and Setting

The aquatic portion of the Study Area is located within and beneath waters of the western Delta (Appendix A: Figure 3). The Delta generally extends from Sacramento in the north, to the confluence of the San Joaquin and Stanislaus River in the south, and west to the edge of Suisun Bay near Collinsville. The Delta is the eastern most segment of the San Francisco Estuary which consists of the Delta, Suisun Bay, San Pablo Bay, and San Francisco Bay (Estuary) (Moyle 2002). The Estuary drains all of the major rivers of the Central Valley and funnels them through the Estuary to the Pacific Ocean. The Delta is the transition zone between saline waters within San Francisco Bay and freshwater marshes that extended inland throughout much of the Central Valley.

Today the Delta is largely managed for agriculture and water conveyance. Many of the former islands and marshes are now surrounded by levees constructed over the last 120 years for agricultural management and flood control. The Central Valley Project and State Water Project facilities located throughout the Delta are also key to the local ecology. These projects withdraw water from the Delta and distribute it to areas across the state for agricultural and municipal uses. Additionally, the Delta contains hundreds of general agricultural diversions which pump water directly out of the rivers and bays and onto adjacent farm fields. As such, water diversions and operation of the two water supply projects dictate much of how water is allocated and distributed throughout the Delta.

Collinsville occupies a unique location in the Delta ecosystem at the transition zone between the freshwater habitats of the Delta and brackish habitats of Suisun Bay. Water is managed by the Water Projects to achieve specific salinity criteria at Collinsville, ideally maintaining a measurement at or below 2 parts per thousand (PPT) one meter from the bottom of the channel (DSC 2023). This measurement, known as the "X2" is a physical attribute of the estuary used as a habitat indicator for the location of the low salinity zone, such that higher productivity for Delta fishes is maintained inland of the X2 zone.

Within the X2 there is a mixing of species from both marine and freshwater environments due to the salt/fresh gradient. For example, the X2 is often used to model the distribution of Delta smelt (*Hypomesus transpacificus*) which is found solely within low salinity zones. As the X2 moves outward into Suisun Bay in winter, so to do Delta smelt. Other listed fish such as longfin smelt (*Spirinchus thaleichthys*) spawn within freshwater reaches of the Delta but make seasonal migrations into the marine portions of the Estuary to feed. This transition zone is also an important area for anadromous fishes including steelhead (*Oncorhynchus mykiss*), Chinook salmon (*O. tshawytscha*), green sturgeon (*Acipenser medirostris*), white sturgeon (*A. transmontanus*) and lamprey (genus: *Entosphenus*). Anadromous species rely on the fresh/saltwater gradients to physiologically adapt to marine or freshwater environments where they spend some portion of their lives. As such this area of the Delta is an environmentally fluid state which varies with outflow year, and water diversions, but also plays a key role for Delta and anadromous fishes by providing a transition zone for physiological adaptations from fresh to saltwater.

1.3 Project Elements

1.3.1 Project Description

The LSPGC Project would involve the construction of a new substation and transmission lines to address the California Independent System Operator (CAISO)-identified overloads to the greater Bay Area by increasing transmission reliability for the area and advancing additional renewable generation. As depicted in Figure 1 (Appendix A), the Proposed Project would be located in portions of Solano, Sacramento, and Contra Costa counties in California.

1.3.2 Project Components

The main components of the Proposed Project include the following:

- A new approximately 11-acre 500/230 kV substation (Collinsville Substation);

- Two approximately 1.2-mile-long single-circuit 500 kV transmission line segments that would interconnect Pacific Gas and Electric Company's (PG&E's) existing Vaca Dixon-Tesla 500 kV Transmission Line into the proposed Collinsville Substation[1]; and
- A new approximately 6-mile-long double-circuit 230 kV transmission line connecting the proposed Collinsville Substation to PG&E's existing Pittsburg Substation. The new 230 kV transmission line would include:
    - An approximately 1-mile-long overhead transmission line segment, that would connect the proposed Collinsville Substation to a pair of riser poles on the northern shore where utility lines would then go underground,
    - Four approximately 4.5-mile-long submarine cables running in a northeast to southwest direction installed approximately 6 to 15 feet below the sediment surface, and
    - A utility vault structure near PG&E's existing Pittsburg Substation to connect the submarine cables to underground cables that would terminate at approximately two new riser poles adjacent to PG&E's existing Pittsburg Substation.

1.3.3 Project Construction

The Collinsville Substation construction would require a portion of the approximately 11-acre substation site to be cleared of all vegetation and graded to create a generally flat area for the substation components. In addition, a new driveway to the substation would be constructed. Next, the ground grid, equipment foundations, and cable trenches would be installed. Once the below-grade construction is complete, the above ground substation components would be installed. Finally, testing and commissioning would be conducted once the transmission lines are terminated at the substation prior to energization.

The overhead transmission lines would be constructed on land and would first require new temporary access roads and work areas to be established at each structure location. This process would involve vegetation clearing and blading, as required to create a flat area to facilitate construction. For the overhead structures, one or more foundations for each structure would be constructed prior to the erection of lattice steel structures or self-supporting, steel monopoles. The 500 kV structures would utilize a horizontal conductor configuration and the 230 kV poles would use a vertical conductor configuration. Finally, the conductors and two optical ground wires would be strung along the transmission line alignment. Following construction, an approximately 20-foot radius around the new structures would remain cleared to facilitate future operation and maintenance.

In-water work for the transmission lines would begin on the northern shore of the Sacramento River with the connection of transmission lines to two riser poles which will guide the cables underground. Open trench excavation will be used to dig an approximately 270-foot section of trench for the cable to go subterranean from the poles, into the river. Trenching would continue from the shoreline into the river for approximately 50 feet.

[1] PG&E will be responsible for the final configuration of the northern tie in of the 500 kV connection between the proposed Collinsville Substation and the existing Vaca Dixon-Tesla 500 kV Transmission Line. LSPGC will be responsible for the installation of dead-end structures near the Collinsville Substation to facilitate looping in the 500 kV lines.

The submarine cables within the river would be installed under the riverbed using a hydroplow with no backfilling required. The main mechanical components of the hydroplow are skids which allow a sled supporting the plow to slide across the river bottom, and an articulated blade which rotates down into the channel bottom. The blade is fitted with water injectors along its leading edge that liquefy substrate immediately ahead of the blade reducing the force required to pull the plow forward. The cable is strung through the plow blade from the ship, and as the plow moves forward, the cable runs through the blade and is embedded at a pre-determined depth in the sediment. The majority of loose sediment on the walls of the furrow is then allowed to naturally sluff back in immediately after the plow is pulled through, filling the furrow.

Near the southern edge of the Sacramento River and San Joaquin River confluence, open trench excavation will again be used to dig the final 70- to 80-foot section of trench for the submarine cable, making the transition to the vault on the southern shore where cables will daylight again. At this southern shore junction, sheetpiles may also be driven on land to stabilize and protect cables on the upstream and downstream sides as they make landfall. The cables would then continue in an underground configuration to designated locations near the fence of PG&E's existing Pittsburg Substation. PG&E would be responsible for connecting the cables to the existing substation equipment.

The Proposed Project would also require the establishment of temporary staging areas, stringing sites, access roads, and construction areas to utilize during construction. These access and staging facilities are anticipated for work outside of the Delta waters and all temporarily impacted areas would be restored to near pre-construction conditions after work is complete.

1.3.4 Construction Schedule

Construction is anticipated to begin in 2026 and take approximately 24 months to complete. The Proposed Project includes construction occurring on land and in water. The construction of in-water installation of the submarine cables and their transitions to and from the shorelines are anticipated to take approximately 3 months. In-water work would be restricted to between July 1 and November 30. Land-based construction would occur year-round or as authorized by permits and authorizations. Per the CAISO technical specifications, the Proposed Project is required to be energized by June 1, 2028.

1.3.5 Operations and Maintenance

LSPGC would conduct ongoing operations and maintenance of all Proposed Project components. These planned activities would involve regular inspections of all facilities and repairs would be conducted on an as-needed basis, and maintenance of transmission line rights-of-way. The proposed Collinsville Substation would be unstaffed and operated remotely. Maintenance of the buried submarine cables is not anticipated.

2.0 REGULATORY BACKGROUND

The following sections explain the regulatory context of the biological assessment, including applicable laws and regulations that were applied to the field investigations and analysis of potential project impacts.

2.1.1 Vegetation and Aquatic Communities

Waters of the United States, Including Wetlands: The Corps regulates "Waters of the United States" under Section 404 of the Clean Water Act (CWA). Waters of the United States are defined in the Code of Federal Regulations (CFR) as including the territorial seas, and waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, such as tributaries, lakes and ponds, impoundments of waters of the U.S., and wetlands that are hydrologically connected with these navigable features (33 CFR 328.3). Potential wetland areas, according to the three criteria used to delineate wetlands as defined in the *U.S. Army Corps of Engineers Wetlands Delineation Manual* (Corps Manual; Environmental Laboratory 1987), are identified by the presence of (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology. Unvegetated waters including lakes, rivers, and streams may also be subject to Section 404 jurisdiction and are characterized by an ordinary high water mark (OHWM) identified based on field indicators such as the lack of vegetation, sorting of sediments, and other indicators of flowing or standing water. The placement of fill material into Waters of the United States generally requires a permit from the Corps under Section 404 of the CWA.

The Corps also regulates construction In navigable waterways of the U.S. through Section 10 of the Rivers and Harbors Act (RHA) of 1899 (33 U.S. Code [USC] 403). Section 10 of the RHA requires Corps approval and a permit for excavation or fill, or alteration or modification of the course, location, condition, or capacity of, any port, roadstead, haven, harbor, canal, lake, harbor or refuge, or enclosure within the limits of any breakwater, or of the channel of any navigable water of the United States. Section 10 requirements apply only to navigable waters themselves, and are not applicable to tributaries, adjacent wetlands, and similar aquatic features not capable of supporting interstate commerce.

Waters of the State, Including Wetlands: The term "Waters of the State" is defined by the Porter-Cologne Act as "any surface water or groundwater, including saline waters, within the boundaries of the state." The State Water Resources Control Board (SWRCB) and nine Regional Water Quality Control Boards (RWQCB) protect waters within this broad regulatory scope through many different regulatory programs. Waters of the State in the context of a California Environmental Quality Act (CEQA) Biological Resources evaluation include wetlands and other surface waters protected by the *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* (SWRCB 2019). The SWRCB and RWQCB issue permits for the discharge of fill material into surface waters through the State Water Quality Certification Program, which fulfills requirements of Section 401 of the CWA and the Porter-Cologne Water Quality Control Act. Projects that require a Clean Water Act permit are also required to obtain a Water Quality Certification. If a project does not require a federal permit but does involve discharge of dredge or fill material into surface waters of the State, the SWRCB and RWQCB may issue a permit in the form of Waste Discharge Requirements.

Sections 1600-1616 of California Fish and Game Code: Streams and lakes, as habitat for fish and wildlife species, are regulated by the California Department of fish and Wildlife (CDFW) under Sections 1600-1616 of California Fish and Game Code (CFGC). Alterations to or work within or adjacent to streambeds or lakes generally require a 1602 Lake and Streambed Alteration Agreement. The term "stream," which includes creeks and rivers, is defined in the California code of regulations (CCR) as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life [including] watercourses having a surface or subsurface flow that supports or has supported riparian vegetation" (14 CCR

1.72). The term “stream” can include ephemeral streams, dry washes, watercourses with subsurface flows, canals, aqueducts, irrigation ditches, and other means of water conveyance if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife (CDFG 1994). Riparian vegetation has been defined as “vegetation which occurs in and/or adjacent to a stream and is dependent on, and occurs because of, the stream itself” (CDFG 1994). Removal of riparian vegetation also requires a Section 1602 Lake and Streambed Alteration Agreement from CDFW.

San Francisco Bay and Shoreline: Enacted in 1965, the McAteer-Petris Act (California Government Code Section 66600 *et seq*.) established the San Francisco Bay Conservation and Development Commission (BCDC) as a state agency charged with preparing a plan for the long-term use of the Bay. BCDC has several areas of jurisdiction, including San Francisco Bay (including sloughs and marshlands lying between mean high tide and five feet above mean sea level) and a shoreline band consisting of all territory located between the shoreline of the Bay and a line 100 feet landward of and parallel with the shoreline (California Government Code 66610). Any person or governmental agency wishing to place fill, to extract materials, or to make any substantial change in use of any water, land, or structure within BCDC jurisdiction must secure a permit from BCDC.

2.1.2 Special-status Species

ENDANGERED AND THREATENED FISH AND WILDLIFE

Specific species of plants, fish, and wildlife species may be designated as threatened or endangered by the federal Endangered Species Act (ESA), or the California Endangered Species Act (CESA). Specific protections and permitting mechanisms for these species differ under each of these acts, and a species’ designation under one law does not automatically provide protection under the other.

The ESA (16 USC 1531 et seq.) is implemented by the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS). The USFWS and NMFS maintain lists of endangered and threatened plant and animal species (referred to as“listed species”). “Proposed” or “candidate” species are those that are being considered for listing and are not protected until they are formally listed as threatened or endangered. Under the ESA, authorization must be obtained from the USFWS or NMFS prior to take of any listed species. “Take” under the ESA is defined as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” Take under the ESA includes direct injury or mortality to individuals, disruptions in normal behavioral patterns resulting from factors such as noise and visual disturbance and impacts to habitat for listed species. Actions that may result in take of an ESA-listed species may obtain a permit under ESA Section 10, or via the interagency consultation described in ESA Section 7. Federal-listed plant species are only protected when take occurs on federal land.

The CESA (CFGC 2050 et seq.) prohibits the take of any plant and animal species that the CFGC determines to be an endangered or threatened species in California. CESA regulations include take protection for threatened and endangered plants on private lands, as well as extending this protection to candidate species that are proposed for listing as threatened or endangered under CESA. The definition of a “take” under CESA (hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill) only applies to direct impact to individuals, and does not extend to habitat impacts or harassment. CDFW may issue an Incidental Take Permit under CESA

to authorize take if it is incidental to otherwise lawful activity and if specific criteria are met. Take of these species is also authorized if the geographic area is covered by a Natural Community Conservation Plan (NCCP), as long as the NCCP covers that activity.

FULLY PROTECTED SPECIES

This category includes specific plant and wildlife species that are designated in the CFGC as protected even if not listed under CESA or ESA. Fully Protected Species includes specific lists of birds, mammals, reptiles, amphibians, and fish designated in CFGC. Fully protected species may not be taken or possessed at any time. No licenses or permits may be issued for take of fully protected species, except for necessary scientific research and conservation purposes. The definition of "take" is the same under the California Fish and Game Code and the CESA. By law, CDFW may not issue an Incidental Take Permit for Fully Protected Species.

MARINE MAMMALS

The Marine Mammal Protection Act (MMPA) was enacted in 1972 and protects all marine mammals within the territorial boundaries of the United States from take. The definition of "take" in the MMPA is the same as that under the FESA. The law is administered by the NMFS, who may issue permits for incidental take and importation of marine mammals in certain circumstances.

SPECIES OF SPECIAL CONCERN, AND OTHER SPECIAL-STATUS SPECIES

To address additional species protections afforded under CEQA which would also be addressed through the PEA, CDFW has developed a list of special species as "a general term that refers to all of the taxa the CNDDB is interested in tracking, regardless of their legal or protection status." This includes lists developed by other organizations, including for example, the Audubon Watch List Species, the Bureau of Land Management Sensitive Species, and USFWS Birds of Special Concern. Additionally, any species listed as sensitive within local plans, policies and ordinances are likewise considered sensitive under CEQA.

2.1.3 Special-status Habitats

CRITICAL HABITAT

The ESA also provides for designation of critical habitat, which are specific geographic areas containing physical or biological features "essential to the conservation of the species." Protections afforded to designated critical habitat apply only to actions that are funded, permitted, or carried out by federal agencies. Critical habitat designations do not affect activities by private landowners if there is no other federal agency involvement.

ESSENTIAL FISH HABITAT

The Magnuson-Stevens Fishery Conservation and Management Act provides for conservation and management of fishery resources in the U.S., administered by NMFS. This Act establishes a national program intended to prevent overfishing, rebuild overfished stocks, ensure conservation, and facilitate long-term protection through the establishment of Essential Fish Habitat (EFH). EFH consists of aquatic areas that contain habitat essential to the long-term survival and health of fisheries, which may include the water column, certain bottom types, vegetation (e.g., sago pondweed (*Stuckenia filiformis*) or ditch-grass/widgeon grass (*Ruppia maritima or Ruppia cirrhosa*)), and complex structures such as oyster beds. Any federal agency that authorizes, funds, or undertakes action that may adversely affect EFH is required to consult with NMFS.

MOVEMENT CORRIDORS AND WILDLIFE NURSERY SITES

Movement and migratory corridors for native wildlife (including aquatic corridors) as well as wildlife nursery sites such as submerged aquatic vegetation are given special consideration under CEQA and as such are included for this letter to evaluate effects as part of the PEA.

3.0 ASSESSMENT METHODOLOGY

WRA biologists reviewed literature resources and performed database searches to assess the potential for sensitive habitat types and special-status species including:

- Antioch North and Honker Bay 7.5-minute U.S. Geological Survey (USGS) quadrangle (USGS 2023)
- Contemporary aerial photographs (Google Earth 2023)
- Historical aerial photographs (NETR 2023)
- National Wetlands Inventory (USFWS 2023a)
- California Natural Diversity Database (CNDDB, CDFW 2023a)
- USFWS Information for Planning and Consultation (USFWS 2023b)
- National Marine Fisheries Service Essential Fish Habitat Mapper (NMFS 2023a)
- National Marine Fisheries Critical Habitat Mapper (NMFS 2023b).

3.1 Special-status Species

3.1.1 General Assessment

Potential occurrence of special-status species in the Study Area was evaluated by first determining which special-status species occur in the vicinity of the Study Area through a literature and database review as described above. The presence of suitable habitat for special-status species was evaluated based on physical and biological conditions of the site, documented occurrences of species in CDFW trawl sampling, as well as the professional expertise of the investigating biologists. After reviewing background literature, it was determined that any species of special-status fish are either present year-round (i.e. they may spawn, rear and forage as adults in the vicinity), or species are present only seasonally when making migrations (e.g. when moving between natal streams and the Pacific Ocean). As such the evaluation below does not include categories such as unlikely, low, or moderate potential as any species are either likely to be present year-round, or are only present seasonally during migrations. As such the categories of classification were simplified. In case where the Study Area is outside of the species known range or similar factors make it so the species will not occur, the species was determined to have no potential. As such the potential for special-status species were determined according to the following criteria:

- **No Potential.** Habitat on and adjacent to the site is clearly unsuitable for the species requirements (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime). Alternatively, the Study Area may be outside of the species known range.
- **Present Seasonally.** Species is observed in the Study Area or has been recorded (i.e., CNDDB, other reports) on the site in the recent past during certain portions of the year, typically when migrating to the Pacific Ocean, or to natal streams.

- **Present Year-Round.** Species has been observed in waters of the Study Area year-round (i.e., CNDDB, CDFW trawl data) in the recent past. These species may spend a large portion of the year spawning, rearing or foraging as adults in the vicinity.

3.2 Wildlife Corridors and Native Wildlife Nursery Sites

To account for potential impacts to wildlife movement/migratory corridors, biologists reviewed maps from the California Essential Connectivity Project (CalTrans 2010), and habitat connectivity data available through the CDFW Biogeographic Information and Observation System (CDFW 2023b). Additionally, aerial imagery (Google Earth 2023) for the local area was referenced to assess if local core habitat areas were present within, or connected to the Study Area. This assessment was refined based on observations of on-site physical and/or biological conditions, including topographic and vegetative factors that can facilitate wildlife movement, as well as on-site and off-site barriers to connectivity.

The potential presence of native wildlife nursery sites is evaluated and discussion of individual wildlife species below. Examples of native wildlife nursery sites include nesting sites for native bird species (particularly colonial nesting sites), marine mammal pupping sites, and colonial roosting sites for other species (such as for monarch butterfly [*Danaus plexippus*]).

4.0 ASSESSMENT RESULTS

4.1 Aquatic Resources

Open Water and Submerged Aquatic Vegetation (no vegetation alliance). CDFW Rank: Sensitive. The subtidal waters located throughout the Study Area are tidal waters of the Sacramento and San Joaquin Delta. Open water constitutes the vast majority of the Study Area for this ARTR (1,167 acres/<99%) and is mapped at the High Tide Line (HTL). Figure 4 (Appendix A) illustrates the overall landcovers assessed for this ARTR.

Open waters contain several habitats (discussed below) which are also regulated either as critical habitat or EFH. Open waters are considered sensitive under CEQA; however, open waters also contain invasive submerged aquatic vegetation (SAV). While some species of SAV such as widgeon grass are considered sensitive or rare on a state level (CDFW 2023c, rank G4 S3), they are also regulated as EFH. Other species of SAV are invasive and can be deleterious to aquatic life. SAV species such as water hyacinth (*Eichhornia crassipes*), uruguay water primrose (*Ludwigia hexapetala*), alligatorweed (*Alternanthera philoxeroides*), Eurasian watermilfoil (*Myriophyllum spicatum*) and Brazilian waterweed (*Egeria densa*). These species can have several effects including slowing water which causes turbidity to clear leaving fish like Delata smelt more vulnerable to predation (Hestir et al. 2015). The majority of SAV is typically wideon grass within this portion of the Delta, and as such SAV would be a sensitive resource.

Water quality within the Study Area is highly variable both seasonally and dependent on daily wind and outflow conditions from the Sacramento River. For example, turbidity within this region can shift quickly in response to weather, typically as a result of either high winter outflows or high summer winds (Bever et al 2018). During winter, high flows carry sediments into the Study Area resulting in naturally high turbidity which can increase during storm events. In summer, high winds cause wind-wave turbulence that resuspends river bed sediments, causing extreme turbidity spikes which can differentially affect large areas of the Sacramento River and Delta. Within the

Sacramento River and Delta, turbidity is generally between 20-40 NTUs during the summer but can increase to as high as 250-500 NTUs when high winds stir light sediments (CDWR 2013). Turbidity spikes associated with summer windstorms may occur in as short as a few minutes, and may also occur differentially (i.e., not all areas are stirred or mixed equally). Shallow tidal flats around San Pablo Bay, Suisun Bay, Grizzly Bay, and Honker Bay are often most affected by this condition (Ruhl *et al*. 2001). However, once sediments are resuspended, these high turbidity zones are spread (via tides and river flow) into adjacent areas like the Study Area. As such, natural variation in water quality, especially turbidity can vary within the Study Area independent of human action by an order of magnitude or more.

The USFWS monitors water quality around the X2 which typically occurs near Collinsville and the Study Area in the summer. The USFWS has noted that secchi disk depths (a metric used to measure water turbidity) has not increased near the X2 boundary since the mid-1980s despite suspended sediment concentrations in Suisun Bay notably decreasing over this same time (USFWS 2022). Fluctuations in water quality due to summer winds or high winter outflows, and natural resuspension of large volumes of sediment partially contribute to these highly variable water quality conditions and therefore maintain similar levels of observed turbidity over time, despite a decrease in sediment quantity. These natural high turbidity events are also considered beneficial for Delta and longfin smelt as these species rely on turbid water for concealment from foraging non-native fish (e.g., bass) and for sources of forage (Bever et al 2018, Sommer and Mejia 2013).

4.2 Special-status Species

4.2.1 Special-status Fish

Following a background literature and database review, 11 species of fish have potential to occur within the aquatic portions of the Study Area. These species are listed in Appendix B alongside other species assessed but found to have no potential to occur. Those species with potential to occur are discussed in greater detail below.

CDFW TRAWL DATA

While general literature reviews can reveal the life-history patterns of fish, including their migratory patterns and likely seasonal presence in an area, a review of long-term field surveys can also help determine if species are known to occur in an area, and how readily they may be encountered at particular times of year. To help refine if species are present particularly during the late-summer and fall when work is proposed, WRA queried publicly available data from CDFW's website to help determine what species of fish may be present within the Study Area during the in-water work window. Table 1 shows data queried from the CDFW Summer Townet Sampling which surveys in June, July, and August (CDFW 2023d), while Table 2 shows data from Fall midwater trawl database (CDFW 2023e). The fall midwater trawl surveys in August, September, October, November, and December. Station 513 was specifically queried as it was sampled by both survey efforts over the past 10 years (2012-2022) and provides long-term observations within the center of the Study Area.

Table 1. CDFW Summer Townet Survey Data at Station 513

Species	Summer Townet - Station 513 (2012-2022 Catch)			
	June	July	August	Total
Chinook Salmon	0	0	0	*0*
Delta Smelt	20	7	0	*27*
Green Sturgeon	0	0	0	*0*
Longfin Smelt	107	5	0	*112*
Pacific Lamprey	0	0	0	*0*
River Lamprey	0	0	0	*0*
Splittail	1	0	0	*1*
Steelhead	0	0	0	*0*
White Sturgeon	0	0	0	*0*

Table 2. CDFW Fall Midwater Trawl Survey Data at Station 513

Species	Fall Midwater Trawl–- Station 513 (2012-2022 Catch)					
	August	September	October	November	December	Total
Chinook Salmon	0	0	0	0	3	*3*
Delta Smelt	0	0	3	0	1	*4*
Green Sturgeon	0	0	0	0	0	*0*
Longfin Smelt	0	1	0	1	1	*3*
Pacific Lamprey	0	0	0	0	0	*0*
River Lamprey	0	0	0	0	0	*0*
Splittail	0	0	0	0	0	*0*
Steelhead	0	0	0	0	0	*0*
White Sturgeon	0	0	0	0	0	*0*

The occurrence of special-status species is very rare within the Study Area during the time of year when Project work is proposed to occur. In particular, between June and July, there is a steep drop in the only two special-status species that have been documented in the Summer Townet Survey, longfin and Delta smelt. Looking even closer at these data below, Table 3 shows the number of individuals documented in the Summer Townet Survey by year and month. Looking at the data in Table 3, no Delta smelt have been documented since 2016, and the one individual which was documented, occurred in June. Similarly, no longfin smelt have been documented in July since 2013, and the majority (94 of 112 individuals) were documented only in the month of June from 2012-2014. Considering the life history of these species, they are present in the vicinity of the Study Area at certain times of year. However, looking at the long-term datasets over the last 10 years, these species are almost entirely absent from the Study Area at the time the Project is proposed to occur (July-November). Therefore, recommendations provided below following the species-specific evaluations are based on this trend in species absence.

Table 3. Longfin and Delta Smelt Observations by Year and Month in Summer Townet Surveys

	June	*July*	*August*
Longfin smelt			
2012	13	0	0
2013	80	5	0
2014	1	0	0
2015	0	0	0
2016	0	0	0
2017	0	0	0
2018	0	0	0
2019	0	0	0
2020	7	0	0
2021	2	0	0
2022	4	0	0
Delta Smelt			
2012	19	7	0
2013	0	0	0
2014	0	0	0
2015	0	0	0
2016	1	0	0
2017	0	0	0
2018	0	0	0
2019	0	0	0
2020	0	0	0
2021	0	0	0
2022	0	0	0

Chinook salmon – Central Valley Fall/late fall-run ESU (*Oncorhynchus tshawytscha*) CDFW Species of Special Concern.

The Central Valley Fall/late fall-run ESU includes all naturally spawned spring-run populations from the Sacramento San Joaquin River mainstem and its tributaries. Late-fall run Chinook salmon are morphologically similar to spring-run chinook. They are large salmonids, reaching 75-100 cm SL and weighing up to 9-10 kg or more. The great majority of late-fall Chinook salmon appear to spawn in the mainstem of the Sacramento River, which they enter from October through February. Spawning occurs in January, February, and March, although it may extend into April in some years. Eggs are laid in large depressions (redds) hollowed out in gravel beds. The embryos hatch following a 3–4-month incubation period and the alevins (sac-fry) remain in the gravel for another 2-3 weeks. Once their yolk sac is absorbed, the fry emerge and begin feeding on aquatic insects. All fry have emerged by early June. The juveniles hold in the river for nearly a year before moving out to sea the following December through March. Once in the ocean, salmon are largely piscivorous and grow rapidly. The specific habitat requirements of late-fall chinook have not been determined, but they are presumably similar to other Chinook salmon runs and fall within the range of the physical and chemical characteristics of the Sacramento River above Red Bluff.

The Sacramento and San Joaquin Rivers as well as their tributaries are natal streams for fall-run chinook salmon, while late-fall run are limited to spawning within the main-stem of the Sacramento River or its more northern tributaries. There are no spawning or freshwater rearing streams within or immediately surrounding the Study Area. Thus, Chinook salmon do not reside in the waters of the Study Area, where conditions do not support its specific life history needs, or long term survival. This species occurs seasonally when migrating to natal streams in the fall as adults, or when migrating to the ocean in spring as juveniles or fry. This species is considered present within the Study Area, but only seasonally and for short periods when migrating.

Chinook salmon – Central Valley Spring-run ESU (*Oncorhynchus tshawytscha*), Federal Threatened, State Threatened.

The Central Valley Spring-run ESU includes all naturally spawned spring-run populations from the Sacramento San Joaquin River mainstem and its tributaries. Chinook salmon are anadromous (adults migrate from a marine environment into the freshwater streams and rivers of their birth) and semelparous (spawn only once and then die). Spring-run chinook salmon enter the Sacramento River between February and June. They move upstream and enter tributary streams from February through July, peaking in May-June. These fish migrate into the headwaters, hold in pools until they spawn, starting as early as mid-August and ending in mid-October, peaking in September. They are relatively faithful to the home streams in which they were spawned, using visual and chemical cues to locate these streams. While migrating and holding in the river, spring chinook do not feed, relying instead on stored body fat reserves for maintenance and gonadal maturation. Eggs are laid in large depressions (redds) hollowed out in gravel beds. Some fish remain in the stream until the following October and emigrate as “yearlings”, usually with the onset of storms starting in October through the following March, peaking in November-December. Large pools with cold water are essential over-summering habitat for this species.

There are no spawning or freshwater rearing locations within the Study Area. Thus, Chinook salmon do not reside in the waters of the Study Area, where conditions do not support its specific life history needs, or long term survival. However, this species occurs seasonally when migrating to natal streams within the Sacramento and San Joaquin Rivers in the spring, or when migrating to the ocean as smolts. As such the species is considered present within the Study Area, but only seasonally and for short periods when migrating to or from natal streams.

Chinook salmon – Sacramento River Winter-run ESU (*Oncorhynchus tshawytscha*), Federal Endangered, State Endangered.

The ESU includes all naturally spawned populations of winter-run chinook salmon in the Sacramento River and its tributaries in California, as well as two artificial propagation programs: winter run chinook from the Livingston Stone National Fish Hatchery, and winter run chinook in a captive broodstock program maintained at Livingston Stone NFH and the University of California Bodega Marine Laboratory. Winter-run chinook salmon are unique because they spawn during summer months when air temperatures usually approach their yearly maximum. As a result, these salmon require stream reaches with cold water sources that will protect embryos and juveniles from the warm ambient conditions in summer. Winter-run chinook salmon are primarily restricted to the mainstem Sacramento River.

There are no spawning or freshwater rearing locations within the Study Area. Thus, Chinook salmon do not reside in the waters of the Study Area, where conditions do not support its specific life history needs, or long-term survival. However, this species occurs seasonally when migrating

to natal streams in the spring near the headwaters of the Sacramento River, or when migrating to the ocean. As such, the species is considered present within the Study Area, but only seasonally and for short periods when migrating to or from natal streams.

Delta smelt (*Hypomesus transpacificus*), Federal Threatened, State Endangered.

Delta Smelt are a pelagic (live in the open water column away from the bottom) and euryhaline species (tolerant of a wide salinity range) found in brackish water. They are found only in the Sacramento-San Joaquin Estuary and as far upstream as the mouth of the American River on the Sacramento River and Mossdale on the San Joaquin River. They extend downstream as far as San Pablo Bay. During the late winter to early summer, delta smelt migrate to freshwater to spawn. Larvae hatch between 10-14 days, are planktonic (float with the water currents), and are washed downstream until they reach areas near the entrapment zone where salt and freshwater mix. Delta smelt are fast growing and short-lived with the majority of growth within the first 7 to 9 months of life. Most smelt die after spawning in the early spring although a few survive to a second year. Delta smelt feed entirely on small crustaceans (zooplankton).

Delta smelt are largely restricted to the Sacramento Delta proper, as well as the eastern portions of Suisun Bay. As described in Bever et al (2018) and Sommer and Mejia (2013), Delta smelt are adapted to survive in areas of highly variable turbidity, such as the waters of the Study Area. Naturally high turbidity in these waters provide a benefit to the species through concealment from predators and increased foraging resources (Sommer and Mejia 2013). Given that the Study Area is within the Delta, this species is potentially present year-round.

Green sturgeon (*Acipenser medirostris*), Federal Threatened, CDFW Species of Special Concern. Green sturgeon is generally found in marine waters from the Bering Sea to Ensenada, Mexico; however, spawning populations have been found only in medium-sized rivers from the Sacramento-San Joaquin system north. Spawning occurs in the Sacramento River between March and June; it may extend slightly longer, into July, in the Klamath River. Water temperature during spawning is likely 50° to 70°F. Spawning occurs in deep, fast water. The fertilized eggs are slightly adhesive and hatch after four to 12 days. Larvae stay close to the bottom and appear to rear primarily in rivers well upstream of estuaries. Young sturgeon (8 inches) feed primarily on small crustaceans such as amphipods and opossum shrimp. As they develop, they take a wider variety of benthic invertebrates, including various species of clams, crabs, and shrimp. Larger green sturgeon diet includes fishes.

The Study Area is at the terminus of the Sacramento River. Green sturgeon are only known to spawn within the headwaters of the Sacramento River near Redding, or within the Feather River. As such, no spawning habitat is present. This species is known to rear within the greater San Francisco Bay region year-round. Green sturgeon are adapted to survive in the highly turbid waters of the Sacramento River and Delta and can tolerate the naturally variable turbidity fluctuations in the region. The species is potentially present year-round both as adults and juveniles either rearing within the Bay or when migrating to and from the Pacific Ocean.

Longfin smelt (*Spirinchus thaleichthys*), Federal Endangered, State Threatened.

Longfin Smelt is a pelagic, estuarine fish that ranges from Monterey Bay northward to Hinchinbrook Island, Prince William Sound Alaska. As this species matures in the fall, adults found throughout the San Francisco Bay migrate to brackish or freshwater in Suisun Bay, Montezuma Slough, and the lower reaches of the Sacramento and San Joaquin Rivers. Spawning is believed to

take place in freshwater. In April and May, juveniles are believed to migrate downstream to San Pablo Bay. Juveniles tend to inhabit the middle and lower portions of the water column. This species tends to be abundant near freshwater outflow, where higher-quality nursery habitat occurs and potential feeding opportunities are greater.

Longfin smelt are known to occur within the Sacramento Delta proper, as well as Suisun Bay, and San Pablo Bay. Longfin smelt, like Delta smelt described in Bever et al (2018) and Sommer and Mejia (2013), thrive in areas of high turbidity, such as the waters of the Study Area, and the naturally high turbidity in these waters provide a necessary habitat benefit to the species through concealment from predators and higher foraging resources (Sommer and Mejia 2013). Given that the Study Area is within the Delta, this species is considered present year-round.

Pacific lamprey (*Entosphenus [Lampetra] tridentatus*), CDFW Species of Special Concern. This anadromous lamprey is found along the entire California coast with regularity until becoming disjunct south of San Luis Obispo County except for regular runs to the Santa Clara River (Calfish 2023). Apart from land-locked populations, this species spends the predatory phase of its life in the ocean, feeding off the bodily fluids of a variety of fish. This species is usually concentrated near the mouths of their spawning streams because its prey is most abundant in coastal areas (Moyle 2002). Adults move up into spawning streams between early March and late June. After hatching, ammocetes are washed downstream, where they burrow into soft substrates and filter feed. Five to seven years later, ammocetes undergo metamorphosis into the predatory phase of their life cycle and out-migrate to the ocean as adults.

Tributaries of the Sacramento and San Joaquin Rivers are natal streams for this species (Calfish 2023). There are no spawning or freshwater rearing locations within the Study Area. Pacific lamprey do not reside in brackish tidal waters of the Study Area, but use the area solely as a migratory pathway. As such this species occurs seasonally when migrating to natal streams within the Sacramento and San Joaquin Rivers in the spring, or when migrating to the ocean in spring. As such the species is considered present within the Study Area, but only seasonally and for short periods when migrating to or from natal streams.

River lamprey (*Lampetra ayresi*), CDFW Species of Special Concern. River lampreys prey upon a variety of fishes in the 10-30 cm TL size range, but the most common prey seem to be herring and salmon. Unlike other species of lamprey in California, river lampreys typically attach to the back of the host fish, above the lateral line, where they feed on muscle tissue. Little is known about habitat requirements in California, but presumably, the adults need clean, gravelly riffles in permanent streams for spawning, while the ammocetes require sandy backwaters or stream edges in which to bury themselves, where water quality is continuously high and temperatures do not exceed 25°C. Adults migrate back into fresh water in the fall and spawn during the winter or spring months in small tributary streams.

Tributaries of the Sacramento and San Joaquin Rivers are natal streams for this species (Calfish 2023). There are no spawning or freshwater rearing locations within the Study Area. Thus, river lamprey do not reside in the waters of the Study Area where conditions do not support its various life stage requirements. However, this species occurs seasonally when migrating to natal streams within the Sacramento and San Joaquin Rivers in the spring, or when migrating to the ocean in spring. As such the species is considered present within the Study Area, but only seasonally and for short periods when migrating to or from natal streams.

Sacramento splittail (*Pogonichthys macrolepidotus*), CDFW Species of Special Concern. Splittail are primarily freshwater fish that have been found mostly in slow-moving sections of rivers and sloughs, and in the Delta and Suisun Marsh they seemed to congregate in dead-end sloughs (Moyle et al. 1982, Daniels and Moyle 1983). Splittail are benthic foragers that feed extensively on opossum shrimp (*Neomysis mercedis*); however, detrital material typically makes up a high percentage of their stomach contents. They will feed opportunistically on earthworms, clams, insect larvae, and other invertebrates. They are preyed upon by striped bass and other predatory fishes. Splittail apparently require flooded vegetation for spawning and as foraging areas for young, hence are found in habitat subject to periodic flooding during the breeding season (Caywood 1974).

This species is known to spawn within backwater sloughs of the Sacramento Delta, within areas where the Project is located (Calfish 2023). This species has adapted to the variable and highly turbid conditions present in the waters of the Study Area and region. There are no spawning locations within the Study Area as it is composed of the main channel of the Sacramento River and this species requires slow, backwater sloughs for spawning. However, this species may rear and forage within the Study Area year-round.

Steelhead - Central Valley DPS (*Oncorhynchus mykiss*), Federal Threatened, CDFW Species of Special Concern. The Central Valley DPS includes all naturally spawned populations (and their progeny) in the Sacramento and San Joaquin Rivers and their tributaries, excluding San Francisco and San Pablo bays and their tributaries. Preferred spawning habitat for steelhead is in perennial streams with cool to cold water temperatures, high dissolved oxygen levels and fast flowing water. During the winter or early spring, the spawning fish reach suitable gravel riffles (shallow areas with gravel or cobble substrate) in the upper sections of streams and dig their redds. Abundant riffle areas for spawning and deeper pools with sufficient riparian cover for rearing are necessary for successful breeding. When steelhead spawn they nearly always return to the stream in which they were hatched. At that time they may weigh from two to twelve pounds or more.

There are no spawning or freshwater rearing locations within the Study Area. Steelhead do not reside in the waters of the Study Area where conditions do not support reproduction (spawning), rearing (freshwater streams) or typical adult foraging grounds (ocean). However, this species occurs seasonally when migrating to natal streams within the Sacramento and San Joaquin Rivers in the fall and winter, or when migrating to the ocean in spring. As such the species is considered present within the Study Area, but only seasonally and for short periods when migrating to or from natal streams.

White sturgeon (*Acipenser transmontanus*), State Candidate Threatened, CDFW Species of Special Concern. This sturgeon is found in most estuaries along the Pacific coast and are known to the San Francsico Bay Estuary. Adults in the San Francisco Bay Estuary system spawn in the Sacramento River and are not known to enter freshwater or non-tidal reaches of Estuary streams. White sturgeon typically spawn in May through June. The diet consists of crustaceans, mollusks, and some fish.

While the Study Area does not provide spawning habitat for any of the aforementioned species, waters of the Study Area at the junction of the Carquinez Strait, Mare Island Strait and San Pablo Bay support all of these species seasonally as they migrate between spawning and rearing habitats and the Pacific Ocean, or other areas of the greater San Francisco Bay region. Waters of

the Study Area may support species as they temporarily forage and rear, but generally this area functions as migratory route for these species when moving between location.

White sturgeon spawn only within upstream portions of large rivers of the Sacramento Valley but must pass through the Study Area to reach those spawning grounds. Juveniles and adults may be present and forage within the surrounding waters year-round, but as shown above in the trawl database data, have not been documented in any trawls over the last 10-years, indicating they are likely only present in very low densities. White sturgeon have adapted to forage and rear within the Sacramento River and Delta and as such tolerate the highly turbid waters and naturally variable turbidity fluctuations in the region.

4.3 Critical Habitat and Essential Fish Habitat

4.3.1 Critical Habitat

A review of the background literature showed that the Study Area is located within an area designated as critical habitat for the following four species:

- Delta smelt,
- Southern DPS Green Sturgeon,
- California Central Valley steelhead, and
- Sacramento River Winter-run Chinook Salmon.

In cases such as this where critical habitat is within a bay or estuary, the extent of critical habitat is defined up to the high tide line (HTL). The extent of critical habitat therefore extends to all portions of the Study Area described as “Open Water” below the HTL in Figure 4 (Appendix A)

Critical habitat are areas designated for special protection associated with specific federally listed species. With each species the elements of habitats that support the reproduction, growth and success of the species are described in the individual critical habitat listings. In determining what areas are critical habitat, agencies will consider “those physical or biological features that are essential to the conservation of a given species, including space for individual and population growth and for normal behavior; food, water, air, light, minerals, or other nutritional or physiological requirements; cover or shelter; sites for breeding, reproduction, and rearing of offspring; and habitats that are protected from disturbance or are representative of the historical geographical and ecological distribution of a species.” The specific physical and biological elements required to promote use of a habitat are termed Primary Constituent Elements and vary from species to species. The physical and biological features, as well as primary constituent elements for each species as it pertains to the Study Area are quoted below from their respective listings.

DELTA SMELT

The physical and biological features for Delta smelt include the following (59 FR 65256):

- Space for individual and population growth, and for normal behavior;
- Food, water, air, light, minerals, or other nutritional or physiological requirements;
- Cover or shelter;
- Sites for breeding, reproduction, rearing of offspring, germination, or seed dispersal; and

- Habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species.

The primary constituent elements essential to the conservation of the delta smelt are

- physical habitat;
- water;
- river flow; and
- salinity concentrations required to maintain delta smelt habitat for spawning, larval and juvenile transport, rearing, and adult migration.

GREEN STURGEON

The primary constituent elements essential for the conservation of the Southern DPS of green sturgeon in estuarine habitats (74 FR 52299) are:

- (i) Food resources. Abundant prey items within estuarine habitats and substrates for juvenile, subadult, and adult life stages.
- (ii) Water flow. Within bays and estuaries adjacent to the Sacramento River (i.e., the Sacramento-San Joaquin Delta and the Suisun, San Pablo, and San Francisco bays), sufficient flow into the bay and estuary to allow adults to successfully orient to the incoming flow and migrate upstream to spawning grounds.
- (iii) Water quality. Water quality, including temperature, salinity, oxygen content, and other chemical characteristics, necessary for normal behavior, growth, and viability of all life stages.
- (iv) Migratory corridor. A migratory pathway necessary for the safe and timely passage of Southern DPS fish within estuarine habitats and between estuarine and riverine or marine habitats.
- (v) Depth. A diversity of depths necessary for shelter, foraging, and migration of juvenile, subadult, and adult life stages.
- (vi) Sediment quality. Sediment quality (i.e., chemical characteristics) necessary for normal behavior, growth, and viability of all life stages.

WINTER-RUN CHINOOK SALMON AND CENTRAL VALLEY STEELHEAD

The primary constituent elements essential for the conservation of both the Sacramento River, Winter-run Chinook salmon and Central Valley Steelhead which are applicable to this Project are elements 3 and 4 which are quoted as follows (70 FR 52488)*:*

- 3. Freshwater migration corridors free of obstruction with water quantity and quality conditions and natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, side channels, and undercut banks supporting juvenile and adult mobility and survival. These features are essential to conservation because without them juveniles cannot use the variety of habitats that allow them to avoid high flows, avoid predators, successfully compete, begin the behavioral and physiological changes needed for life in the ocean, and reach the ocean in a timely manner. Similarly, these features are essential for adults because they allow fish in a non-feeding condition to successfully swim upstream, avoid predators, and reach spawning areas on limited energy stores.
- 4. Estuarine areas free of obstruction with water quality, water quantity, and salinity conditions supporting juvenile and adult physiological transitions between fresh- and

saltwater; natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels; and juvenile and adult forage, including aquatic invertebrates and fishes, supporting growth and maturation. These features are essential to conservation because without them juveniles cannot reach the ocean in a timely manner and use the variety of habitats that allow them to avoid predators, compete successfully, and complete the behavioral and physiological changes needed for life in the ocean. Similarly, these features are essential to the conservation of adults because they provide a final source of abundant forage that will provide the energy stores needed to make the physiological transition to fresh water, migrate upstream, avoid predators, and develop to maturity upon reaching spawning areas.

4.3.2 Essential Fish Habitat

A review of the background literature revealed that the Study Area is located within EFH for three fisheries management plans (NMFS 2023a): Coastal Pelagic, Pacific Groundfish and Pacific Salmon.

- The Coastal Pelagic Fisheries Management Plan (PFMC 2021) is designed to protect habitat for migratory pelagic species such as Pacific sardine (*Sardinops sagax*), Pacific mackerel (*Scomber japonicus*), northern anchovy (Engraulis mordax), market squid (*Doryteuthis opalescens*), jack mackerel (*Trachurus symmetricus*) and various species of krill or euphausiids. The east-west geographic boundary of EFH for coastal pelagic species is defined as all marine and estuarine waters from the shoreline along the coasts of California, Oregon and Washington offshore to the limits of the exclusive economic zone and above the thermocline where sea surface temperatures range between 10˚ C to 26˚ C. Species most likely to occur in the Study Area include Northern anchovy (*Engraulis mordax*) and Pacific sardine (*Sardinops sagax*) (NMFS 2022a).
- The Groundfish Fisheries Management Plan (PFMC 2022a) is designed to protect habitat for approximately 80 species of fish, including various species of flatfish, rockfish, groundfish, and several species of sharks and skates. EFH for Pacific coast groundfish is defined as the aquatic habitat necessary to allow groundfish production to support long-term sustainable fisheries for groundfish and for groundfish contributions to a healthy ecosystem. Species most likely to occur in the Study Area and Sacramento Delta include starry flounder (*Platichthys stellatus*) and English sole (*Pleuronectes vetulus*) (NMFS 2020).
- The Pacific Salmon Fisheries Management Plan (PFMC 2022b) is designed to protect habitat for commercially important salmonid species specifically Chinook and Coho salmon occur within the Study Area. While Coho salmon are extirpated from San Francisco Bay and its tributaries (NMFS 2012), four species of Chinook Salmon would be seasonally present within waters surrounding the Study Area. In the estuarine and marine areas, Chinook salmon EFH extends from the nearshore and tidal submerged environments within state territorial waters out to the full extent of the exclusive economic zone 200 miles offshore of California north of Point Conception.

Along the West Coast, the PFMC also identifies habitats that fall within Habitat Areas of Particular Concern (HAPC). HAPCs are high priority areas for conservation, management, or research because they are important to ecosystem function, sensitive to human activities, stressed by development, or are rare. These areas provide important ecological functions and/or are especially

vulnerable to degradation and can be designated based on either specific habitat types or discrete areas. HAPCs are a discrete subset of EFH.

- HAPCs for Chinook salmon include complex channel and floodplain habitat, spawning habitat, thermal refugia, estuaries, and submerged aquatic vegetation as described in Appendix A to the Pacific Coast Salmon FMP (PFMC 2022b).
- Within the Study Area only "estuary" habitat is present among the HAPSCs listed by the FMP.
- HAPCs for Pacific coast groundfish are estuaries, rocky reefs, canopy-forming kelp, seagrasses, and "areas of interest" as described in Amendment 19 to the Pacific coast groundfish FMP (PFMC 2022a).

Similar to critical habitat discussed above, waters of the Study Area would also be regulated as EFH.

In addition to general designations as critical habitat, aquatic vegetation was mapped within the Study Area using side-scan sonar. Once mapped, these areas were cross referenced against bathymetric data to confirm the distribution of SAV which are shown in Figure 5 (Appendix A).

4.4 Marine Mammals

Marine mammals are known to occur within much of San Francisco Bay and can often move inland up the Sacramento River seasonally, especially when following salmon migrations. Less typically deep-sea marine mammals such as humpback or gray whales can stray into the Sacramento River as well (SFGate 2007); however, these occurrences are extremely rare, and only a small handful of such occurrences are known to have occurred in the last 50 years. As such these are extremely rare events that do not warrant the level of typical conditions as might be expected to be encountered by a project and are not included for this analysis.

Pinnipeds however do commonly occur within this area of the Delta and Sacramento River, as such these species have potential to occur as part of typical and baseline conditions and are discussed in more detail below.

Pacific harbor seal (*Phoca vitulina richardsi*), MMPA. Harbor seals are fairly common, non-migratory pinnipeds inhabiting coastal and estuarine waters from Alaska to Baja California, Mexico. They are a year-round resident in the San Francisco Bay Area (Grigg et al. 2004). They haul out on rocks, reefs, and beaches, and feed in marine, estuarine, and occasionally fresh waters (Grigg et al. 2004). This widespread true seal is commonly found throughout much of San Francisco Bay and further inland. Harbor Seals use open water for feeding and travelling, and terrestrial substrates adjacent to water for hauling out (resting). A haul-out site is generally considered a rookery if there are pups present at the site. Harbor seals in San Francisco Bay also tend strongly towards use of established haul-out areas, as opposed to hauling out in new areas (Kopec 1999).

No haul-outs are known within the vicinity of the Study Area; however, individual seals are commonly observed moving inland while foraging.

California sea lion (*Zalophus californianus*), MMPA. California sea lions are found from Vancouver Island, British Columbia to the southern tip of Baja California in Mexico. They breed

mainly on offshore islands, ranging from southern Califo'nia's Channel Islands south to Mexico, although a few pups have been born on Año Nuevo and the Farallon Islands on the central Californian coast (TMMC 2023). Sandy beaches are preferred for haul out sites, although in California they haul out on marina docks as well as jetties and buoys (TMMC 2023).

No haul-outs are known within the vicinity of the Study Area; however, individual sea lions are commonly observed moving through these areas of the Sacramento and San Joaquin Rivers while foraging.

4.5 Wildlife Corridors and Native Wildlife Nursery Sites

4.5.1 Wildlife Corridors and Nursery Habitat

Wildlife movement between suitable habitat areas can occur via open space areas lacking substantial barriers. The terms "landscape linkage" and "wildlife corridor" are often used when referring to these areas. The key to a functioning corridor or linkage is that it connects two larger habitat blocks, also referred to as core habitat areas (Beier and Loe 1992; Soulé and Terbough 1999). It is useful to think of a "landscape linkage" as being valuable in a regional planning context, a broad scale mapping of natural habitat that functions to join two larger habitat blocks. The term "wildlife corridor" is useful in the context of smaller, local area planning, where wildlife movement may be facilitated by specific local biological habitats or passages and/or may be restricted by barriers to movement. Above all, wildlife corridors must link two areas of core habitat and should not direct wildlife to developed areas or areas that are otherwise void of core habitat (Hilty et al. 2019).

As discussed above, the Study Area lies along the migratory corridor for numerous anadromous species including four species of Chinook salmon, steelhead and three species of lamprey. Adult fish returning from the Pacific Ocean will pass through the Study Area at certain times of the year to reach natal streams. Juveniles will also pass through the Study Area at other times of the year in route to the Pacific Ocean. As such these species are only present at certain times of the year.

With the presence of core habitat areas upstream and downstream of the Study Area, waters within the Study Area function as corridor for anadromous fish species moving between natal streams and marine habitats.

In the case of more regional species, Delta and longfin smelt both spawn in the Delta, then remain within the local area to forage as adults, or rear as juveniles. These species can also make short-distance localized migrations to spawning areas or summer feeding areas but are generally present year-round (Moyle 2002). These species use waters in the Study Area as a movement corridor.

Nursery sites are those that function as rearing or spawning grounds for fish. While nursery sites can be a site that supports the raising and rearing of juvenile animals, within tidal estuaries, SAV is often an important nursery area. Within the Delta, widgeon grass can serve as rearing sites for native fish which take cover within the vegetation. For example, Sacramento splittail spawn on SAV, then larvae rear within the beds for several weeks before schooling together and moving to the Bay (Calfish 2023). As such SAV within the Study Area is also likely to support nursery sites.

Side-scan sonar was used to map and identify the extent of SAV within the Study Area. The extent of side scan sonar data was compared to the bathymetric profile of the channel on the most

recent navigational charts (NOAA 2023) and the resulting areas where SAV is detected via sonar or has the highest potential to occur are shown in Figure 5 (Attachment A).

5.0 Impacts, Avoidance and Minimization Measures

5.1 Special-status Species

As described in the sections below, the Proposed Project may have potential to impact individual fish or habitats protected by the wildlife protection agencies including NMFS, USFWS, and CDFW. Prior to initiation of construction, it is anticipated the permittee will consult with regulatory agencies with jurisdiction over the Proposed Project activities.

This section analyzes the Proposed Project's potential impacts and provides recommendations for AMMs as well as mitigation for habitats if applicable.

5.1.1 Special-Status Fish Species

Twelve species of fish which are designated as special status are present within the Study Area either seasonally, or year-round. In the case of Chinook salmon, steelhead and lamprey, these species are only present seasonally when migrating to and from natal streams and core habitats are not present for these species. Other species such as longfin smelt are present year-round and have been documented in CDFW trawls late in the summer and fall (CDFW 2023b). The following analysis looks at the spectrum of potential impacts to seasonally and perennially present fish and describes AMMs as well as mitigation for potential impacts.

POTENTIAL IMPACT BIO-1: POTENTIAL INTRODUCTION OF INVASIVE SPECIES

San Francisco Bay is one of the busiest ports in the world with more than 7,000 container ships per year entering the Bay (Choksi 2009). One consequence of such a robust trade network is the introduction of non-native species which are carried in ballast water of vessels or on ship hulls with biofouling. Introductions of non-native species to San Francisco Bay includes both fish and invertebrate species, which cause a variety of impacts to native fauna. Non-native species have a variety of deleterious effects from competing with or consuming native species (Moyle 2002), to decreasing pelagic productivity (Baumsteiger et al. 2017). As a result of this impact and considering the danger that invasive species pose to native species and ecosystems, the U.S. Court of Appeals for the Ninth Circuit ruled that the U.S. Environmental Protection Agency must regulate ship discharges, including ballast water discharges containing invasive species, that pollute U.S. waters under the Clean Water Act (Choksi 2009). Further, Congress passed the Vessel Incidental Discharge Act, combining laws that regulate vessel discharge to help prevent the introduction of harmful species (Simmonds 2022).

Within aquatic environments, barges and boats used for construction are expected to be based in the Bay but may need to come in from outside of the local area. If ships were to come into the Bay from outside, this may introduce non-native species. Any materials used for the Proposed Project will be new, but if aquatic equipment (e.g., hydroplow) necessary for the Proposed Project has not been properly cleaned and decontaminated, it could also potentially spread invasive species from other areas.

The potential introduction of invasive species during construction is a potentially significant impact. The following AMMs will be implemented by the Proposed Project to reduce effects to less-than-significant levels.

AMM BIO-1: INVASIVE SPECIES MANAGEMENT

In order to help reduce the potential effects of invasive species from construction of the Proposed Project the following measures will be implemented:

- Aquatic vessels brought to the Study Area from ports outside of San Francisco Bay and Delta for aquatic construction will follow all maritime regulations relating to the exchange of ballast water to prevent the spread of invasive species from outside ports.
- Any in-water fill materials such as piles will be new and not salvaged from areas outside of San Francisco Bay.
- Any pumps or in-water equipment that may be needed during construction will be cleaned and dried for at least 72 hours prior to first being used on the Proposed Project. Continual use onsite will not require drying between uses.

With the implementation of AMM BIO-1 effects from invasive species will be less than significant with mitigation incorporated.

POTENTIAL IMPACT BIO-2: SPILLS AND LEAKS

In-water construction requires specialized mechanical equipment including workboats, pumps, floating barges, excavators and hydro plows. These larger pieces of equipment require generators, pumps, or compressors to run the equipment, and a variety of petroleum and plant-based fuels or lubricants, many of which can be toxic to aquatic ecosystems if spilled and introduced accidentally. Introduction of such materials could cause degradation to the aquatic environment, which is a potentially significant impact under CEQA. The following AMMs will be implemented by the Proposed Project to reduce effects to less-than-significant levels.

AMM BIO-2: SPILL PREVENTION AND CONTROL

A spill prevention and control plan will be developed and implemented for the Proposed Project throughout all phases of construction. This plan will at minimum include the following parameters to reduce potential effects from spills to less than significant levels:

- Procedures to clean equipment to ensure any equipment used in water (e.g. hydroplow or excavators) are cleaned of excess lubricants and fuels or other petroleum-based products prior to use.
- Identification of any hazardous materials used by the Proposed Project.
- Storage locations and procedures for such materials.
- Spill prevention practices as well as BMPs employed for various activities.
- Requirements to inspect equipment daily such that it is maintained free of leaks.
- Spill kit location, cleanup, and notification procedures.

AMM BIO-3: WORK WINDOW

To minimize potential impacts to fish during in-water work (i.e., work that occurs below the waterline and causes disturbance to the Delta substrate) which may either cause general disturbance or has the potential to cause deleterious conditions that may disrupt both migratory

events or cause impacts to species when more sensitive life stages (i.e., eggs and fry) are present, a work window of July 1 to November 30 would be enacted.

AMM BIO-4: ENVIRONMENTAL AWARENESS TRAINING

A Proposed Project-specific environmental awareness training for construction personnel will be conducted by a qualified biologist before commencement of construction activities and as needed when new personnel begin work on the Proposed Project. The training will inform all construction personnel about the presence of sensitive habitat types; potential for occurrence of special status fish and wildlife species; the need to avoid damage to suitable habitat and species harm, injury, or mortality; measures to avoid and minimize impacts to species and associated habitats; the conditions of relevant regulatory permits, and the possible penalties for not complying with these requirements. The training may consist of a pre-recorded presentation to be played for new personnel, a script prepared by the biologist and given by construction personnel trained by the biologist, or training administered by on-site biological monitors. The training will include:

- Applicable State and federal laws, environmental regulations, Proposed Project permit conditions, and penalties for non-compliance. A physical description of special-status species with potential to occur on or in the vicinity of the Proposed Project Site, AMMs, and protocol for encountering such species including communication chain;
- BMPs enacted for habitat protection and their location on the Proposed Project site including the implementation of any Spill or Leak Prevention Programs.
- Contractors will be required to sign documentation stating that they have read, agree to, and understand the required AMMs. If they do not understand, they will withhold their signature until the Designated Biologist addresses their question. The contractor may not begin work until they have signed the documentation.
- Field identification of any Proposed Project site boundaries, egress points and routes to be used for work. Work will not be conducted outside of the Proposed Project site.
- A record of this training will be maintained on the Proposed Project site and will be made available to agencies upon request.

With the implementation of AMM BIO-2 through 4 effects from spills and leaks will be reduced to less-than-significant levels.

POTENTIAL IMPACT BIO-3: TURBIDITY AND TOXIC SUBSTRATES

In-water work for the Proposed Project is expected to contribute to localized increased water turbidity from mobilization of substrate during cable installation when using open trenching and hydroplowing construction techniques. The installation of submarine cables through the Study Area will primarily be with a hydroplow. The open trench sections of installation at the northern and southern shore will use open trenching via an excavator which is mounted aboard a work barge or operated from shore to complete the trench and bring cables to the onshore vault. During the installation process the jets which liquify and mobilize sediments ahead of the hydroplow blade, as well as use of an excavator will cause some of the sediment to be mobilized into the water column outside of the trench, increasing localized turbidity. Elevated turbidity can impair gill function, reduce oxygen availability in the water column, decrease physiological capabilities, and increase stress in fish (Heath 1995). While turbidity can impact sensitive life stages of fish, especially eggs or fry, the Proposed Project will not occur at a time of year when these more sensitive life stages are present as described in AMM BIO-3. Elevated turbidity also does not represent a uniform impact to protected fish species. Delta smelt distribution has been positively

correlated with turbidity which can help increase foraging efficiency and decrease predation threats (Sommer and Mejia 2013). As described above, turbidity within the Delta is generally between 20-40 NTUs but can increase to as high as 250-500 NTUs during high wind events that stir light sediments (CDWR 2013). Studies of turbidity in San Francisco Bay showed that turbidity associated with dredging (an activity which causes similar levels of disturbance to benthic environments as hydroplows or may use excavators for the dredging process) typically diminish to background levels within a radius of approximately 600 feet within one tidal cycle for singular events (Corps 2015). The actual distance suspended sediment caused by the Proposed Project would move is dependent upon multiple factors (i.e., tide, river outflows, wind condition, etc.); however, it is anticipated that the area affected and the duration of turbidity increases resulting from cable installation will be similar to turbidity increases resulting from dredging. Elevated turbidity due to in-water work may create temporary conditions which are unsuitable for some fish species in the immediate vicinity of the work area. These conditions are anticipated to be temporary, resolving to background conditions shortly after the conclusion of the Proposed Project. As noted above, turbidity in the waters within and surrounding the Study Area can vary substantially under natural conditions as a result of the dynamic hydrological conditions in San Francisco Bay and the Delta. Fish which are present year round have adapted to such conditions, and in the case of Delta and Longfin smelt, rely on high turbidity areas for concealment and forage (Sommer and Mejia 2013). Turbidity can vary with incoming and outgoing tides, as a result of windy conditions, with storm flows, and with passing boats under existing conditions. Based on these factors, the potential impacts resulting from increased turbidity are less than significant when accounting for the implementation of AMM BIO-3.

Finally, disturbance of bottom sediments can disturb and spread contaminants that are potentially present within sediments. If contaminants are present, hydro plowing or trenching through them could mobilize these materials, spreading them to areas that are currently not affected by elevated levels of contaminants. These impacts would be considered potentially significant under CEQA.

In addition to AMM BIO-2 through BIO-4, the following AMM will be implemented by the Proposed Project to reduce effects from cable installation to less-than-significant levels.

AMM BIO-5: AQUATIC SEDIMENT SCREENING AND TESTING

- Prior to installation of cables, screening of the cable alignment based on available background resources (e.g., Envirostor) will be conducted to determine if there have been any known spills or other hazardous materials releases that potentially intersect with the alignment. If any known spills or other hazardous materials releases are discovered, an aquatic sediment screening and testing program will be developed to evaluate the risk of exposing hazardous sediments to the marine environment. The program will entail the following:
    - Representative aquatic sediment samples will be collected at a minimum of three locations placed evenly along the alignment. The depth of the samples would be consistent with the depth of trenching at each sample location.
    - Sediment samples will be tested according to methods prescribed in the Guidelines for Implementation of the Inland Testing Manual in San Francisco Bay or updated similar manual approved by the San Francisco Bay Dredge Material Management Office (DMMO) (DMMO 2001). The results of this test would be compared to

concentrations allowed for in-bay disposal by the San Francisco Bay DMMO to determine if sediments are clean or require special handling.
    - Aquatic sediments that exceed San Francisco Bay DMMO testing standards would:
        - Be avoided by the cable installation route, or
        - Be removed through dredging and disposed of at an appropriate facility approved by the RWQCB, or
        - Be controlled via use of a silt curtain or other appropriate BMP approved by the RWQCB.
    - Cable installation and hydroplow use would be limited to the specified areas and the minimum length necessary.

With the implementation of AMM BIO-2 through BIO-5, effects from cable installation will be less than significant.

POTENTIAL IMPACT BIO-4: Fish Entrainment

Cable Installation

The primary means of installing submarine cables across the majority of the Study Area will be with a hydroplow.. For installation via hydroplow, water is taken in at an inlet onboard the ship, then run through a pump to pressurize the system. High pressure water is then expelled through jets aimed at the substrate. The jets liquify the substrate ahead of the plow or below the injectors, digging a trench. A cable is simultaneously fed into the trench. Once the plow is pulled forward by the ship, substrates naturally settle and fall back into the trench, burying the cable and furrow such that no further work is required to backfill.

Because operation of the hydroplow requires that water be pumped from the river to supply the jets, this type of operation poses a threat to fish via entrainment. Unscreened water diversions pose a threat to fish of all species as fish have the chance to be sucked into the inlet and entrained by the pump. In laboratory tests, up to 50% of green sturgeon were entrained when passing within 1.5 meters of an unscreened agricultural diversion pipe (Mussen et al. 2014). As such water intakes to support the hydroplow may cause significant impacts to fish if fish pass near to the inlet and are subsequently entrained.

Considering that some species are only present seasonally for migration, part of the impact can be minimized through the use of an in-water work window as is specified in AMM BIO-3, ensuring work occurs when critical life stages for these species are absent; however, as some species are present year-round, additional AMMs are required to reduce the potential for entrainment to less-than-significant levels. AMM BIO-6 will be implemented by the Proposed Project to reduce the potential for fish entrainment to less-than-significant levels.

Open Trenching

When cables are transitioned from the northern shore to the river, and from the river back onto the southern shore, open trenching will be used to facilitate installation. The open trench will need to be deep enough to evenly transition the submarine cables to upland elevations, so much of the trench will be below the tide line and flooded with water. The unincumbered connection to waters would allow fish to potentially enter the trench and be either entrained or entombed if the trench

is filled while fish are present. These impacts would be considered potentially significant under CEQA.

AMM BIO-6: INTAKE SCREENING

To minimize the potential for fish to be entrained by the Proposed Project, any pumps or water intakes used would be screened in accordance with the following CDFW and NMFS screening requirements for water diversions within the Delta (CDFG 2000, NMFS 1997). If any variation from these criteria is necessary, the Proponent would consult with the agency responsible for the species for recommendations to protect fish.

AMM BIO-7: FISH EXCLUSION PLAN

To minimize the potential for fish to be trapped in trenches on the northern and southern shorelines, a fish exclusion plan will be prepared to describe the means and methods to exclude fish from trenches to minimize potential for harm. The plan will be submitted to the relevant resource agencies for approval and comment to ensure the manner of implementation is consistent with authorizations and best practices.

With the use of AMM BIO-3, BIO-6, and BIO-7 the potential impacts to fish due to entrainment will be reduced to less-than-significant levels.

POTENTIAL IMPACT BIO-5: UNDERWATER NOISE

Along the Collinsville and Pittsburg shorelines, lines will be trenched to transition shoreside and submarine cable connections through the corresponding vaults. At the utility vault near the southern shoreline this transition area will be protected and stabilized with a series of sheetpiles driven in uplands to protect the trench from sluffing. Cables will also be installed with a hydro plow. Corresponding discussion of noise related to pile driving and hydro plow use are shown below.

Pile driving

Pile driving, even on land in proximity to waters, can produce underwater noise, which manifests as pressure waves in the aquatic environment. The louder the noise, the more pressure is present in the waves. High pressure sound waves in the aquatic environment can result in damage to fishes' internal organs. The NMFS has established thresholds based upon the size of the fishes under consideration for the onset of physical injury and adverse behavioral effects. Those thresholds are listed below in Table 4 (NMFS 2018). Because Delta smelt and longfin smelt are known to occur within the Study Area at certain times of the year, especially during their seasonal migrations in winter, the more conservative 183 dB Sound Exposure Level (SEL) threshold is the effective criteria for hydroacoustic effects analysis for the Proposed Project. Behavioral modification is based on the root mean square (RMS) and is considered standard for all species. The RMS of 150 dB represents the zone where fish may be affected behaviorally but not physically harmed; however, it should be noted that in busy ports and bays such as San Pablo Bay, background underwater noise is frequently measured at or above 150 dB under baseline conditions, therefore the baseline noise conditions are frequently at or above the standard thresholds for behavioral effects (Caltrans 2020).

Table 4. Fish Impact Criteria

EFFECT	METRIC	FISH MASS (GRAMS)	THRESHOLD
Onset of physical injury	Peak pressure	N/A	206 dB (re: 1 µPa)
	Accumulated SEL	≥ 2 g	187 dB (re: 1µPa^2•sec)
		< 2 g	183 dB (re: 1µPa^2•sec)
Adverse behavioral effects	RMS	N/A	150 dB (re: 1 µPa)

There are two primary styles in pile driving, vibratory and impact hammer driving. These styles of pile driving have different potentials for effect and are described below.

Vibratory Pile Driving

Vibratory pile driving uses hydraulicly powered, oscillating counterbalance weights to vibrate an object (i.e., pile) at high speed. The vibration mobilizes the earth beneath and around the pile causing the surrounding earth to liquify. Once mobilized, the weight of the hammer pushes the pile downward. Vibratory hammers do not "strike" a pile and as such have lower peak sound pressure than impact hammers, but also require more prolonged use as they drive piles slower. Even with prolonged use, vibratory hammers do not approach the peak or cumulative sound exposure thresholds that would cause injury or death to fish (Caltrans 2020). Because of the low level of effect, resource agencies generally agree that vibratory pile driving results in reduced adverse effects on fish and is therefore the preferred driving methodology. This reduced level of effect is also why agencies have not identified any peak or cumulative injury thresholds for vibratory pile driving to fish (Caltrans 2020). With the lower level of effect, use of a vibratory hammer is often employed as a minimization measure to reduce the overall number of strikes necessary to drive piles on a project. For this Proposed Project, removing any existing piles, or initially placing and driving new piles will be preferentially performed with a vibratory hammer to decrease the Proposed Project's acoustic effect on the aquatic environment.

The limiting factors to driving with a vibratory hammer are seating depth and pile size. Small diameter piles (e.g., 18–24-inch steel pipe piles) or sheetpiles may be able to be fully driven using a vibratory hammer when substrates are soft (i.e., silty, and low in clay); however, the presence of geotechnical conditions such as clay hardpans and sand lenses, especially when driving large diameter steel pipe piles to moderate depths, a vibratory hammer may not have sufficient energy to install the pile fully (Caltrans 2020). Once a vibratory hammer reaches refusal, an impact hammer is often necessary to complete the installation to drive piles to specified depths for structural integrity. Additionally, vibratory pile driving is often not able to achieve engineering criteria required to support design structural loads, and impact driving is necessary in these cases for "final seating" of the pile.

Impact Hammer Pile Driving

An impact hammer operates by using a sliding hammer head to strike a pile, causing the downward force of the head to drive the pile, similarly to the way a handheld hammer strikes and drives a nail. This method creates a pulse of sound that propagates through the pile, spreading outward into the aquatic environment. As shown in Table 5, peak, cumulative and RMS sound pressure levels all have different thresholds and types of effect. The "peak" is the highest value of the measured sound and may cause injury to fish exposed to instantaneous peak levels at or above 206 dB. Driving piles requires multiple strikes from the hammer, therefore there is also a cumulative effect of all strikes. In this case, cumulative exposure can cause injuries to fish at slightly lower decibel levels depending on the size of the fish. For fish less than 2 grams, the cumulative sound exposure level is 183 dB, while fish over 2 grams have a threshold of 187 dB. The distance at which these thresholds are reached vary based on the size and type of pile, number of strikes required and hammer size.

The Proposed Project will require installation of a series of temporary sheetpiles near the southern shoreline to stabilize the soils around the utility vault. The general pile types identified in the plans are shown below in Table 5 along with the likely material, size, and number of piles.

Table 5. Anticipated Pile Material, Number and Type

PILE TYPE	PILE MATERIAL	PILE SIZE	NUMBER OF PILES ANTICIPATED
Elements to be Installed for the Southern Shoreline			
Sheetpile (on land)	Steel	Width may vary	450 LF

Driving piles between July 1 and November 30 (during the in-water work window) will minimize the possibility that fish are present when work occurs as most special-status fish species are not likely to be present during this period. Even noise produced which might behaviorally affect fish would not be likely to impede important stages of migrations that might pass through the Sacramento River in route to natal streams. During the in-water work window, more sensitive life stages (i.e., egg or larvae) are also not present, further reducing effects on these sensitive life stages. Sound levels shown below in Table 6 are examples of those effects which may be caused by the installation of piles of similar sizes anticipated for the Proposed Project. All projects referenced in Table 6 are from the Caltrans Technical Guidance for the Assessment of Hydroacoustic Effects of Pile Driving on Fish (Caltrans 2020). Any attenuation used for the referenced projects is noted.

Table 6. Reference Sound Measurements

PILE TYPE	HAMMER TYPE	REFERENCE PROJECT	ATTENUATION	WATER DEPTH (METERS)	DISTANCE (METERS)	RECORDED DECIBELS		
						Peak	*SEL*	*RMS*
On Land*								
Sheetpile (modeled)	Vibratory	Berth 23, Port of Oakland	None	-	10	-	-	153
**Note when modeling piles driven on land a 10dB attenuation is suggested by the Caltrans (2020) guidance for modeling sound effects; therefore, the same projects used to reference in water driving are used to model on-land pile driving, but the measurements are reduced by 10 dB.*								

Most listed fish species only occur within the Study Area during seasonal migratory periods. Working during the recommended in-water work window reduces potential impacts to most species. However, some species such as green sturgeon and longfin smelt may be present in the Study Area during the work windows and are considered present year-round, and as such analysis is required for these species to determine what effects Project specific pile driving may have on them.

Using the NMFS pile driving calculator (NMFS 2022) WRA modeled the effects of driving sheet pile with a vibratory hammer. The following assumptions when accounted for when completing calculations:

1.) All piles will be driven solely with a vibratory hammer.
    a. With sheetpiles it is estimated that vibratory driving on land or water may require up to 0.5 hours per sheet. No impact hammers will be used. Up to 20 sheets may be driven per day.
2.) No attenuation is proposed for any vibratory hammer driving.

Unattenuated data is presented in Table 6. Modeling results in Table 7. The results of pile driving calculations are provided in Appendix C. Pile Driving Calculations and are summarized below in Table 7 for vibratory driving. All distances shown below are in meters (m).

Table 7. Modeled Vibratory Hammer Pile Driving Effects

Attenuation	Fish				Marine Mammals		
					RMS (db re:1uPa		
	Peak (dB re: 1uPa)	Cumulative SEL (dB re:1uPa-sec2)		RMS (db re:1uPa)	PW Pinniped PTS SEL Threshold	OW Pinniped PTS SEL Threshold	Behavior (All Marine Mammals)
Threshold (dB)	N/A*	N/A*	N/A*	*150*	*201*	*219*	*120*
Steel sheetpile (on-land). 480 minutes (8 hours) per day.							
Unattenuated Distance (meters)	N/A*	N/A*	N/A*	1.6	<1	<1	158.5

* Sound level will not exceed threshold limit at the source of the noise.

As noted above and shown in Table 7, vibratory hammers do not result in peak or cumulative sound exposure thresholds that would cause injury or death to fish (Caltrans 2020). This is why all piles will be driven using a vibratory hammer.

All pile driving activities would result in some level of noise and potential behavioral effects to fish species. However, the extent of behavioral effect is very small and only extends approximately 1.6 meters from the source. This distance represents disturbance across less than 1% of the channel width. The Project is located within one of the busiest shipping and recreational channels on the west coast. The Study Area is subject to daily disturbance by recreational boat traffic and trans-Pacific cargo ships making their way up the Sacramento - Stockton Deepwater Shipping Channel. These vessels create noise that exceeds the behavioral thresholds for fish (Caltrans 2020),

resulting in a baseline condition of regular behavioral noise disturbance. Pile driving for the Project is a temporary incremental increase to this baseline condition. The Project's exceedance of the behavioral threshold for fish is a less than significant impact because it would not substantially alter the environment beyond existing baseline conditions.

Hydro Plow

Use of a hydro plow can also create underwater sound levels that may affect fish. The PG&E Embarcadero Project - Initial Study noted that project was expected to create noise levels of approximately 160 dB (Aspen 2013). This is an equivalent level to background or ambient noise levels in San Francisco Bay (Caltrans 2020). The highest potential hydroplow noises noted can rarely go as high was 170-180 dB for short periods. Because the hydroplow creates a non-impulsive and continuous noise similar to vibratory driving a small steel pile, we can use the NMFS Pile Driving Calculator to model the effects of noise from the hydroplow. We would expect that rare and exceptionally loud conditions which registered 180 dB at 10 m, lasting 24 hours, would attenuate to background noise levels of 150 dB within 100 meters. Further, the hydroplow would not be expected to surpass the 183/187 dB threshold at any time and with non-impulsive sounds would not cause cumulative effects. Therefore, as with pile driving described above, the effects of noise from use of a hydroplow are less than significant.

Table 8. Modeled Effects of Noise from a Hydroplow

Attenuation	Fish				Marine Mammals	
	Peak (dB re: 1uPa)	Cumulative SEL (dB re:1uPa-sec2)		RMS (db re:1uPa)	RMS (db re:1uPa	
					PW Pinniped PTS SEL Threshold	OW Pinniped PTS SEL Threshold
Threshold (dB)	N/A	N/A	N/A	*150*	*201*	*219*
Hydroplow. 24 hours. 160 dB (Expected)						
Unattenuated Distance (meters)	N/A	N/A	N/A	4.6	3.0	0.2
Hydroplow. 24 hours. 180 dB (Extreme High)						
Unattenuated Distance (meters)	N/A	N/A	N/A	100	64	4.5

* - For non-impulsive sounds Peak and Cumulative thresholds are not applicable.

5.1.2 Critical Habitat

POTENTIAL IMPACT BIO-6: CRITICAL HABITAT AND EFH

The Proposed Project will not withdraw water or divert water in any way that might affect water quality for critical habitat. The absence of any such changes to water quality will maintain salinity gradients, flow, volume, and similar characteristics noted in each critical habitat designation. Further, the Proposed Project will not create any large in-water barriers such as a salinity barrier,

tide gate or similar structure that would physically impede fish from moving through the area during or after construction. As such any migratory corridors will remain free from obstructions that would be likely to impede movements. Further, conducting work during the in-water work window (July-November) will avoid periods when species such as Chinook salmon, and steelhead rely on waters in the vicinity of the Study Area to provide a migratory corridor, foraging grounds, as well as a salinity gradient that allows their physiological transition from salt to fresh water (and vice versa). Considering the manner of cable installation, sub-tidal sediments along the riverbed will be temporarily disturbed when the cables are installed via hydroplow or via open trenching, but immediately after installation the furrow will be refilled, such that sediments can re-settle and remain in a similar state as they were prior to disturbance. Testing prior to implementation will also ensure that contaminants are not spread causing indirect impacts to critical habitat. For species which are potentially present for longer periods of the year, such as Delta smelt, working outside of the spawning or rearing window avoids periods of the year when impacts could be most detrimental (AMM BIO-3). As such implementation of the Proposed Project as described, already negates potential effects to critical habitat which co-occurs within the Study Area.

With no permanent structures being placed over the water, and work timing proposed at a time of year when migratory events are not occurring, and outside of times when critical life stages are present (e.g., eggs or larvae), effects to critical habitat are less than significant with the AMM's incorporated.

5.1.3 Essential Fish Habitat, Wildlife Corridors and Native Wildlife Nursery Sites

The Study Area contains EFH listed under three fisheries management plans. The elements of EFH are similar to the elements listed above for critical habitat with the exception that EFH also provides protection for certain species of aquatic vegetation which provides cover, forage and rearing areas for native fishes.

The buildout of the Proposed Project within aquatic environments is sub-terranean and sub-tidal. As such, the cables will not be exposed to fish. Impacts associated with installation are also temporary, as loose sediment will naturally sluff back in to the furrows created by the hydroplow to install cables below the riverbed. Further, conducting work in the late summer/fall focuses any disturbances near the end of the growing season for EFH protected SAV, thus avoiding effects which might stunt growth or hinder reproductive success during critical growth stages in the spring and summer (NMFS 2014). As such it is expected that any disturbance to EFH listed or other SAV beds would be at a time of year when the plants are becoming dormant, and thus disturbance would not be likely to impede their regrowth in future years. Further, the time of year when work occurs is also outside of the winter and spring months when EFH species are present within the Estuary to spawn and reproduce thereby avoiding potential effects on more critical life stages.

The Proposed Project, with its current design and list of AMMs including BIO-1 through BIO-6 above prescribe protections for individual fish, and habitats in such a way that these would equally reduce effects to EFH to less-than-significant levels.

5.1.4 Marine Mammals

While relatively rare, marine mammals including harbor seals and California sea lion are known to occur in the vicinity of the Study Area and may migrate into the waters of the Study Area. Potential impacts to marine mammals are discussed in more detail below.

POTENTIAL IMPACT BIO-7: MARINE MAMMALS – UNDERWATER SOUND

Similar to fish, marine mammals can be injured if sounds produced by construction surpass certain tolerances. Injury to marine mammals from noise relates primarily to hearing damage or loss, and the thresholds for injury differ from those established for fish. The NMFS threshold for Post-Traumatic Stress (PTS) onset of pinnipeds (i.e., harbor seal and California sea lion, the two species known to regularly occur in the area) is 185 to 203 dB for impulsive sounds (i.e., impact hammers) and 201 to 219 dB for non-impulsive sounds (i.e., vibratory hammers) (NMFS 2018).

The sound of a suction dredge is used as a proxy from non-impulsive sounds that might be created during operation of a hydroplow. Sound levels from hydroplows used in the PG&E Project referenced above were measured at 160-180 dB (Aspen 2013). Sounds from a suction dredge can also be used as proxy for a hydroplow and vary from 163 to 188 dB (WODA 2013). All of these are below the PTS threshold for marine mammals as shown in Table 4. Sounds created associated with operation of a hydroplow are considered less than significant to marine mammals. Vibratory hammers driving steel sheet piles would not be expected to surpass the PTS threshold as these produce between 153 and 177 dB. The modeled sound levels shown in Table 7 indicate that exceedance of PTS thresholds from vibratory hammers are limited to within 1-3 meters of the pile, and as such, would be considered less than significant because marine mammals are not likely to remain present within 3 meters of a pile during construction, particularly considering that the pile driving will occur on land. With such small buffer zones where a marine mammal could experience PTS levels of sound, and considering the animal would have to voluntarily follow equipment for prolonged periods to experience such sounds, the effect of sound on marine mammals would be less than significant.

5.2 Wildlife Corridors and Native Wildlife Nursery Sites

This section analyzes the Proposed Project's potential impacts and mitigation for habitat corridors and linkages in reference to the significance threshold outlined in CEQA Appendix G, Part IV (d):

> *d) Does the Project have the potential to interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;*

The Study Area lies along the migratory route for numerous anadromous species which move from natal streams in the Central Valley to adult foraging grounds in the Pacific Ocean; therefore, the Study Area functions as a migratory corridor for fish. As discussed above, the Study Area also contains SAV (Figure 5, Appendix A) which can function as a nursery site for various fish species which spawn are rear within the SAV.

If construction were to occur at times of year when migratory events for fish were occurring or when larval fish were present, construction activities may have the potential to disrupt migratory events or to disturb nursery sites which are occupied by rearing fish. These would be considered a significant impact under CEQA.

However, the AMMs described above would reduce potential impacts to wildlife migratory corridors and nursery sites to less than significant levels. AMM BIO-1 through 4 will address the potential introduction of invasive species and ensure Proposed Project elements are conducted in such a way that lingering effects will not create indirect effects. Further AMM BIO-4 limits

construction to periods of time that avoid larval-rearing fish and critical migratory periods; therefore, most potential effects to both nursery site and migratory corridors are negated based on the timing of in-water work. Further, AMM BIO-5 will ensure that any existing toxic sediments are not disturbed during installation, while screening and exclusion associated with AMM BIO-6 and BIO-7 will ensure that any individual fish are not lost. Therefore, with the reduction of all potential factors affecting nursery sites, and design if the project avoiding periods of the year when nursery sites are used, effects would be less than significant.

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APPENDIX A. FIGURES

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Path: L:\Acad 2000 Files\330000\330086\GIS\ArcMap\330086Base.aprx Layout Name:Fig1_Study Area Location

Sources: National Geographic, WRA | Prepared By: njander, 11/16/2023

Figure 1. Study Area Regional Location Map

Collinsville Project

0 1 2 Miles

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wra Environmental Consultants

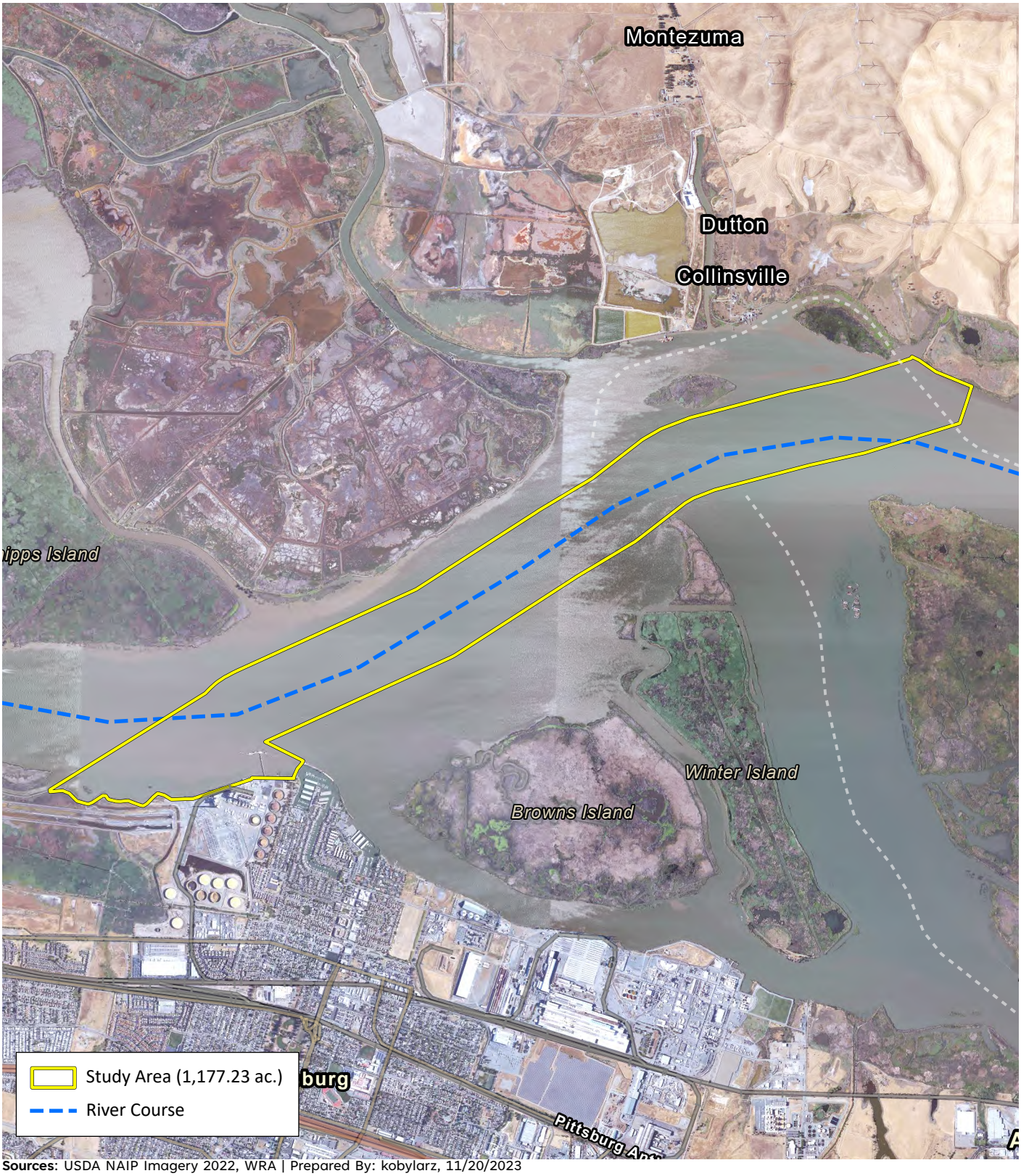

Figure 2. Study Area Details

Collinsville Project

0 0.5 1 Miles

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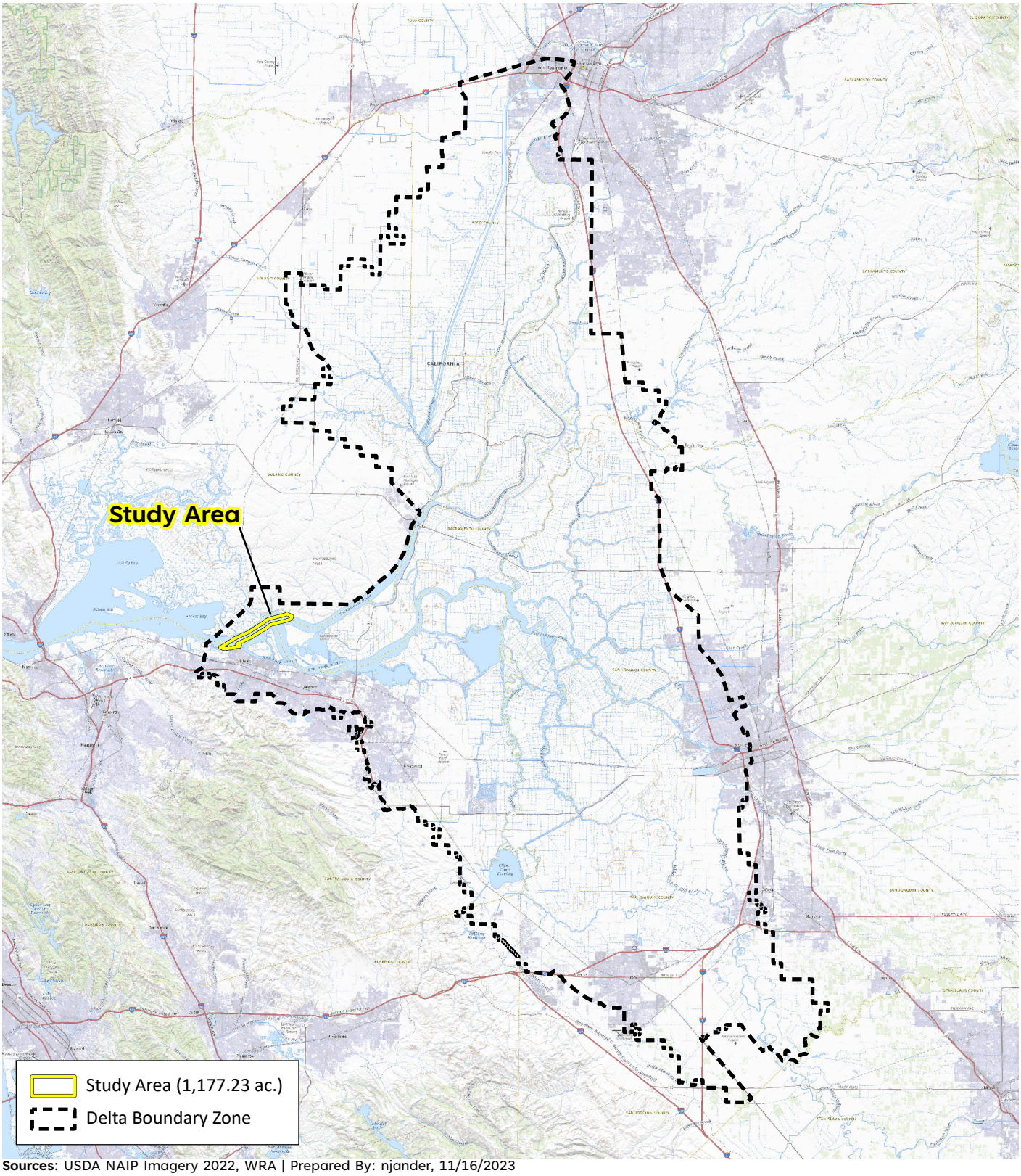
wra Environmental Consultants



Path: L:\Acad 2000 Files\330000\330086\GIS\ArcMap\330086Base.aprx Layout Name: Fig3_Study Area within the Delta

Sources: USDA NAIP Imagery 2022, WRA | Prepared By: njander, 11/16/2023

Figure 3: Study Area within the Delta

Collinsville Project

wra Environmental Consultants

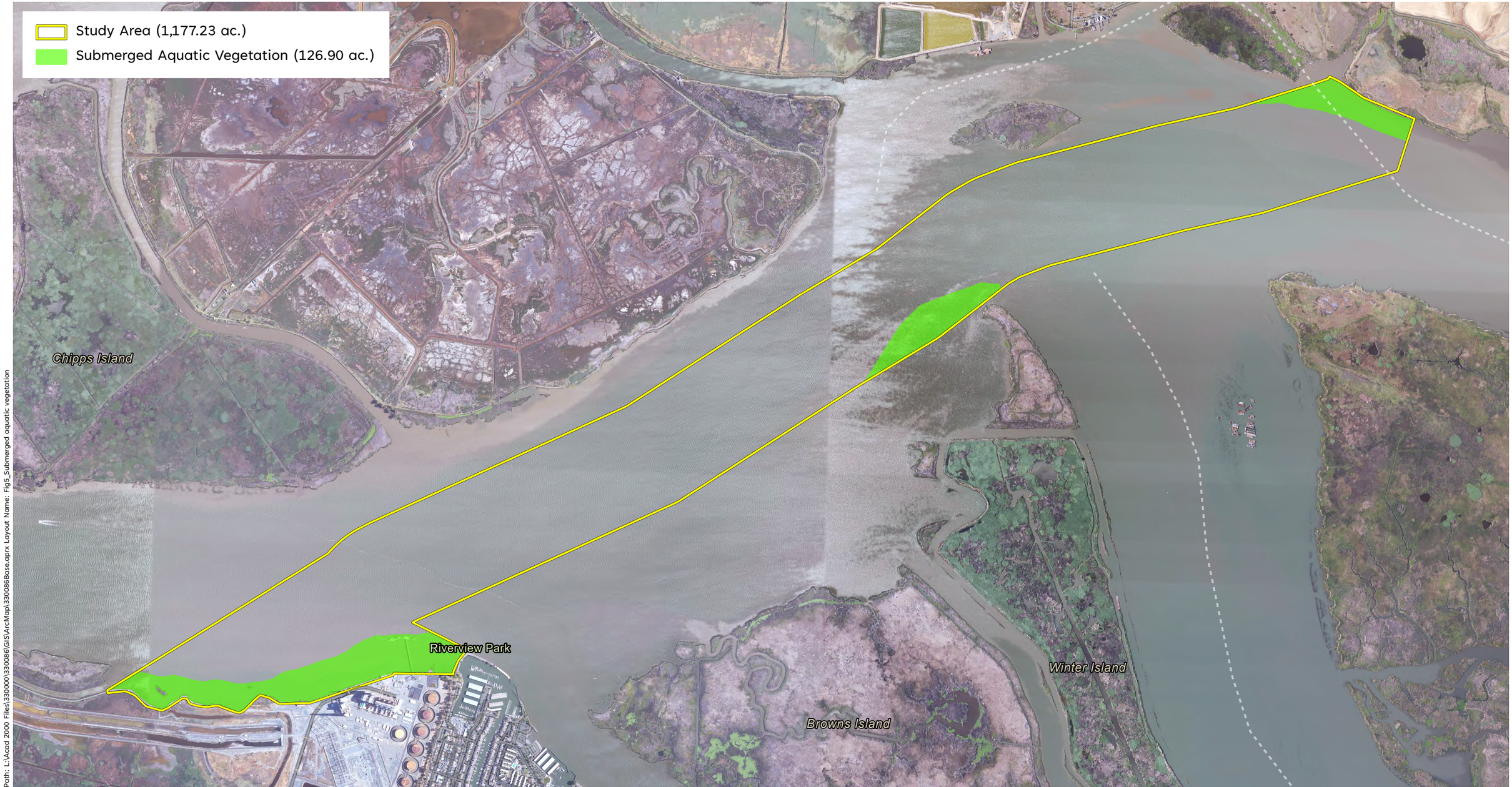
Path: L:\Acad 2000 Files\330000\330086\GIS\ArcMap\330086Base.aprx Layout Name: Fig4_Habitats within the Study Area

Sources USDA NAIP Imagery 2022, WRA | Prepared By: kobylarz, 11/20/2023

Figure 4. Habitats within the Study Area

Collinsville Project

wra Environmental Consultants



Path: L:\Acad 2000 Files\330000\330086\GIS\ArcMap\330086Base.aprx Layout Name: Fig5_Submerged aquatic vegetation

Sources USDA NAIP Imagery 2022, WRA | Prepared By: kobylarz, 11/20/2023

Figure 5. Submerged aquatic vegetation

Collinsville Project

wra Environmental Consultants

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APPENDIX B. SPECIAL-STATUS SPECIES POTENTIAL TABLE

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Appendix B. Potential for Fish Species to Occur within the Project Area

List Compiled from the California Department of Fish and Wildlife Natural Diversity Database (CDFW 2024), U.S. Fish and Wildlife Service Information for Planning and Consultation Species Lists (USFWS 2024), and CalFish (2024) search of the Antioch North and surrounding eight U.S. Geological Survey 7.5' quadrangles (Jersey Island, Brentwood, Antioch South, Clayton, Honker Bay, Denverton, Birds Landing, and Rio Vista).

SCIENTIFIC NAME	STATUS[1]	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
WILDLIFE				
FISH				
Chinook salmon - Central Valley fall/late fall-run ESU ***Oncorhynchus tshawytscha***	SSC	Populations spawning in the Sacramento and San Joaquin Rivers and their tributaries. Adults migrate upstream to spawn in cool, clear, well-oxygenated streams. Juveniles remain in fresh water for 1 or more years before migrating downstream to the ocean.	**Present Seasonally.** This species spawns within the main stem and tributaries of the Sacramento and San Joaquin Rivers. Adults and juveniles must pass through the Project Area in route to and from the Pacific Ocean. This species would be considered seasonally present during migratory periods.	*See Section 4.2 for further discussion of this species.*
Chinook salmon - Central Valley spring-run ESU ***Oncorhynchus tshawytscha***	FT, ST	Occurs in the Feather River and the Sacramento River and its tributaries, including Butte, Mill, Deer, Antelope and Beegum Creeks. Adults enter the Sacramento River from late March through September. Adults migrate upstream to spawn in cool, clear, well-oxygenated streams from mid-August through early October. Juveniles migrate soon after emergence as young-of-the-year or remain in freshwater and migrate as yearlings.	**Present Seasonally.** This species spawns within tributaries of the Sacramento and San Joaquin Rivers and must pass through the Project Area in route to the Pacific Ocean. This species would be considered seasonally present during migratory periods.	*See Section 4.2 for further discussion of this species.*
Chinook salmon – Sacramento River winter-run ESU ***Oncorhynchus tshawytscha***	FE, SE	Occurs in the Sacramento River below Keswick Dam. Spawns in the Sacramento River near Redding, but not in tributary streams. Requires clean, cold water over gravel beds with water temperatures between 6 and 14 degrees C for spawning. Adults migrate upstream to spawn in cool, clear, well-oxygenated streams. Juveniles typically migrate to the ocean soon after emergence from the gravel.	**Present Seasonally.** This species spawns within the main stem of the Sacramento River. Adults and juveniles must pass through the Project Area in route to and from the Pacific Ocean. This species would be considered seasonally present.	See section 4.2 for further discussion of this species.

SCIENTIFIC NAME	STATUS[1]	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Coho salmon - central CA coast ESU ***Oncorhynchus kisutch***	FE, SE	Federal listing includes populations between Punta Gorda and San Lorenzo River. State listing includes populations south of San Francisco Bay only. Occurs inland and in coastal marine waters. Requires beds of loose, silt-free, coarse gravel for spawning. Also needs cover, cool water, and sufficient dissolved oxygen.	**No Potential.** This species is considered extirpated from San Francisco Bay and its tributaries (NMFS 2012).	No further action is necessary for this species.
Delta smelt ***Hypomesus transpacificus***	FT, SE	Lives in the Sacramento-San Joaquin estuary in areas where salt and freshwater systems meet. Occurs seasonally in Suisun Bay, Carquinez Strait and San Pablo Bay. Seldom found at salinities > 10 ppt; most often at salinities < 2 ppt.	**Present Year Round.** This species has been documented to occur within Suisun Bay less than a mile from the proposed Project Area (CDFW 2023d,e). The Project Area is also within the core sections of this species home range which are restricted to the Sacramento Delta, as such the species is considered present year-round.	*See Section 4.2 for further discussion of this species.*
green sturgeon, southern Distinct Population Segment ***Acipenser medirostris***	FT, SSC	Spawn in the Sacramento River and the Feather River. Spawn at temperatures between 8-14 degrees C. Preferred spawning substrate is large cobble but can range from clean sand to bedrock.	**Present Year Round**. The Project Area is at the terminus of the Sacramento River, where green sturgeon are known to spawn. This species is also known to rear within the greater San Francisco Bay region year-round. As such, the species would be considered present year-round.	*See Section 4.2 for further discussion of this species.*
longfin smelt ***Spirinchus thaleichthys***	FE, SE	Euryhaline, nektonic and anadromous. Found in open waters of estuaries, mostly in middle or bottom of water column. Prefer salinities of 15 to 30 ppt but can be found in completely freshwater to almost pure seawater.	**Present Year Round.** This species has been documented to occur within the vicinity of the Project Area which is also located within the species core habitat range (CDFW 2023d,e). This species would be considered present year-round.	*See Section 4.2 for further discussion of this species.*
Pacific lamprey ***Entosphenus* (*Lampetra*) *tridentatus***	SSC	Spawns between March and July in gravel bottomed streams in riffle habitat. Larvae drift downstream to areas of low velocity and fine substrates and are relatively immobile in the stream substrates.	**Present Seasonally.** This species is known to spawn and rear within tributaries of the Sacramento and San Joaquin Rivers. As such adults and juveniles must migrate through the Project Area when moving to and from spawning streams and would be considered seasonally present.	*See Section 4.2 for further discussion of this species.*

SCIENTIFIC NAME	STATUS[1]	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
river lamprey ***Lampetra ayresi***	SSC	Lower Sacramento River, San Joaquin River and Russian River. May occur in coastal streams north of San Francisco Bay. Adults need clean, gravelly riffles, Ammocoetes need sandy backwaters or stream edges, good water quality and temps < 25 degrees C.	**Present Seasonally.** This species is known to spawn and rear within tributaries of the Sacramento and San Joaquin Rivers. As such adults and juveniles must migrate through the Project Area when moving to and from spawning streams and would be considered seasonally present.	*See Section 4.2 for further discussion of this species.*
Sacramento perch ***Archoplites interruptus***	SSC	(Only within native range) Historically found in the sloughs, slow-moving rivers, and lakes of the Central Valley. Prefer warm water. Aquatic vegetation is essential for young. Tolerate wide range of physio-chemical water conditions.	**Unlikely**. This species is known to occur within sloughs and slow backwater areas. The Project Area is comprised of swift waters of the Sacramento River. Such areas are too turbulent for the species.	No further action is necessary for this species.
Sacramento splittail ***Pogonichthys macrolepidotus***	SSC	Formerly endemic to the lakes and rivers of the Central Valley, but now confined to the Sacramento Delta, Suisun Bay, and associated marshes. Occurs in slow-moving river sections and dead-end sloughs. Requires flooded vegetation for spawning and foraging for young. A freshwater species, but tolerant of moderate salinity (10-18 parts per thousand).	**Present Year Round.** This species has a high potential to occur within the sloughs and marshes of Winter Island that is adjacent to the Project Area. As a result, the species could be found within the Project Area year-round.	*See Section 4.2 for further discussion of this species.*
steelhead - central CA coast DPS ***Oncorhynchus mykiss irideus***	FT	Occurs from the Russian River south to Soquel Creek and Pajaro River, also in San Francisco and San Pablo Bay Basins. Adults migrate upstream to spawn in cool, clear, well-oxygenated streams. Juveniles remain in fresh water for 1 or more years before migrating downstream to the ocean.	**No Potential.** This population segment is designated within watersheds that extend as far inland as the Carquinez Bridge, approximately 20 miles west of the Project Area. Any steelhead present are therefore likely to be Central Valley DPS, not Central California Coast DPS.	No further action is necessary for this species.

SCIENTIFIC NAME	STATUS[1]	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
steelhead - central valley DPS ***Oncorhynchus mykiss irideus***	FT, SSC	Includes all naturally spawned populations (and their progeny) in the Sacramento and San Joaquin Rivers and their tributaries, excluding San Francisco and San Pablo bays and their tributaries. Preferred spawning habitat is in cool to cold perennial streams with high dissolved oxygen levels and fast flowing water. Abundant riffle areas for spawning and deeper pools with sufficient riparian cover for rearing are necessary for successful breeding.	**Present Seasonally.** This species is known to spawn and rear within tributaries of the Sacramento and San Joaquin Rivers. As such adults and juveniles must migrate through the Project Area when moving to and from spawning streams and would be considered seasonally present.	*See Section 4.2 for further discussion of this species.*
western brook lamprey ***Lampetra richardsoni***	SSC	Found in large coastal rivers and their tributaries. Ammocoetes, are typically found in slackwater areas or pools where they burrow into soft substrate. Larval stage lasts 2-4 years in California. Spawning takes place in riffles in the early spring	**Present Seasonally.** This species is known to spawn and rear within tributaries of the Sacramento and San Joaquin Rivers. As such adults and juveniles must migrate through the Project Area when moving to and from spawning streams and would be considered seasonally present.	*See Section 4.2 for further discussion of this species.*
white sturgeon ***Acipenser transmontanus***	SCT, SSC	Found in most estuaries along the Pacific coast. Adults in the San Francisco Bay Estuary system spawn in the Sacramento River and are not known to enter freshwater or non-tidal reaches of Estuary streams. Spawn May through June.	**Present Year Round.** This species is known to spawn and rear within the main stems of the Sacramento and San Joaquin Rivers as well as major river tributaries such as the Feather. Adults and juveniles also rear within these rivers year-round. Within the lower portion of the Sacramento River and into Suisun Bay, juveniles and adults may forage year round.	*See Section 4.2 for further discussion of this species.*
CRITICAL HABITAT				
Chinook salmon – Sacramento winter-run Evolutionary Significant Unit	Critical Habitat	Critical habitat for this species was designated under FR 58 FR 33212.	**Present.** Critical Habitat for this species is present within aquatic portions of the Project Area up to the high tide line.	*See Section 4.3.1 for further discussion of this specific habitat.*
Steelhead - Central Valley DPS	Critical Habitat	Critical habitat for this species was designated under 70 FR 52629.	**Present.** Critical Habitat for this species is present within aquatic portions of the Project Area up to the high tide line.	*See Section 4.3.1 for further discussion of this specific habitat.*
Delta smelt	Critical Habitat	Critical habitat for this species was designated under 59 FR 65256.	**Present.** Critical Habitat for this species is present within aquatic portions of the Project Area up to the high tide line.	*See Section 4.3.1 for further discussion of this specific habitat.*

SCIENTIFIC NAME	STATUS[1]	HABITAT	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
green sturgeon, southern Distinct Population Segment	Critical Habitat	Critical habitat for this species was designated under 74 FR 52300.	**Present.** Critical habitat for this species is present within aquatic portions of the Project Area up to the high tide line.	*See Section 4.3.1 for further discussion of this specific habitat.*
ESSENTIAL FISH HABITAT				
Coastal Pelagic	Essential Fish Habitat	Essential Fisheries Habitat is designated under the Coastal Pelagic Species Fishery Management Plan (PFMC 2019)	**Present.** Essential fish habitat governed under this fisheries management plan is present within aquatic portions of the Project Area.	*See Section 4.3.2 for further discussion of this specific habitat.*
Groundfish	Essential Fish Habitat	Essential Fisheries Habitat is designated under the Groundfish Fisheries Management Plan (PFMC 2022a)	**Present.** Essential fish habitat governed under this fisheries management plan is present within aquatic portions of the Project Area.	*See Section 4.3.2 for further discussion of this specific habitat.*
Salmon	Essential Fish Habitat	Essential Fisheries Habitat is designated under the Salmonid Fishery Management Plan (PFMC 2022b)	**Present.** Essential fish habitat governed under this fisheries management plan is present within aquatic portions of the Project Area.	*See Section 4.3.2 for further discussion of this specific habitat.*

Key to Abbreviations:
FE: Federal Endangered
FT: Federal Threatened
SCT: State Candidate - Threatened
SE: State Endangered
ST: State Threatened
SSC: CDFW Species of Special Concern

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APPENDIX C. PILE DRIVING CALCULATIONS

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Vibratory Pile Driving

VERSION 1.1-Multi-Species: 2022

KEY

	User Provided Information *Default values are in bold, italics turquoise (can be changed by user if project-specific information is available*
	Preset NMFS Provided Information (cannot be altered by user). NMFS thresholds/default weighting value are in bold red.
	OUTPUT: Resultant Isopleth/Range to Effects (cannot be altered by user); Note: isopleths are presented in meters and feet
	Automatically Calculated Values Based on User Provided Information (only weighting adjustment (-dB) can be altered by user; Row 64, if spectrum is available)

STEP 1: GENERAL PROJECT INFORMATION

PROJECT TITLE and CONTACT	Collinsville Substation Proejct, Pile Driving Calculations.
PROJECT/SOURCE INFORMATION (size, material, number, duration to drive pile, etc.)	

Notes (please include all assumptions)

Data for sheetpiles in water modeled for driving on land. Used 10 db recommended reduction per Caltrans 2020.

1 sec SEL = RMS	METRIC: RMS (NOT Peak)	WEIGHTING (WFA in kHz)	
Unattenuated Sound Pressure Level (dB) (see Proxy Level Tab for surrogate values; Copy, ONLY Paste Values (123), not formulas)	163	**Sea Turtle Default WFA (kHz)**	**Marine Mammal Default WFA (kHz)**
Attenuated Sound Pressure Level (dB)* (calculation done automatically)	**153**		
Distance associated with sound pressure level measurement/Measurement distance from pile (meters); Typically, 10-m but please double check data being used			
Transmission loss constant (NMFS recommends: 15 if unknown)			
		Attenuation (e.g., bubble curtain) (enter positive number)	

*If sound pressure level provided includes attenuation methods (e.g., bubble curtain), please note this in Project/Source Information in Step 1

RESULTANT ISOPLETHS

(Range to Effects)

For vibratory pile driving, only behavioral thresholds exist for fishes

	FISHES
Isopleth (meters)	
Isopleth (feet)	

MARINE MAMMALS

			PTS ONSET		
Hearing Group	**LF Cetacean PTS SEL$_{cum}$ Threshold (dB)**	**MF Cetacean PTS SEL$_{cum}$ Threshold (dB)**	**HF Cetacean PTS SEL$_{cum}$ Threshold (dB)**	**PW Pinniped PTS SEL$_{cum}$ Threshold (dB)**	**OW Pinniped PTS SEL$_{cum}$ Threshold (dB)**
	199	**198**	**173**	**201**	**219**
Isopleth (meters)					
Isopleth (feet)					

ALL MARINE MAMMALS	**BEHAVIOR**
	RMS Threshold (dB)
	120
Isopleth (meters)	**158.5**
Isopleth (feet)	**520.0**

Marine Mammal Hearing Group
Low-frequency (LF) cetaceans: baleen whales
Mid-frequency (MF) cetaceans: dolphins, toothed whales, beaked whales, bottlenose whales
High-frequency (HF) cetaceans: true porpoises, *Kogia*, river dolphins, cephalorhynchid, *Lagenorhynchus cruciger* & *L. australis*
Phocid pinnipeds (PW):true seals
Otariid pinnipeds (OW):sea lions and fur seals

WEIGHTING FUNCTION CALCULATIONS

Weighting Function Parameters	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds	Sea Turtles
a	1	1.6	1.8	1	2	1.4
b	2	2	2	2	2	2
f_1	0.2	8.8	12	1.9	0.94	0.077
f_2	19	110	140	30	25	0.44
C	0.13	1.2	1.36	0.75	0.64	2.35
Adjustment (-dB)†	-0.05	-16.83	-23.50	-1.29	-0.60	0.00

$$W(f) = C + 10\log_{10}\left\{\frac{(f/f_1)^{2a}}{[1+(f/f_1)^2]^a[1+(f/f_2)^2]^a}\right\}$$

APPENDIX F.4

Bumblebee Habitat Assessment

Bumble Bee Habitat Assessment Surveys
Collinsville 500/230 Kilovolt Substation Project
Biologist Ivan Parr, BioMaAS
May 19 and 23, 2025

Summary of Findings: Habitat Assessment for Crotch's Bumble Bee
Collinsville 500/230 Kilovolt Substation Project

Overview

Pacific Gas & Electric (PG&E) retained Kleinfelder to conduct a pre-project survey for the Collinsville 500/230 Kilovolt (kV) Substation Project (Proposed Project). The project also includes the construction of an approximately 1.2 mile 500 kV transmission line intertie, which will connect the proposed substation to the existing Vaca Dixon-Tesla 500kV Transmission Line; and modifications to transposition structures at four locations. (Figure 1). As a result, five discreet sites (North, Maud, Bird's Landing, Collinsville Proposed Substation, and Byron)were identified for biological resource studies (Study Area) (Figure 2).

In spring of 2025, PG&E requested that Kleinfelder Inc. (Kleinfleder) and a subconsultant, BioMaAS, Inc. (BioMaAS) determine if the Study Area had potential to contain habitat for the Crotch's bumble bee (*Bombus crotchii*) [CBB], a species under review for listing as endangered under the California Endangered Species Act (CESA). The biologist conducting the habitat assessment surveys is Ivan Parr, who does not have a Memorandum of Understanding (MOU) with the California Department of Fish & Wildlife (CDFW) to capture and handle CBB, but has organized and participated in three multi-day field trainings through the Western Section of The Wildlife Society and The Xerces Society, in which he learned to survey for bumble bees, assess habitat, and handle living bumble bees under Xerces Society permits. These workshops also provided him the opportunity to handle living and preserved CBB. The biologist had also conducted habitat assessments on three other projects prior to this survey.

Desktop Review

To determine the potential for CBB within the Study Area, Kleinfelder and BioMaAS biologists reviewed several sources, including the California Natural Diversity Database (CNDDB 2025), Bumble Bee Watch (The Xerces Society et al. 2025A), and the California Bumble Bee Atlas (Xerces et al., 2025B). According to the CNDDB, seven extant occurrences occur within a 10-mile radius of the Study Area's five components: Fairfield (Occurrence 570) Lagoon Valley (Occurrence 12), Travis Air Force Base (Occurrences 116, 568, 399), and Peterson Ranch (Occurrence 571). Bumble Bee Watch identified an additional sighting as of May 20, 2025, in the Montezuma Hills, within a quarter mile of the proposed Collinsville Substation (Figure 3).

PG&E requested that biologists assess the potential for CBB habitat on the ground. Biologists identified areas within the five sites of the Study Area which could be accessed by driving and on foot, to conduct a targeted habitat assessment.

Habitat of the Crotch's Bumble Bee

The CBB occurs throughout cismontane California, preferring hotter areas than most other bumble bee species. Relatively little information on this species is available in literature, however, they are known to inhabit scrub and grassland areas. As a short-tongued species, CBB has a preference for milkweeds (*Asclepias*), dusty maidens (*Chaenactis* spp.), lupines (*Lupinus* spp.), bur clover (*Medicago* spp.), caterpillar flowers (*Phacelia* spp.), and sages (*Salvia* spp.) (Williams et al. 2014). Other documented forage plants include vetches (*Vicia* spp.), larkspur (*Delphinium* ssp.), clovers (*Trifolium* spp.), California poppy (*Eschscholzia californica*), mariposa lilies (*Calochortus* spp.), sweetclover (*Melilotus* spp.), soap-lily (*Chlorogalum pomeridianum*), yellow star-thistle (*Centaurea solstitialis*), and hedgenettle (*Stachys* spp.) (Nelson pers comm. 2024). CBB nests are found within underground burrows and are difficult to detect from the surface, being accessed through inconspicuous holes in the soil, rocky debris, rocky piles, leaf litter, or downed wood. The CBB may hide an entrance to its nest under any of these substrates, however, they may also simply utilize an existing invertebrate or mammal burrow in an open grassland (Nelson 2024, pers comm), so the presence of small burrows alone could provide nesting habitat for CBB (Williams et al. 2014).

Surveys

On May 19 and 23, 2025, Pacific Gas & Electric (PGE) biologist Ode Bernstein and BioMaAS biologist Ivan Parr conducted habitat assessment surveys by walking through portions of each of the sites and recording habitat characteristics, including nest habitat and floral resources that could be used for forage. All flowering plant species were recorded. All observed bumble bees and their behaviors were also recorded. Habitat assessment methods were based on Hatfield et al. (2012), USFWS (2019), The Xerces Society (2017), and CDFW (2023). However, a protocol-level presence/absence survey for CBB was not conducted since this survey would require multiple months of effort and the presence of habitat alone could still suggest presence of CBB, even if the bee was not seen (CDFW 2023).

Overview of Findings:

Although no Crotch's bumble bees were observed during the survey, habitat for the Crotch's bumble bee was observed within all five of the separate sites within the Study Area. Each site contained annual grassland and ruderal habitat suitable for the species. Both nesting habitat and forage habitat in the form of floral resources were recorded in all five sites. Nesting habitat was present by cracks in the soil, discarded lumber, vegetation thatch, rocky areas, leaf litter, cow patties, soil cracks, small mammal burrows, insect burrows, and other debris piles. As previously mentioned, nesting habitat could be any small hole within open grassland, so nesting habitat is present in nearly any location within the Study Area that is not currently developed or actively tilled for agriculture. Dominant floral resources within the five sites contained at least one member of the CBB's documented forage plants. All sites contained a prevalence of yellow star-thistle and clovers. In addition, the North Site, Maud Site, and Bird's Landing sites had an abundance of vetch species (*Vicia benghalensis*). Annual yellow sweetclover (*Melilotus indicus*) was present at the Bird's Landing, Collinsville, and Byron sites. Bur clover (*Medicago* sp.) was present in the form of ruderal groundcover at the North Site, Maud Site, and Bird's Landing. Given the prevalence of both nesting and foraging habitat, and the proximity of CBB records, the CBB has a high potential to occur within the Study Area as a whole. A detailed explanation of findings within each of the sites is included below.

North Site

Habitat within the North Site involved a mostly tilled filed surrounding the towers (Figure 2). The principal habitat consisted of annual grassland, specifically Italian wildrye (*Festuca perenne*), resulting in a *Festuca perenne* Herbaceous Semi-Natural Alliance surrounded by agricultural fields, as previously mapped by Insignia (2022) (Appendix A). Smaller portions of the Site are mapped as ruderal habitats, namely the *Brassica nigra* – *Centaurea* (*solstitialis*, *melitensis*, *calicitrapa*) Herbaceous Semi-Natural Alliance. Yellow star-thistle, a favored forage plant for the CBB, is one of the dominant species throughout the entire site, as is a congener, purple star thistle (*Centaurea calcitrapa*). All areas within the Site, including some of the developed portions, which contain downed wood and debris, have potential breeding habitat for the CBB. Due to sightings within a 10-mile radius of the North Site and the presence of both forage and breeding habitat, CBB has a moderate potential to occur within the North Site.

Maud Site

Habitat within the Maud Site is principally annual grassland. Surveyed portions were mapped as Avena ssp. – Bromus spp. Herbaceous Semi-Natural Alliance (Insignia 2025)(Appendix A), which was confirmed by the surveys. Ruderal vegetation was also prevalent throughout the site, along trails, ditches, and intermittent waterways. Annual grasses dominated the property; however, several blooming plants species were persistent throughout the entire site. These included the native harvest brodiaea (*Brodiaea coronaria*) and gumweed (*Grindelia camporum*), in addition to invasives such as yellow star-thistle, clovers, and vetch – these latter three being common forage plants for the CBB. All areas within the Site, including some of the developed portions, which contain downed wood and debris, could be breeding habitat for the CBB. Due to sightings within a 10-mile radius of the Maud Site and the presence of both forage and breeding habitat, CBB has a moderate potential to occur here.

Bird's Landing Site

Habitat within the Bird's Landing Site contains a developed substation and towers which lie principally within annual grassland. It is mapped as *Avena* spp. – *Bromus* spp. Herbaceous Semi-Natural Alliance (Insignia 2025), which was confirmed by the surveys. Ruderal vegetation grows around the towers. Annual grasses dominated the property; however, several blooming plants species were persistent throughout the entire site. These included mostly Italian thistle (*Carduus pycnocephalus*), yellow star-thistle, black mustard (*Brassica nigra*), purple vetch (*Vicia benghalensis*), and Mediterranean linseed (*Bellardia trixago*). Yellow star-thistle and purple vetch are among the preferred forage plants for the CBB. All areas within the Site, which consists of grassland, could be breeding habitat for the CBB. Due to sightings within a 10-mile radius of the site and the presence of both forage and breeding habitat, CBB has a moderate potential to occur within the Bird's Landing Site.

Collinsville Site

Habitat within the Collinsville Site includes the proposed substation, which is on a tilled field surrounded by black mustard (*Brassica nigra*) and yellow star-thistle, forming the *Brassica nigra* – *Centaurea* (*solstitialis*, *melitensis*) Herbaceous Semi-Natural Alliance (Appendix A). The remaining undeveloped portion of the site is covered in various semi-natural annual grassland alliances. Despite the persistence of invasive species, there is a recent (May 20, 2025) sighing of a CBB within a quarter mile of the proposed substation (The Xerces Society et al., 2025A). In addition to black mustard and yellow star-thistle, blooming plants within the site are dominated by Italian thistle, purple vetch, Mediterranean

linseed, and mallows (*Malva*, *Malvella* spp.). The footprint of the substation lies on tilled earth, which could potentially impact the presence of a CBB nest, but there are still many acres of open grassland where a CBB nest could build survive underground. Due to sightings within a quarter-mile radius of the Collinsville Site and the presence of both forage and breeding habitat, CBB has a high potential to occur within the Collinsville Site.

Byron Site

The Byron Site is the one area within the Study Area that occurs within Contra Costa County. The majority of this site falls within agricultural fields. However, canals and a levee run through the site, and these are bordered by alkali vegetation such as iodine bush (*Allenrolfea occidentalis*) and alkali heath (*Frankenia salina*), making an *Allenrolfea occidentalis* Shrubland Alliance and *Distichlis spicata* – (*Juncus cooperi – Frankenia salina*) Interior Herbaceous Alliance (in this case salt grass [*Distichlis spicata*] co-dominates with alkali-heath [*Frankenia salina*]. In addition to native habitats, invasive grasslands such as the *Festuca perenne* Herbaceous Semi-Natural Alliance dominate. Although the majority of the project construction would take place within tilled agricultural fields, flowering plants are present within the fields and t–e potential for foraging CBB is present anywhere within the site. Suitable nest habitat for CBB exists along the levee and anywhere that fields have been left to go fallow. There are no recorded sightings of CBB within a 10-mile radius of the Byron site, but occurrences 13 miles west (Occurrence 585, Marsh Creek State Park) and 13 miles south (Occurrence 19 and Occurrence 587, Tracy) demonstrate that the site is within the current range of the CBB, and CBB may persist in the area undetected (Figure 3). Due to the presence of both forage and breeding habitat, CBB has a moderate potential to occur within the Byron Site.

The Tables below summarize the findings within the individual sites.

Site Name: North Site			
Temperature range: 69-75	Weather: Sunny, clear	Time of Start: 6:45	Wind (mph): 2
Habitat: Ruderal, annual grassland, agricultural fields	Surrounding Habitats: annual grassland, ruderal, agricultural fields		
Notes: area surrounding culvert dominated by blackberries.			
Floral Resources within study area (*asterisk indicates observed visitation) • Achyrachaena mollis / Blow wives / ACMO2 • Amsinckia menziesii / Fiddleneck, Common fiddleneck, Small-flowered fiddleneck / AMME • Anthemis cotula / Dog fennel, Mayweed / ANCO2 • Bellardia trixago / Mediterranean lineseed, Mediterranean linseed / BETR • Brodiaea terrestris / Ground brodiaea / BRTER • Carduus pycnocephalus / Italian thistle / CAPY2 • Centaurea calcitrapa / Purple star thistle, Purple star-thistle / CECA2 • Centaurea melitensis / Tocalote / CEME2 • Centaurea solstitialis / Yellow starthistle, Yellow star-thistle / CESO3 • Convolvulus arvensis / Field bindweed, Bindweed, Orchard morning-glory / COAR4 • Croton setigerus / Dove weed / CRSE11 • Cynara scolymus / Globe artichoke / CYSC2 • Deinandra sp. / Tarweed / DEINA2 • Erodium cicutarium / Coastal heron's bill, Redstem filaree / ERCI6 • Eryngium aristulatum / Jepson's button celery / ERAR11			

- Grindelia camporum / Gumweed / GRCA
- Hypochaeris glabra / Smooth cats ear, Smooth cat's-ear / HYGL2
- Matricaria discoidea / Pineapple weed, Pineapple weed, Rayless chamomile / MADI6
- Medicago arabica / Spotted burclover, Burclover, Spotted burclover / MEAR
- Navarretia sp. / Pincushionplant / NAVAR
- Plagiobothrys bracteatus var. aculeolatus / Bracted popcornflower / PLBRA
- Silybum marianum/Blessed milk thistle/SILMA*
- Trifolium albopurpureum / Indian clover / TRAL5
- Trifolium depauperatum / Dwarf sack clover / TRDE
- Trifolium fragiferum / Strawberry clover / TRFR2
- Vicia benghalensis / Purple vetch / VIBE
- Xanthium spinosum / Spiny cocklebur / XASP2

Bumble Bee Observations (asterisk indicates observed within work area)

Species (Queen, Worker, Drone)	Behavior	Species Visited	Photographs
Bombus vosnesenskii (Worker)	Foraging	Silybum marianum	NA

Bee Notes: NA

Nest Observations

Nest observed?	Species	Location	Habitat Present
None			Burrows, Debris piles, Downed wood, Leaf litter, Rock piles

Overview of the North Site, showing ruderal and annual grassland habitat.

Fallow fields overgrown with flowering forbs, including purple star-thistle, yellow star-thistle, bindweed (*Convolvulus arvensis*), and harvest brodiaea (*Brodiaea coronaria*).

The base of the towers provides small amounts of shade and protection from blading, making vegetation diversity higher around the towers.

Irrigation canals provide a water source within an otherwise arid landscape.

Soil cracks, burrows, and vegetation debris provide habitat for nesting bumble bees.

Site Name: Maud Site

Temperature range: 69-75	Weather: Sunny, clear	Time of Start: 8:51	Wind (mph): 2
Habitat: Ruderal, annual grassland, agricultural fields	Surrounding Habitats: annual grassland, ruderal, agricultural fields		

Notes: area surrounding culvert dominated by blackberries.

Floral Resources within study area (*asterisk indicates observed visitation)

- Achyrachaena mollis / Blow wives / ACMO2
- Amsinckia menziesii / Fiddleneck, Common fiddleneck, Small-flowered fiddleneck / AMME
- Anthemis cotula / Dog fennel, Mayweed / ANCO2
- Bellardia trixago / Mediterranean lineseed, Mediterranean linseed / BETR
- Brodiaea coronaria / Harvest brodiaea, Garland brodiaea / BRCO3
- Carduus pycnocephalus / Italian thistle / CAPY2
- Centaurea calcitrapa / Purple star thistle, Purple star-thistle / CECA2
- Centaurea melitensis / Tocalote / CEME2
- Centaurea solstitialis / Yellow starthistle, Yellow star-thistle / CESO3
- Convolvulus arvensis / Field bindweed, Bindweed, Orchard morning-glory / COAR4
- Croton setigerus / Dove weed / CRSE11
- Cynara scolymus / Globe artichoke / CYSC2
- Deinandra sp. / Tarweed / DEINA2

- Erodium cicutarium / Coastal heron's bill, Redstem filaree / ERCI6
- Eryngium aristulatum / Jepson's button celery / ERAR11
- Grindelia camporum / Gumweed / GRCA
- Hypochaeris glabra / Smooth cats ear, Smooth cat's-ear / HYGL2
- Matricaria discoidea / Pineapple weed, Pineapple weed, Rayless chamomile / MADI6
- Medicago arabica / Spotted burclover, Burclover, Spotted burclover / MEAR
- Navarretia sp. / Pincushionplant / NAVAR
- Plagiobothrys bracteatus var. aculeolatus / Bracted popcornflower / PLBRA
- Trifolium albopurpureum / Indian clover / TRAL5
- Trifolium depauperatum / Dwarf sack clover / TRDE
- Trifolium fragiferum / Strawberry clover / TRFR2
- Vicia benghalensis / Purple vetch / VIBE
- Xanthium spinosum / Spiny cocklebur / XASP2

Bumble Bee Observations (asterisk indicates observed within work area)

Species (Queen, Worker, Drone)	Behavior	Species Visited	Photographs
None			

Bee Notes: NA

Nest Observations

Nest observed?	Species	Location	Habitat Present
None			Burrows, Debris piles, Downed wood, Leaf litter, Rock piles

Annual grassland dominates the habitat within the Maud Site.

Showing towers within the Maud Site, including surrounding ruderal and annual grassland.

Ephemeral ponded areas and cow wallows provide late-season moisture which promote blooming plants.

Harvest brodiaea, a native plant, is abundant throughout the Maud Site.

Burrows and soil cracks provide abundant opportunities for bumble bee nests.

Site Name: Bird's Landing Site

Temperature range: 78-80	Weather: Sunny, clear	Time of Start: 10:45 AM	Wind (mph): 3
Habitat: Ruderal, annual grassland	Surrounding Habitats: annual grassland, ruderal, agricultural fields		

Notes: area surrounding culvert dominated by blackberries.

- Anthemis cotula / Dog fennel, Mayweed / ANCO2
- Bellardia trixago / Mediterranean lineseed, Mediterranean linseed / BETR
- Brassica nigra / Black mustard / BRNI
- Carduus pycnocephalus / Italian thistle / CAPY2
- Castilleja densiflora / Dense flower owl's clover / CADE29
- Centaurea calcitrapa / Purple star thistle, Purple star-thistle / CECA2
- Centaurea melitensis / Tocalote / CEME2
- Centaurea solstitialis / Yellow starthistle, Yellow star-thistle / CESO3
- Cichorium intybus / Chicory / CIIN
- Conium maculatum / Poison hemlock / COMA2
- Convolvulus arvensis / Field bindweed, Bindweed, Orchard morning-glory / COAR4
- Conyza canadensis / Canadian horseweed / COCA5
- Cynara scolymus / Globe artichoke / CYSC2
- Erodium cicutarium / Coastal heron's bill, Redstem filaree / ERCI6

- Foeniculum vulgare / Fennel / FOVU
- Helminthotheca echioides / Bristly ox-tongue
- Hirschfeldia incana / Mustard / HIIN3
- Malva neglecta / Dwarf mallow, Common mallow / MANE
- Malva nicaeensis / Bull mallow / MANI2
- Marah fabaceus / California manroot / MAFA3
- Medicago polymorpha / California burclover / MEPO3
- Melilotus indicus / Annual yellow sweetclover, Sourclover / MEIN2
- Silybum marianum / Milk thistle / SIMA3
- Sonchus asper / Spiny sowthistle / SOAS
- Sonchus oleraceus / Sow thistle, Common sow thistle / SOOL
- Stephanomeria exigua / Small wirelettuce / STEX
- Torilis arvensis / Field hedge parsley, Tall sock-destroyer / TOAR
- Tragopogon porrifolius / Salsify, Salsify, Oyster plant / TRPO
- Trifolium repens / White clover / TRREP
- Triteleia laxa / Ithuriel's spear, Ithuriel's spear, Common triteleia / TRLA16
- Vicia benghalensis / Purple vetch / VIBE

Bumble Bee Observations (asterisk indicates observed within work area)

Species (Queen, Drone, Male)	Behavior	Species Visited	Photographs
None	NA	NA	NA

Bee Notes: NA

Nest Observations

Nest observed?	Species	Location	Habitat Present
None			Burrows, Debris piles, Downed wood, Leaf litter, Rock piles

Overview of the Bird's Landing Site, showing annual grassland habitat.

Flowering milk thistle, yellow star-thistle, Italian thistle, and black mustard provide potential forage plants throughout the Bird's Landing Site.

The Bird's Landing Substation is dominated by ruderal and grassland species, including black mustard and purple star thistle.

Invertebrate burrows and vegetation thatch provide refugia and potential habitat for CBB nests.

Purple owl's clover (*Castilleja densiflora*), a native wildflower present within the Site.

Site Name: Collinsville Site

Temperature range: 78-80	Weather: Sunny, clear	Time of Start: 12:13 PM	Wind (mph): 4
Habitat: Ruderal, annual grassland	Surrounding Habitats: annual grassland, ruderal, agricultural fields		
Notes: area surrounding culvert dominated by blackberries.			

Floral resources within work area (*asterisk indicates observed visitation):

- Anthemis cotula / Dog fennel, Mayweed / ANCO2
- Brassica nigra / Black mustard / BRNI
- Brassica rapa / Common mustard, Turnip, Field mustard / BRRA
- Carduus pycnocephalus / Italian thistle / CAPY2
- Centaurea calcitrapa / Purple star thistle, Purple star-thistle / CECA2
- Centaurea melitensis / Tocalote / CEME2
- Centaurea solstitialis / Yellow starthistle, Yellow star-thistle / CESO3
- Chenopodium berlandieri / Pit seed goosefoot, Pitseed goosefoot / CHBE4
- Conium maculatum / Poison hemlock / COMA2
- Convolvulus arvensis / Field bindweed, Bindweed, Orchard morning-glory / COAR4
- Croton setigerus / Dove weed / CRSE11
- Cynara scolymus / Globe artichoke / CYSC2

- Helminthotheca echioides / Bristly ox-tongue
- Hirschfeldia incana / Mustard / HIIN3
- Lepidium latifolium / Perennial pepperweed / LELA2
- Malva neglecta / Dwarf mallow, Common mallow / MANE
- Marrubium vulgare / White horehound / MAVU
- Melilotus indicus / Annual yellow sweetclover, Sourclover / MEIN2
- Melissa officinalis / Lemon balm / MEOF2
- Silybum marianum / Milk thistle / SIMA3
- Sonchus asper / Spiny sowthistle / SOAS
- Sonchus oleraceus / Sow thistle, Common sow thistle / SOOL
- Trifolium repens / White clover / TRREP
- Xanthium spinosum / Spiny cocklebur / XASP2

Bumble Bee Observations (asterisk indicates observed within work area)

Species (Queen, Drone, Male)	Behavior	Species Visited	Photographs
None			

Bee Notes: NA

Nest Observations

Nest observed?	Species	Location	Habitat Present
None			Burrows, Debris piles, Downed wood, Leaf litter, Rock piles

The majority of the site is within ruderal and annual grassland habitats harboring flowering plants.

Looking west at the proposed footprint of the Collinsville Substation. A CBB was observed within a quarter mile of this location.

Grass debris, soil cracks, and even dried cow patties may provide habitat for bumble bee nests.

Looking west towards San Francisco Bay, showing the tilled footprint of the proposed substation, where it is being overgrown by flowering plants.

Site Name: Byron Site

Temperature range: 72-76 F	Weather: Sunny, clear	Time of Start: 09:15 AM	Wind (mph): 3
Habitat: Ruderal, annual grassland	Surrounding Habitats: annual grassland, ruderal, agricultural fields		
Notes: area surrounding culvert dominated by blackberries.			

Floral resources within work area (*asterisk indicates observed visitation):

- Amsinckia menziesii / Fiddleneck, Common fiddleneck, Small-flowered fiddleneck / AMME
- Brassica nigra / Black mustard / BRNI
- Carduus pycnocephalus / Italian thistle / CAPY2
- Centaurea babylonica / Syrian knapweed / CEBA4
- Centaurea calcitrapa / Purple star thistle, Purple star-thistle / CECA2
- Centaurea melitensis / Tocalote / CEME2
- Centaurea solstitialis / Yellow starthistle, Yellow star-thistle / CESO3
- Centromadia pungens / Common tarweed / CEPU14
- Conium maculatum / Poison hemlock / COMA2
- Convolvulus arvensis / Field bindweed, Bindweed, Orchard morning-glory / COAR4
- Cressa truxillensis / Alkali weed / CRTR5

- Distichlis spicata / Salt grass / DISP
- Epilobium brachycarpum / Willow herb / EPBR3
- Frankenia salina / Yerba reuma, Alkali heath / FRSA
- Grindelia camporum / Gumweed / GRCA
- Heliotropium curassavicum / Chinese parsley / HECU3
- Iris pseudacorus / Horticultural iris / IRPS
- Lepidium latifolium / Perennial pepperweed / LELA2
- Malva neglecta / Dwarf mallow, Common mallow / MANE
- Malva nicaeensis / Bull mallow / MANI2
- Malvella leprosa / Alkali mallow, Alkali-mallow, White-weed / MALE3
- Melilotus indicus / Annual yellow sweetclover, Sourclover / MEIN2
- Nerium oleander / Oleander, Common oleander / NEOL
- Pseudocydonia sinensis / Chinese-quince / PSSI4
- Rhaponticum repens / Russian knapweed / ACRE3
- Rubus armeniacus / Himalayan blackberry / RUAR9
- Silybum marianum / Milk thistle / SIMA3
- Sonchus asper / Spiny sowthistle / SOAS
- Sonchus oleraceus / Sow thistle, Common sow thistle / SOOL
- Trifolium fragiferum / Strawberry clover / TRFR2

Bumble Bee Observations (asterisk indicates observed within work area)

Species (Queen, Drone, Male)	Behavior	Species Visited	Photographs
None			

Bee Notes: NA

Nest Observations

Nest observed?	Species	Location	Habitat Present
None			Burrows, Debris piles, Downed wood, Leaf litter, Rock piles

Looking east towards the towers at the Byron Site. Much of the landscape is tilled, but vegetation persists around the base of the towers.

Alkali sinks dominated by saltgrass and alkali-heath harbor potential nesting areas and floral resources.

Saltgrass and alkali heath grows along a levee within the site footprint.

Centromadia, a native tarweed provides summer blossoms. Small mammal burrows may be utilized in developing nests.

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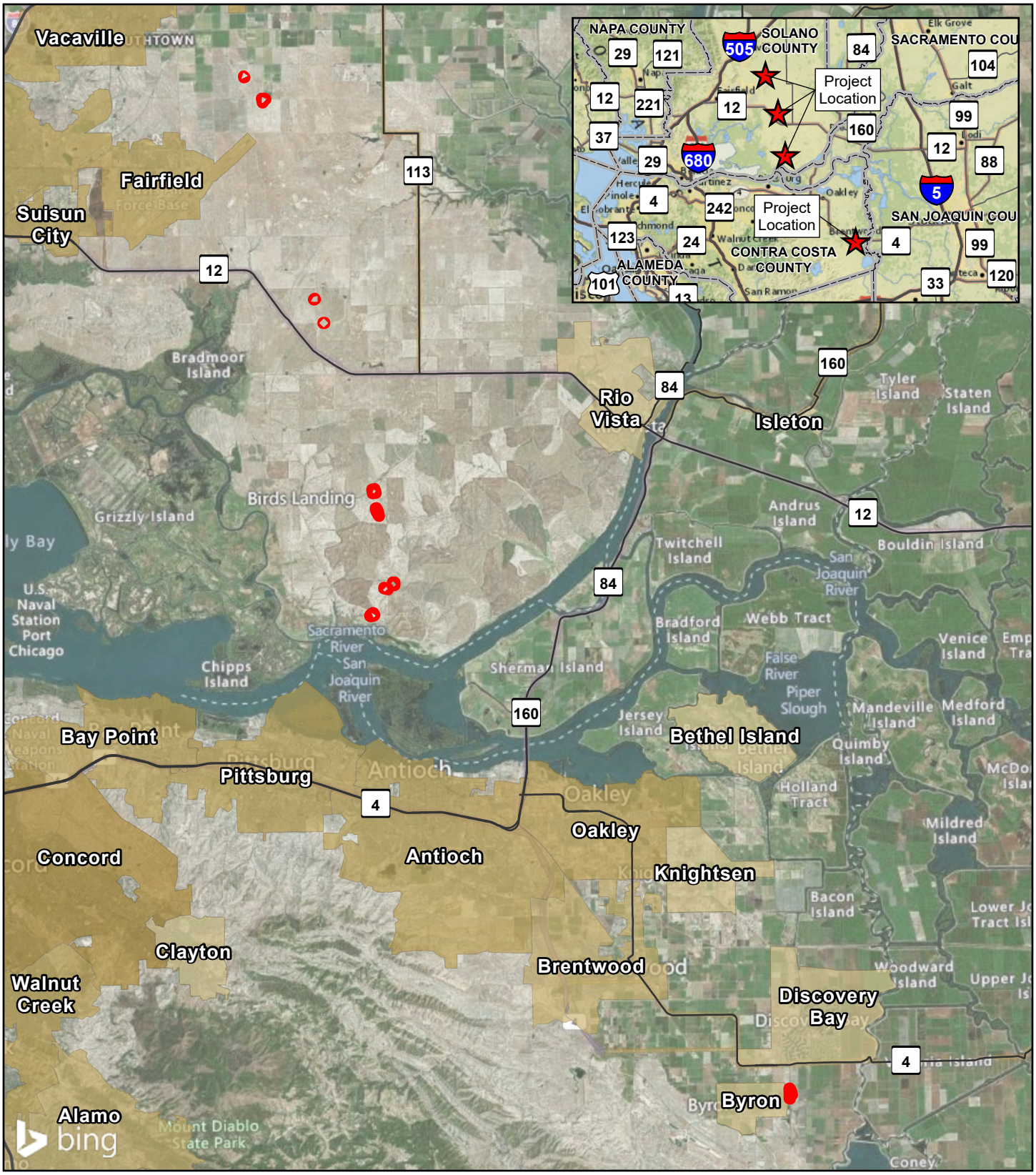
Figures



Source: Bing Maps

0 2 4 Miles

0 3.2 6.4 Kilometers

N

Scale 1:253,440

1 inch = 4 miles

Figure 1: Regional Vicinity
Collinsville 500/230 Kilovolt Substation Project
Solano and Contra Costa County
California

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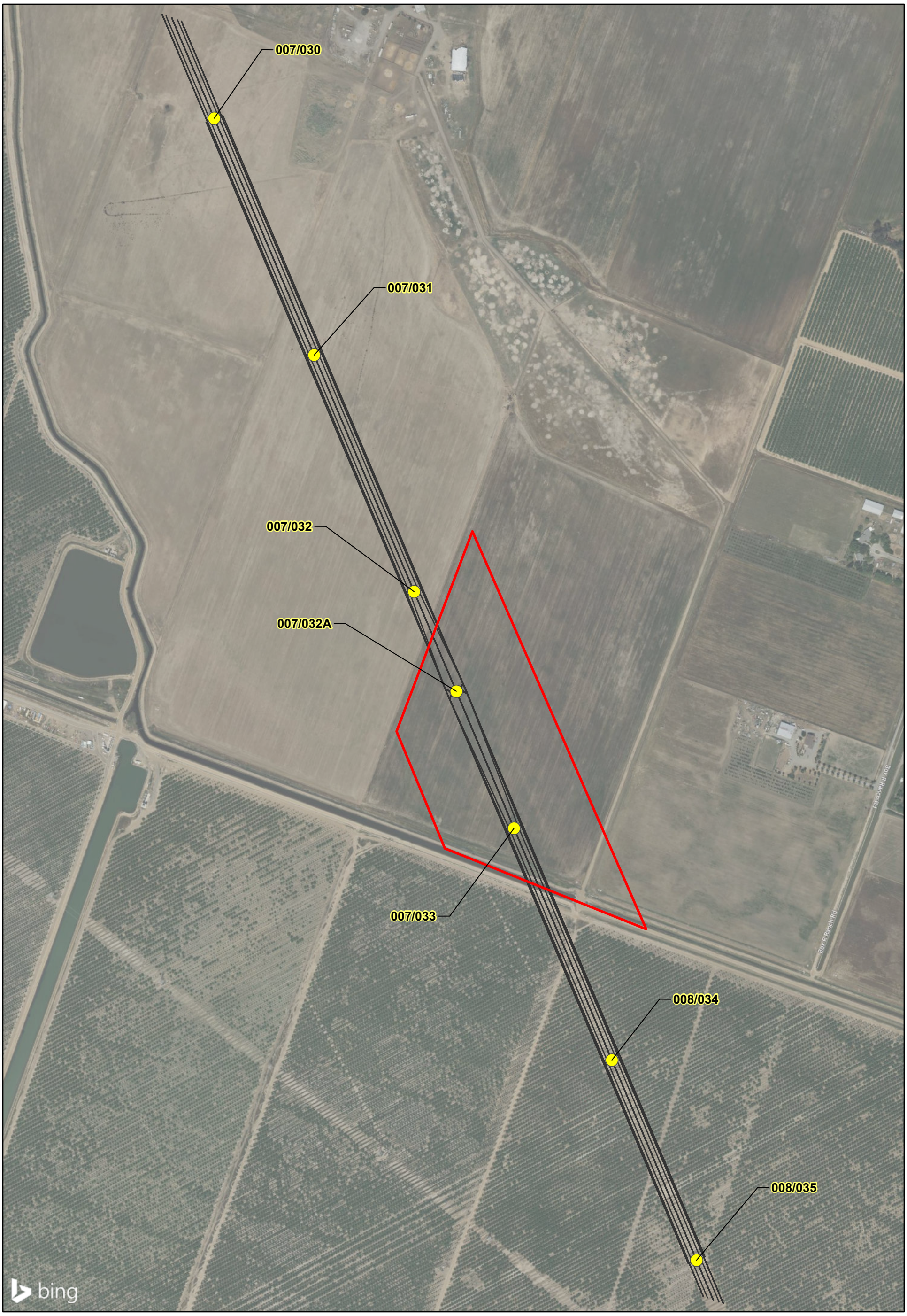
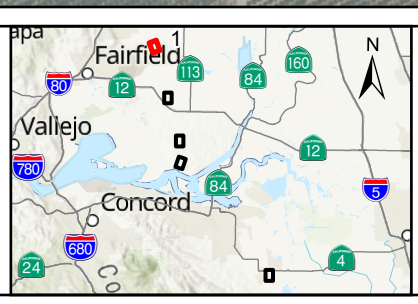


Survey Area

Tower Site

Study Line



Scale 1:6,000
1 inch = 500 feet

0 250 500 Feet

0 75 150 Meters

Figure 2: Study and Survey Areas
Page 1 of 5
North Study Site
Collinsville 500/230 Kilovolt
Substation Project
Solano and Contra Costa County
California

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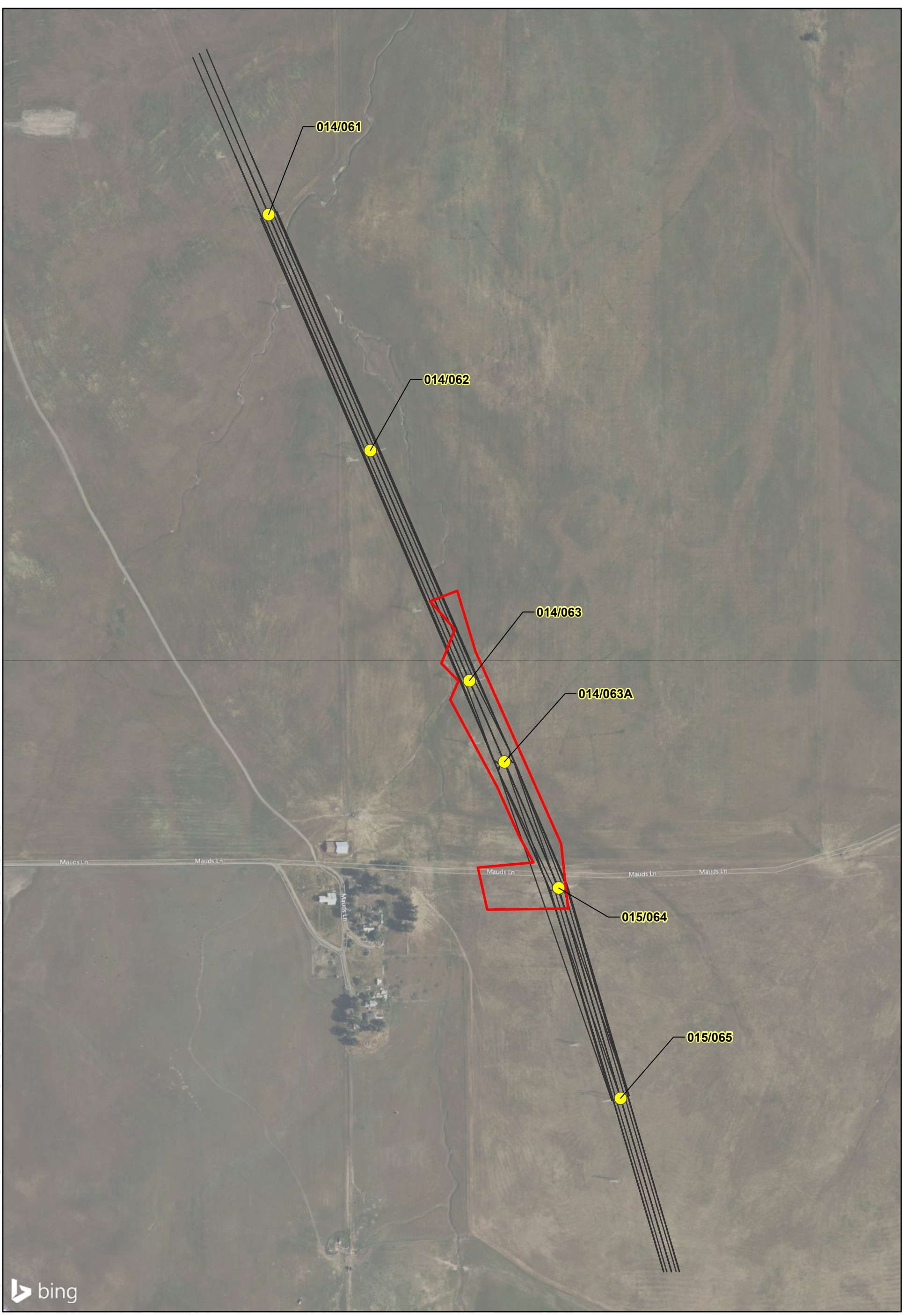
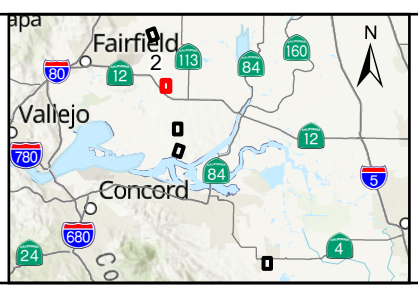


Survey Area
Tower Site
Study Line



Scale 1:6,000
1 inch = 500 feet

N

0 250 500 Feet

0 75 150 Meters

Figure 2: Study and Survey Areas
Page 2 of 5
Maud Study Site
Collinsville 500/230 Kilovolt
Substation Project
Solano and Contra Costa County
California

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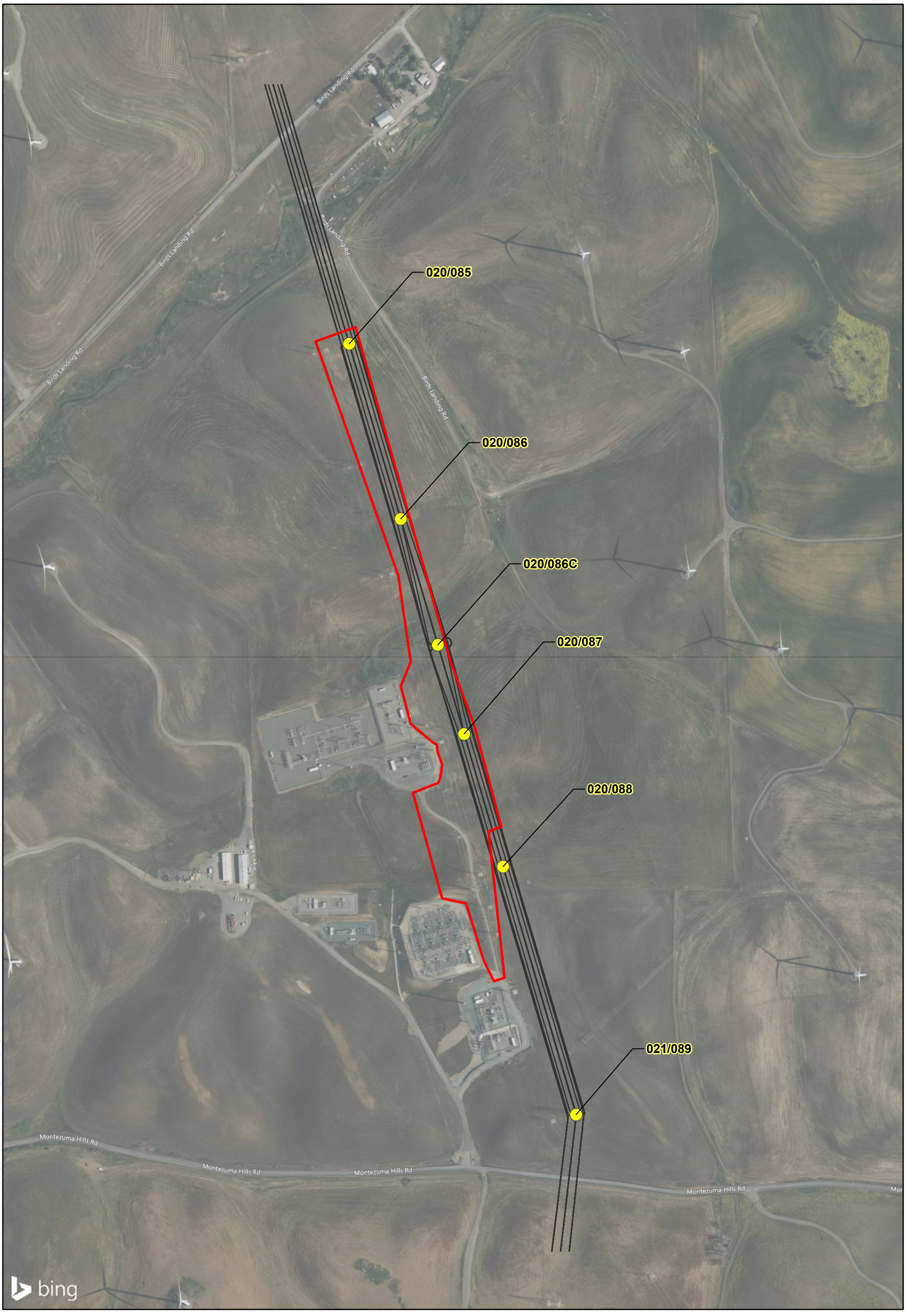
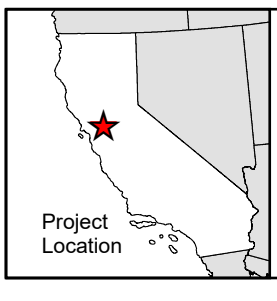
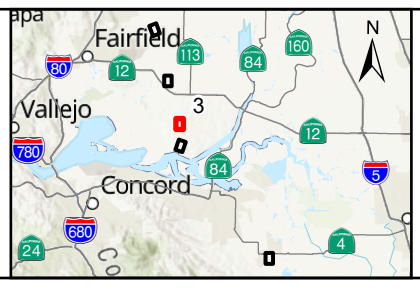




Survey Area

Tower Site

Study Line



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Scale 1:6,000
1 inch = 500 feet

0 250 500 Feet

0 75 150 Meters

Figure 2: Study and Survey Areas
Page 3 of 5
Bird's Landing Study Site
Collinsville 500/230 Kilovolt
Substation Project
Solano and Contra Costa County
California

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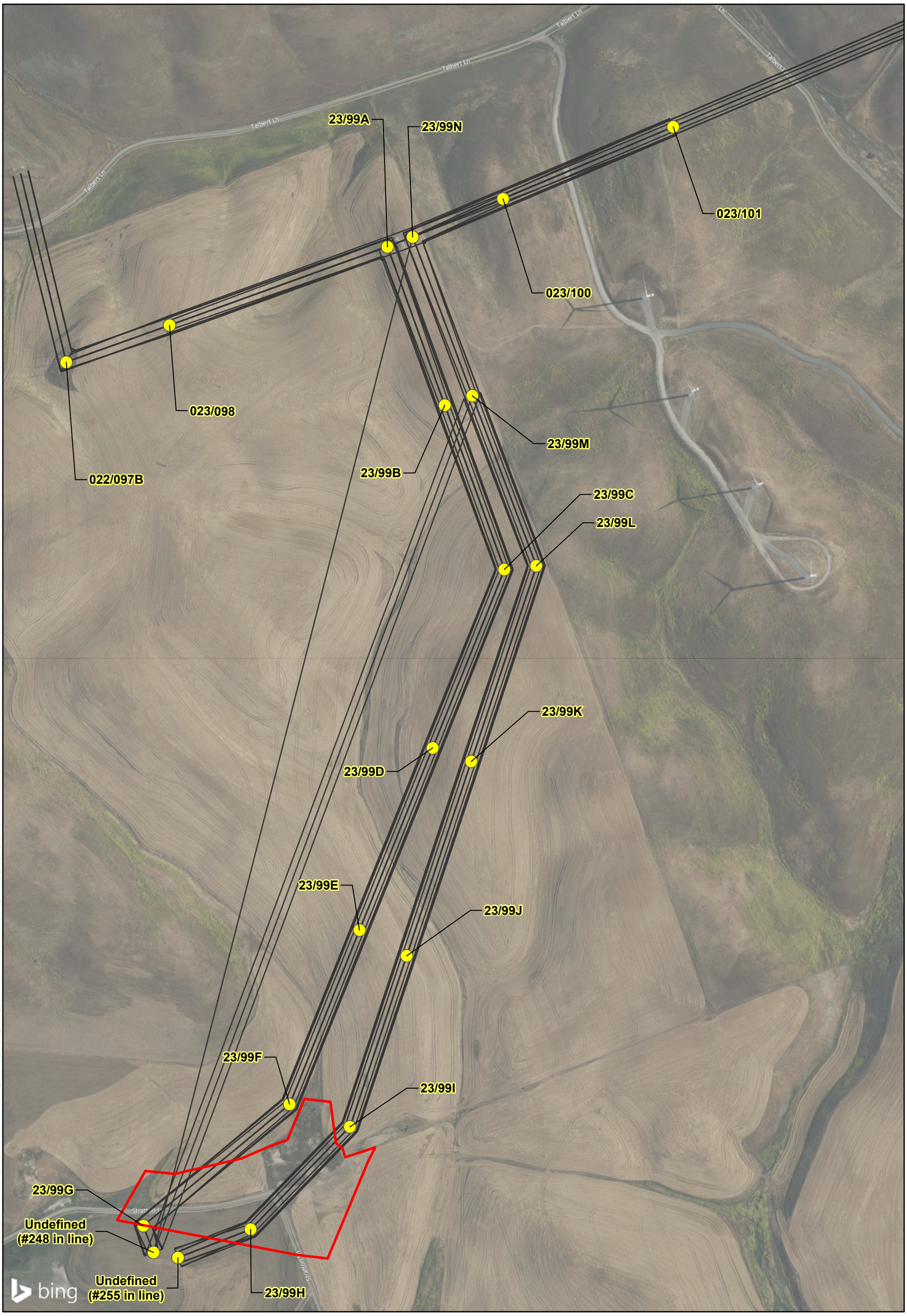
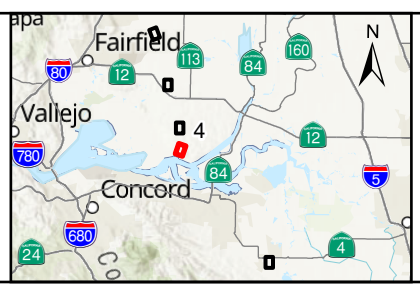


Survey Area

Tower Site

Study Line



Scale 1:6,000
1 inch = 500 feet

0 250 500 Feet

0 75 150 Meters

Figure 2: Study and Survey Areas
Page 4 of 5
Collinsville Study Site
Collinsville 500/230 Kilovolt Substation Project
Solano and Contra Costa County
California

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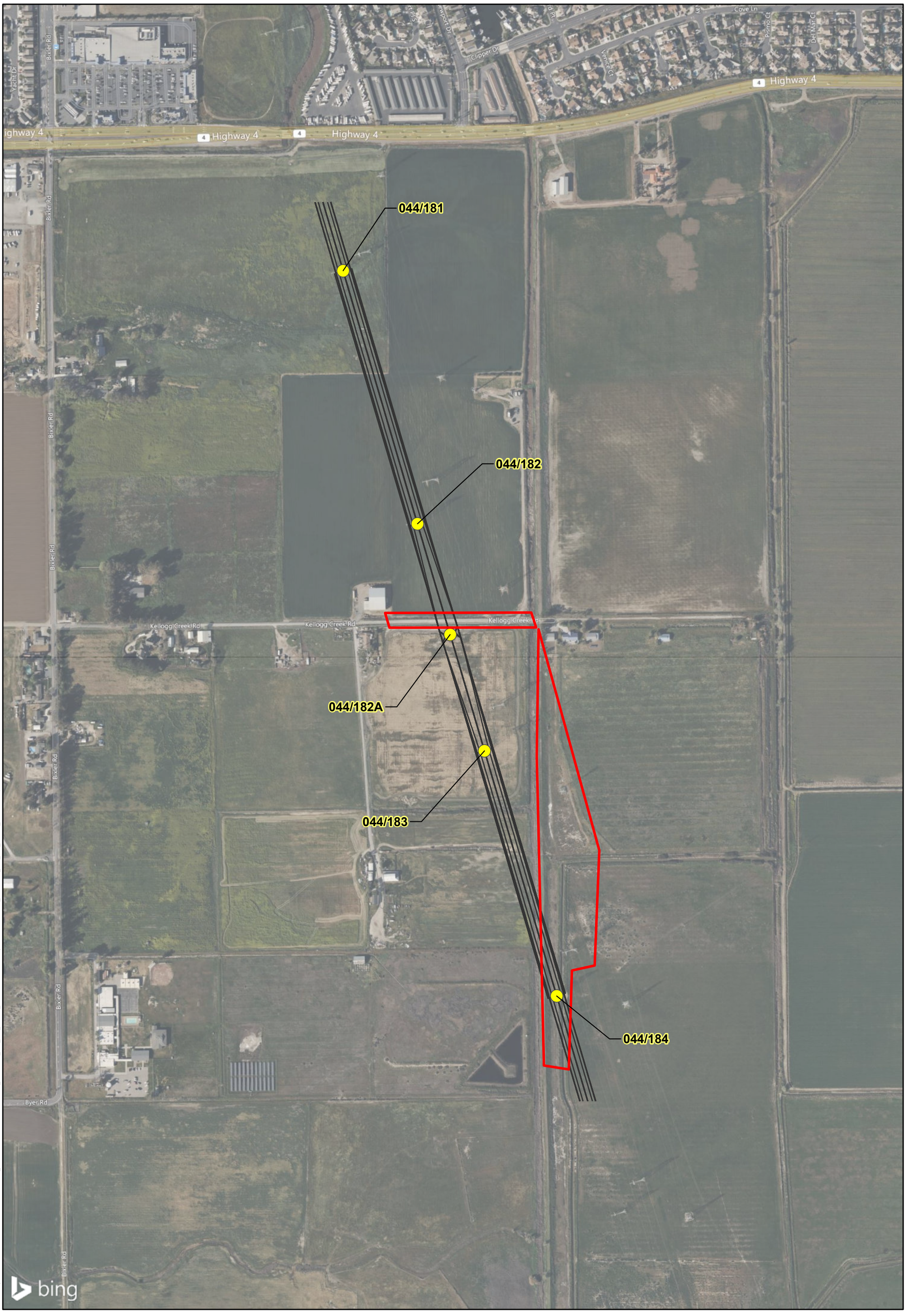
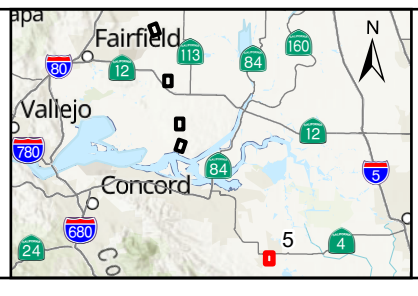


Survey Area
Tower Site
Study Line



Scale 1:6,000
1 inch = 500 feet

N

0 250 500 Feet

0 75 150 Meters

Figure 2: Study and Survey Areas
Page 5 of 5
Byron Site
Collinsville 500/230 Kilovolt Substation Project
Solano and Contra Costa County
California

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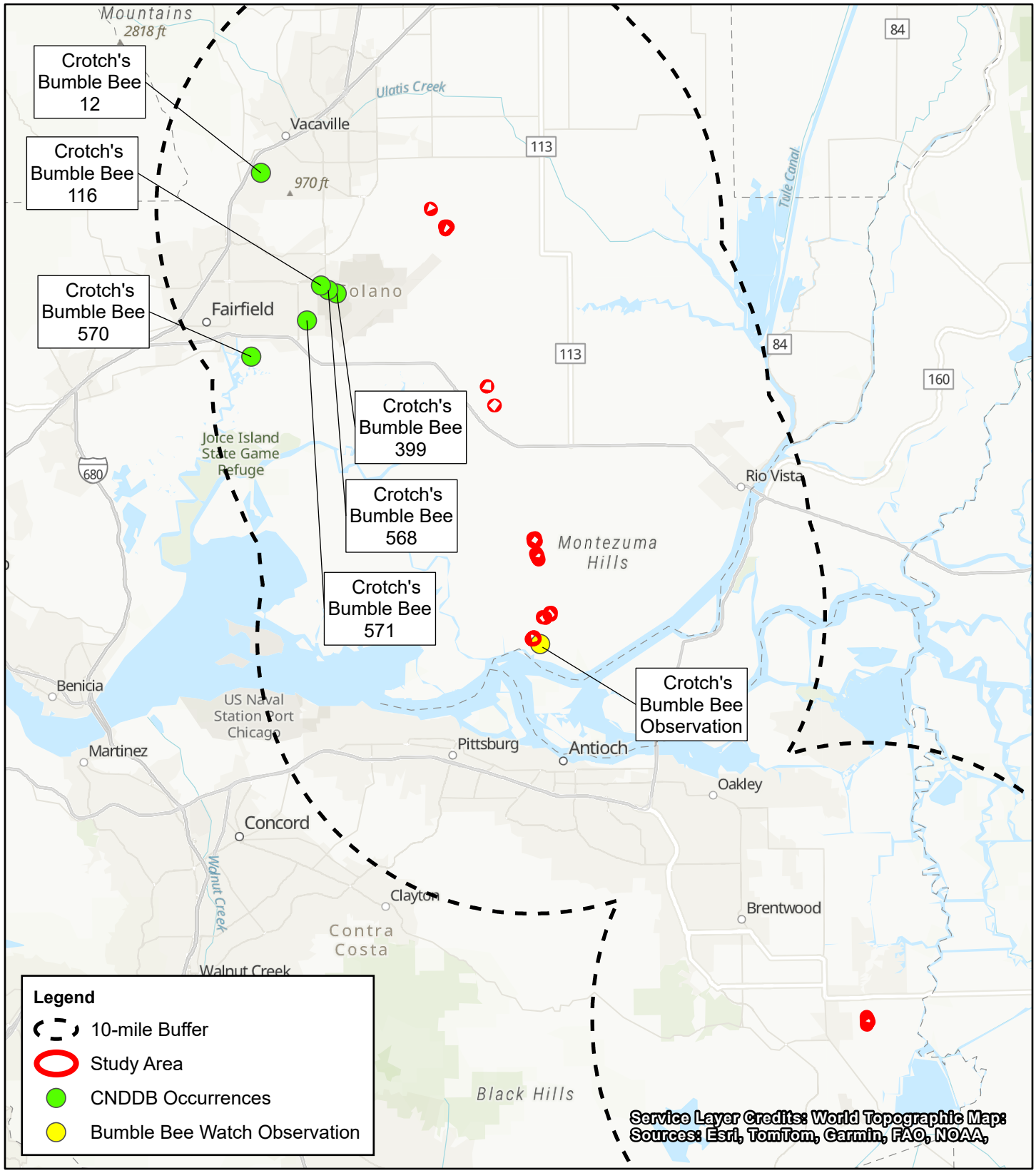

0 2.5 5 Miles

0 4 8 Kilometers

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Scale: 1:316,800
1 inch = 5 miles

Figure 3: Crotch's Bumble Bee CNDDB and Bumble Bee Watch Occurrences Collinsville 500/230 Kilovolt Substation Project
Solano and Contra Costa County
California

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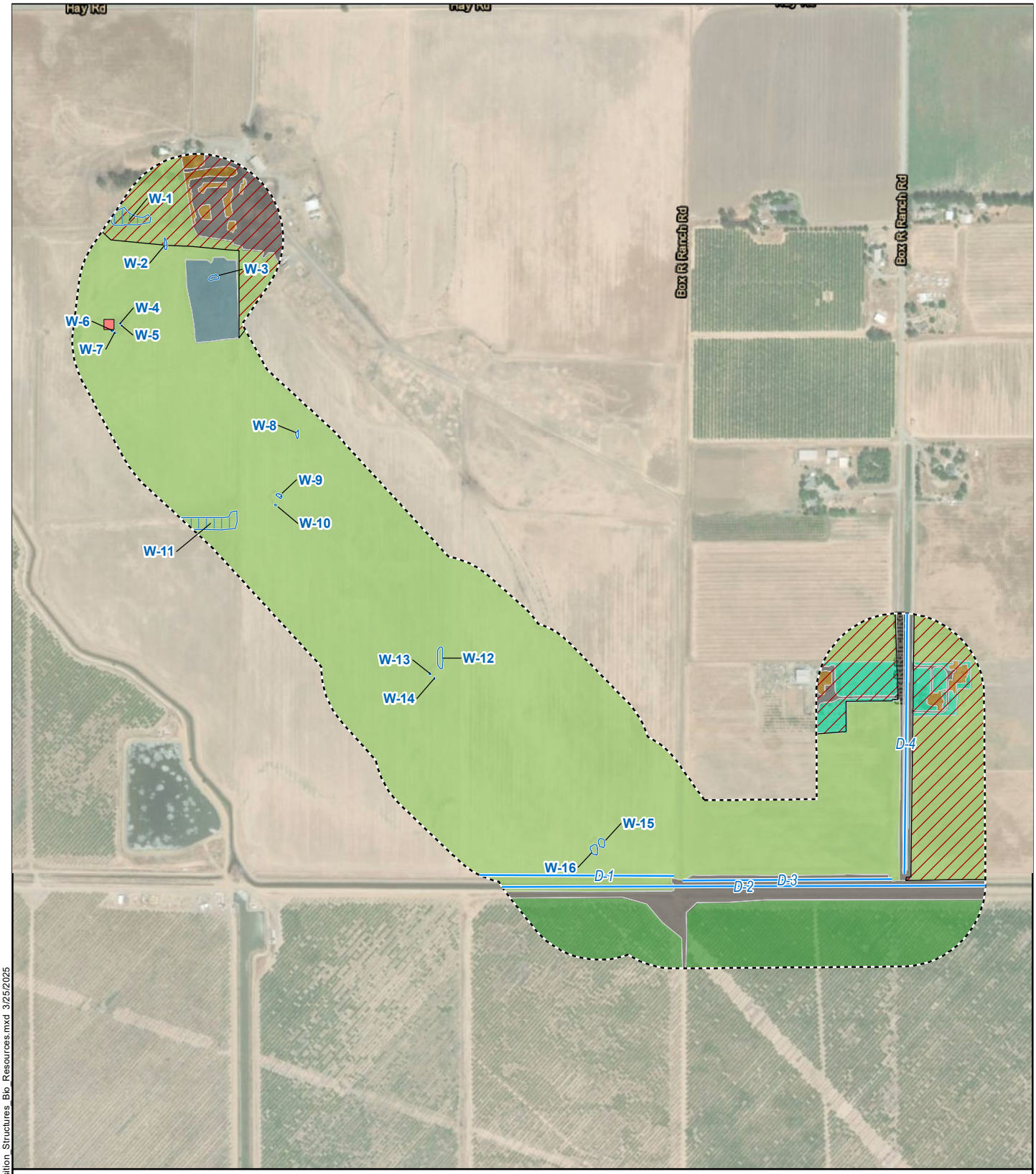
Appendix



Attachment A: Bio Resources Map Tower A

Collinsville 500/230 Kilovolt Substation Project

Vegetation Community

- Agriculture
- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- Developed
- Disturbed
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- Open Water
- Ornamental Vegetation
- Stick Nest
- Drainage
- Wetland
- Limited Access Area
- Survey Area

1:10,000

0 400 800 Feet

LS POWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

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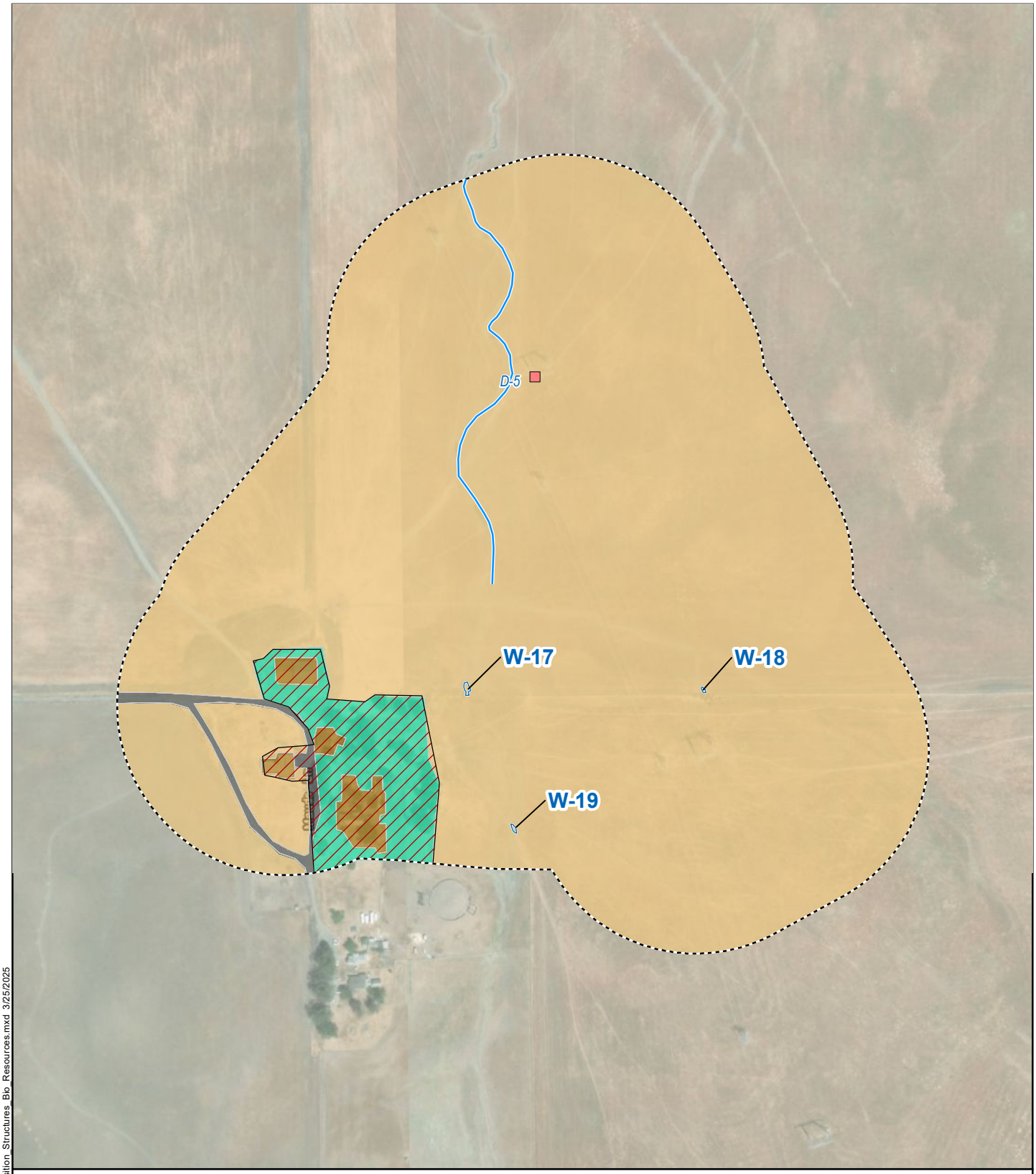

Attachment A: Bio Resources Map Tower B

Collinsville 500/230 Kilovolt Substation Project

Vegetation Community

- *Avena spp.* - *Bromus* spp. Herbaceous Semi-Natural Alliance
- Developed
- Disturbed
- Ornamental Vegetation

- Stick Nest
- Drainage
- Wetland
- Limited Access Area
- Survey Area

1:5,000

0 400 800 Feet

LS POWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

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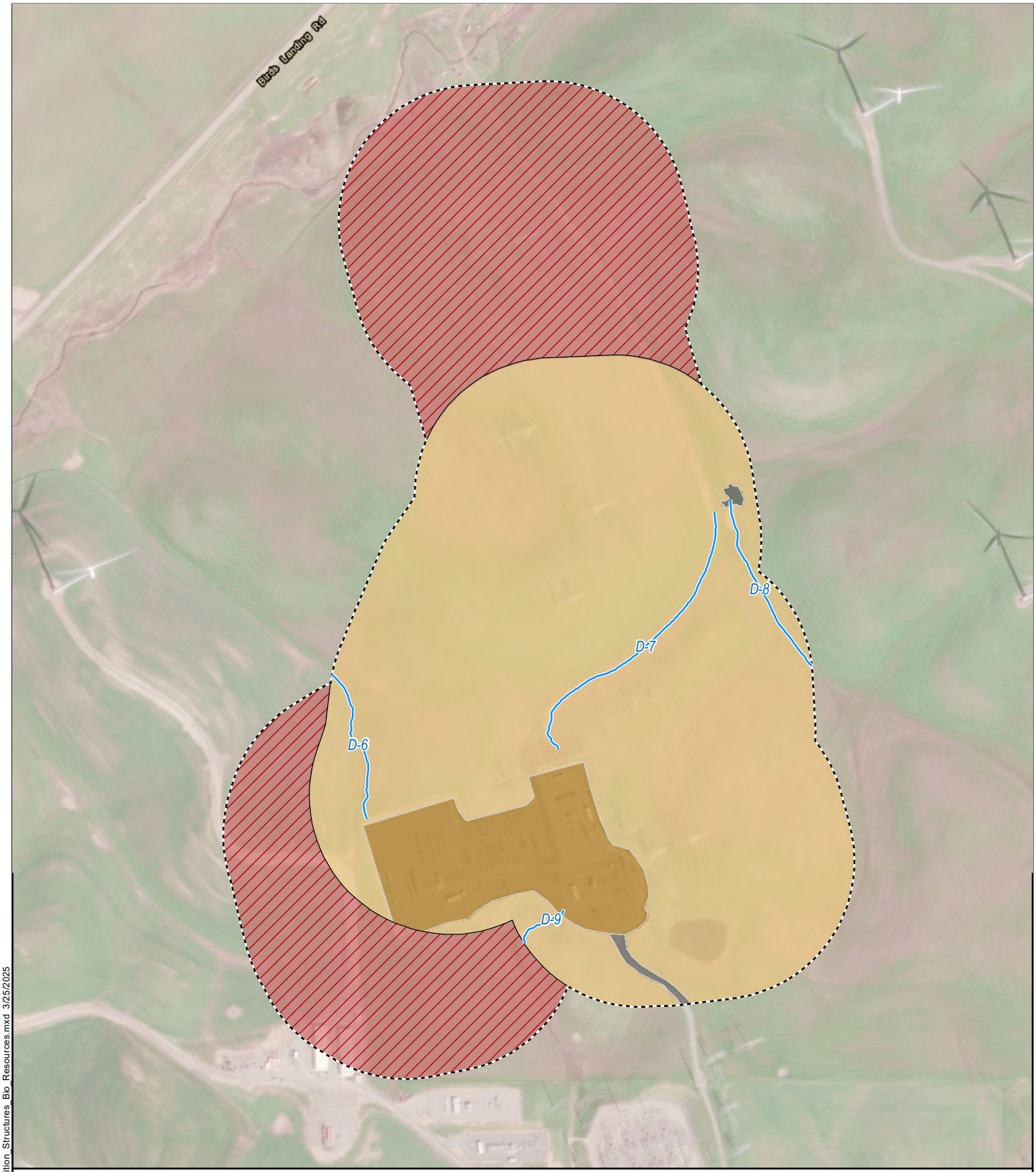

Attachment A: Bio Resources Map Tower C

Collinsville 500/230 Kilovolt Substation Project

Vegetation Community

- *Avena spp.* - *Bromus* spp. Herbaceous Semi-Natural Alliance
- Developed
- Disturbed
- Unsurveyed Area

- Drainage
- Limited Access Area
- Survey Area

1:6,000

0 400 800 Feet

LS POWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

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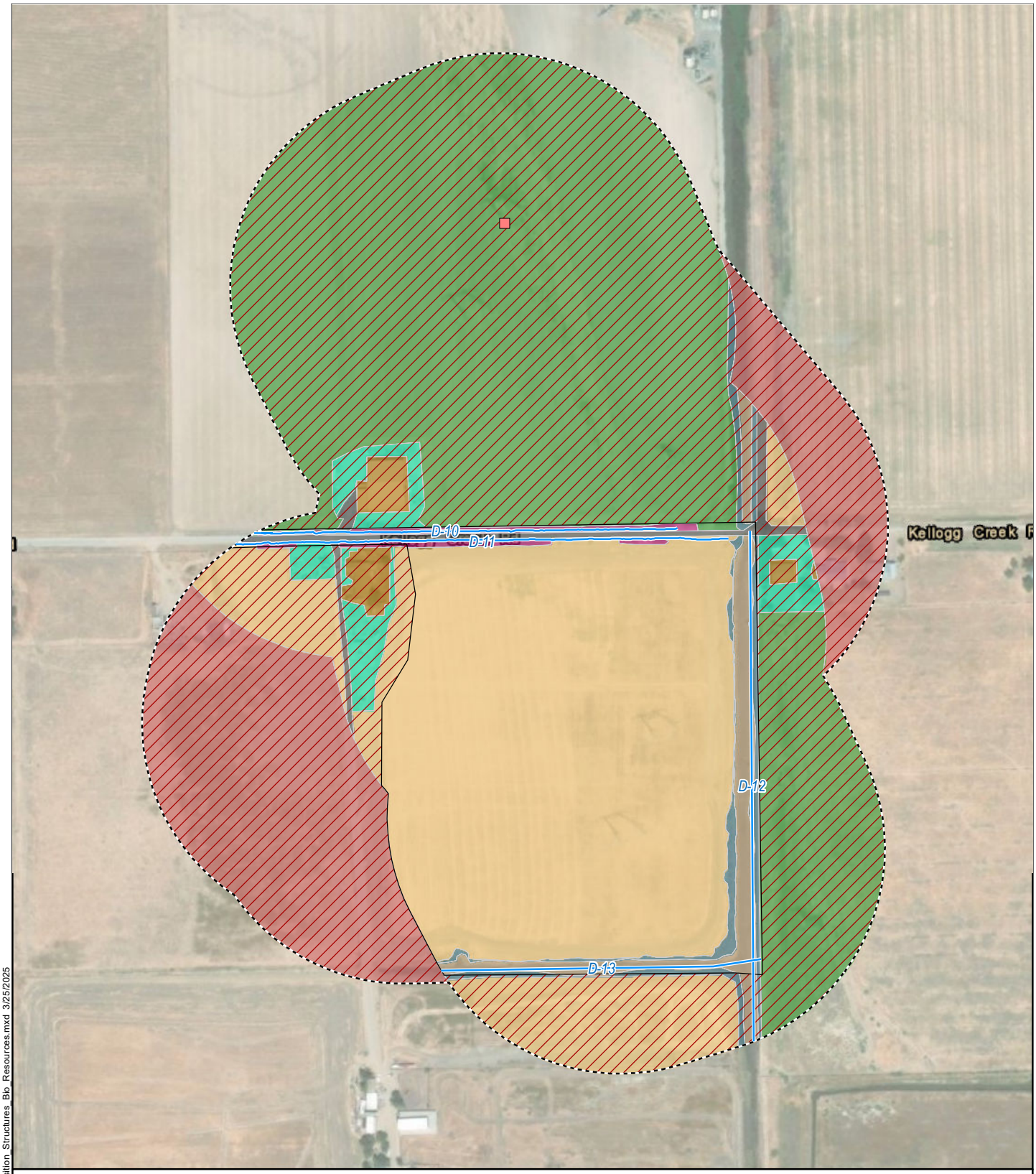

Attachment A: Bio Resources Map Tower D

Collinsville 500/230 Kilovolt Substation Project

Vegetation Community

- Agriculture
- *Allenrolfea occidentalis* Shrubland Alliance
- *Avena spp. - Bromus* spp. Herbaceous Semi-Natural Alliance
- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- Developed
- Disturbed
- Ornamental Vegetation
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- Unsurveyed
- Stick Nest
- Drainage
- Limited Access Area
- Survey Area

N

1:4,000

0 400 800 Feet

LS POWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

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APPENDIX F.5

NOAA NMFS Biological Assessment

INSIGNIA ENVIRONMENTAL

LS POWER GRID CALIFORNIA, LLC

COLLINSVILLE 500/230 KILOVOLT SUBSTATION PROJECT

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL MARINE FISHERIES SERVICE
BIOLOGICAL ASSESSMENT

JUNE 2025

PREPARED FOR:

LS POWER GRID CALIFORNIA

EXECUTIVE SUMMARY

On behalf of LS Power Grid California, LLC (LSPGC), the project proponent, Insignia Environmental (Insignia) has prepared this Biological Assessment (BA) in accordance with the requirements set forth under regulations for implementing Section 7 of the federal Endangered Species Act (ESA). This BA addresses species and critical habitat under the jurisdiction of the National Marine Fisheries Service. The purpose of this BA is to review the Collinsville 500/230 Kilovolt (kV) Substation Project (Proposed Project) in sufficient detail and provide information "concerning listed and proposed species and designated and proposed critical habitat that may be present in the action area" to support the evaluation of potential effects of a federal action on such species and habitat (50 Code of Federal Regulations Section 402.02). Portions of the Proposed Project are located within United States (U.S.) Army Corps of Engineers (USACE) Rivers and Harbors Appropriation Act (RHA) Section 10 and Clean Water Act Section 404 waters, and will cross a USACE civil works project (RHA Section 14 [33 U.S. Code Section 408]). LSPGC has requested that the USACE, San Francisco District issue a Section 10/404 permit and Section 408 approval for the Proposed Project.

The Proposed Project involves the construction of a new 500/230 kV substation in Collinsville, Solano County, California (the proposed LSPGC Collinsville Substation) and installation of a new approximately 6-mile-long 230 kV transmission line to connect the proposed LSPGC Collinsville Substation to Pacific Gas and Electric Company's (PG&E's) existing Pittsburg Substation in the City of Pittsburg, Contra Costa County, California. In addition, the Proposed Project triggers the need for modifications to existing transmission lines to interconnect the proposed LSPGC Collinsville Substation to PG&E's electrical system (PG&E's Interconnection Facilities), including PG&E's existing Pittsburg Substation. PG&E will make modifications and upgrades to its electric system through permits secured by PG&E and these components are not evaluated in this BA. The Proposed Project addresses multiple overloads on the existing 230 kV corridor between PG&E's Contra Costa and Newark substations and will provide additional supply from the Vaca Dixon-Tesla 500 kV Transmission Line into the northern Greater Bay Area (Bay Area) to increase reliability in the area, as well as support the advancement of additional energy generation in the Bay Area.

Based on a literature review, publicly available data, field investigations, the Proposed Project design, and the planned construction schedule, four ESA-listed species[1] under the jurisdiction of the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries) may occur within the action area. These species include the following:

- Chinook salmon (*Oncorhynchus tshawytscha*) Central Valley spring-run Evolutionarily Significant Unit (ESU),
- Chinook salmon Sacramento River winter-run ESU,
- North American green sturgeon (*Acipenser medirostris*) Southern Distinct Population Segment (DPS), and

[1] Under the federal ESA, "species" includes subspecies, or "Distinct Population Segments" (DPSs) for vertebrates only. Pacific salmon are listed as "Evolutionarily Significant Units" (ESUs), which are essentially equivalent to DPSs for the purpose of the ESA.

- Steelhead (*Oncorhynchus mykiss irideus*) California Central Valley DPS.

The Proposed Project will temporarily impact approximately 16.78 acres[2] (730,822 square feet) of the Sacramento-San Joaquin River Delta (Delta), which provides foraging and migration habitats for these fish species, including open water, sandy and soft bottom benthic habitat, and approximately 1.26 acres (54,885 square feet) of potential submerged aquatic vegetation (SAV).[3] The estuarine, open water habitat within the action area in the lower Delta is designated as critical habitat for Chinook salmon Sacramento River winter-run ESU, North American green sturgeon Southern DPS, and steelhead California Central Valley DPS. The Proposed Project will result in temporary impacts to approximately 16.78 acres (730,822 square feet) of designated critical habitat for Chinook salmon Sacramento River winter-run ESU, North American green sturgeon Southern DPS, and steelhead California Central Valley DPS. With the implementation of Avoidance and Minimization Measures (AMMs), this BA concludes that the federal (USACE) action to authorize construction and operation of the Proposed Project may affect, but is not likely to adversely affect the four federally listed fish species or NOAA Fisheries-designated critical habitat for the Chinook salmon Sacramento River winter-run ESU, North American green sturgeon Southern DPS, or steelhead California Central Valley DPS in the action area.

The Proposed Project will cause temporary impacts to approximately 16.78 acres (730,822 square feet) of Essential Fish Habitat (EFH) for the Coastal Pelagic Fishery Management Plan, Groundfish Fishery Management Plan, and Pacific Salmonids Fishery Management Plans under the Magnuson-Stevens Fishery Conservation and Management Act, but all areas are anticipated to recover within 1 year of disturbance. Adverse effects to EFH will be minimized with the implementation of the proposed AMMs. Therefore, the federal action to authorize construction and operation of the Proposed Project may affect EFH for coastal pelagic species, Pacific coast groundfish species, or Pacific salmonid species but effects will be minimized, mitigated, or otherwise offset by the AMMs for the Proposed Project.

[2] For each of the submarine cables, the temporary impacts to benthic/open water habitat were calculated by assuming each of the two hydroplow skis (each with a 3-foot-wide footprint) will temporarily impact benthic habitat as a result of hydroplow tracks, plus a 16-inch-wide cable furrow will be created during cable installation. In addition, temporary impacts along the northern shoreline include the nearshore trenching areas. Along the southern shoreline, the entire nearshore area within the boundaries of the proposed turbidity curtain was assumed to be temporarily impacted by submarine cable installation activities.

[3] Field surveys have not been conducted to verify the distribution and extent of SAV in the action area; SAV locations were approximated using side-scan sonar data, which was cross-referenced against bathymetric data, and aerial imagery.

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1 – INTRODUCTION

LS Power Grid California, LLC (LSPGC), a wholly owned subsidiary of LS Power that was established to develop, own, and operate electric transmission projects in California, is proposing the Collinsville 500/230 Kilovolt (kV) Substation Project (Proposed Project). Since it was founded in 1990, LS Power has developed, constructed, managed, and acquired more than 47,000 megawatts of competitive power generation and approximately 780 miles of transmission infrastructure across the United States.

The Proposed Project includes construction of the proposed LSPGC Collinsville Substation and installation of a new approximately 6-mile-long transmission line between the LSPGC Collinsville Substation and Pacific Gas and Electric Company's (PG&E's) existing Pittsburg Substation. The Proposed Project triggers the need for modifications to existing transmission lines to interconnect the proposed LSPGC Collinsville Substation to PG&E's electrical system (PG&E's Interconnection Facilities), including PG&E's existing Pittsburg Substation. PG&E will make modifications and upgrades to its electric system through permits secured by PG&E. The Proposed Project is located at the confluence of the Sacramento and San Joaquin rivers in the lower Sacramento-San Joaquin River Delta (Delta)[4] and in upland areas near the unincorporated community of Collinsville in Solano County and in the City of Pittsburg in Contra Costa County. An overview of the Proposed Project is provided in Figure 1: Project Overview Map and the details of the Proposed Project are described in Section 2 – Project Description.

Based on a literature review, publicly available data, field investigations, the Proposed Project design, and the planned construction schedule, LSPGC has determined that the Proposed Project may affect, but is not likely to adversely affect the following species:

- Chinook salmon (*Oncorhynchus tshawytscha*) Central Valley spring-run Evolutionarily Significant Unit (ESU),
- Chinook salmon Sacramento River winter-run ESU,
- North American green sturgeon (*Acipenser medirostris*) Southern Distinct Population Segment (DPS), and
- Steelhead (*Oncorhynchus mykiss irideus*) California Central Valley DPS.

Additionally, the Proposed Project may affect, but is not likely to adversely affect critical habitat designated by the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NOAA Fisheries) for the following species:

- Chinook salmon Sacramento River winter-run ESU,
- North American green sturgeon Southern DPS, and
- Steelhead California Central Valley DPS.

[4] Title 14, Section 1.71 of the California Code of Regulations defines the Delta as "all rivers, sloughs, canals, cuts, forebays, and flooded islands within the area south of Interstate 80 to its junction with Highway 50, and south of Highway 50 via the Pioneer Bridge to its junction with Highway 99, west of Highway 99, north of Interstate 580, 205, and Highway 120, and east of Interstate 680."

Construction of the Proposed Project may affect Essential Fish Habitat (EFH) for coastal pelagic species, Pacific coast groundfish species, and Pacific salmonid species designated in the Fishery Management Plans (FMPs) under the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), but effects will be minimized, mitigated, or otherwise offset by the Avoidance and Minimization Measures (AMMs) for the Proposed Project.

Portions of the Proposed Project are located within waters of the United States (U.S.) regulated by the United States Army Corps of Engineers (USACE) under Section 10 of the Rivers and Harbors Appropriation Act (RHA) and Section 404 of the Clean Water Act , and will cross a USACE civil works project (RHA Section 14 [33 U.S. Code Section 408]). LSPGC has requested that the USACE issue a Section 10/404 permit and Section 408 approval for the Proposed Project, which will require a federal action. LSPGC and Insignia Environmental (Insignia) have prepared this Biological Assessment (BA) in accordance with the requirements set forth under regulations implementing Section 7 of the federal Endangered Species Act (ESA). This BA addresses species and critical habitat under the jurisdiction of NOAA Fisheries. The purpose of this BA is to review the Proposed Project in sufficient detail and provide information "concerning listed and proposed species and designated and proposed critical habitat that may be present in the action area" to support the evaluation of potential effects of a federal action on such species and habitat (50 Code of Federal Regulations [CFR] Section 402.02). LSPGC is requesting that the USACE undertake the proposed federal action and initiate Section 7 consultation with NOAA Fisheries.

Additionally, LSPGC and Insignia have prepared a separate BA for the Proposed Project to address ESA-listed species and critical habitat managed by the U.S. Fish and Wildlife Service (USFWS), including the following:

- California Ridgway's rail (*Rallus obsoletus obsoletus*),
- California least tern (*Sternula antillarum browni*),
- delta smelt (*Hypomesus transpacificus*),
- longfin smelt (*Spirinchus thaleichthys*),
- northwestern pond turtle (*Actinemys marmorata*), and
- salt marsh harvest mouse (*Reithrodontomys raviventris*).

LSPGC is also requesting that the USACE initiate Section 7 consultation with the USFWS for these species.

The Magnuson-Stevens Act establishes a management system for national marine and estuarine fishery resources. This legislation requires all federal agencies to consult with NOAA Fisheries regarding all actions or proposed actions that are permitted, funded, or undertaken and that may adversely affect EFH. EFH is defined as waters and substrate necessary for fish to spawn, breed, feed, or grow to maturity, and is further defined within FMPs. The legislation states that migratory routes to and from anadromous fish spawning grounds should also be considered EFH. This BA includes information and details to evaluate effects to EFH under the Magnuson-Stevens Act.

Figure 1: Project Overview Map

2 – PROJECT DESCRIPTION

The proposed LSPGC Collinsville Substation will be located near the unincorporated community of Collinsville, which is in southeastern Solano County. The Proposed Project's purpose is to address multiple overloads on the 230 kV electric corridor between Contra Costa and Newark substations under normal and contingency conditions, and to provide additional supply from the Vaca Dixon-Tesla 500 kV Transmission Line into the northern Greater Bay Area (Bay Area), to increase reliability to the area and support the advancement of additional energy generation in the northern Bay Area (California Independent System Operator [CAISO] 2022).

The Proposed Project, an upgrade to the regional electric system, is necessary to provide safe and reliable electric service to customers in the Bay Area and adjacent areas and will be accomplished through the following components:

- Constructing the proposed LSPGC Collinsville Substation, a new 500/230 kV substation.
- Constructing a new approximately 6-mile-long, double-circuit 230 kV transmission line (the proposed LSPGC 230 kV Transmission Line) to connect PG&E's existing Pittsburg Substation to the proposed LSPGC Collinsville Substation.
- Installing an underground telecommunications path in the City of Pittsburg.

The Proposed Project triggers the need for other improvements to the regional electric grid that will be constructed, operated, and owned by PG&E. These PG&E upgrades are the interconnection of the existing PG&E 500 kV Vaca Dixon-Tesla Line and 12 kV Distribution Line and connections to and upgrades at PG&E's existing Pittsburg Substation. PG&E is responsible for obtaining the required permits for its scope of work, and PG&E's components are not evaluated in this BA.

2.0 LOCATION

The Proposed Project proposes development activities in Contra Costa, Sacramento, and Solano counties in California. As depicted in Figure 1: Project Overview Map, the proposed LSPGC Collinsville Substation will be located near the unincorporated community of Collinsville, which is in southeastern Solano County. The proposed LSPGC 230 kV Transmission Line will begin underground near PG&E's existing Pittsburg Substation in the City of Pittsburg in northern Contra Costa County, travel under the Delta, and continue in an overhead configuration in Solano County before connecting to the proposed LSPGC Collinsville Substation.

2.1 REGIONAL SETTING

The Proposed Project will be located in upland areas and within the waters of the western/lower Delta. The current land uses around the proposed LSPGC Collinsville Substation site include undeveloped areas (e.g., Suisun Marsh and the Delta), utility operations, residences, wind farms, and agricultural lands. The proposed substation site is also within the Collinsville-Montezuma Hills Wind Resource Area in Solano County, which is an area used primarily for energy facilities and farming (Sacramento Municipal Utility District [SMUD] 2023). The proposed LSPGC

Collinsville Substation site is on property owned by Flannery Associates, LLC, which recently purchased thousands of acres of land in Solano County (including many former SMUD properties in the Collinsville area). New rights-of-way (ROWs) will be acquired by LSPGC for the proposed transmission line, and land rights will be acquired by LSPGC for the proposed LSPGC Collinsville Substation. The area where the proposed transmission line intersects the northern shoreline of the Delta contains mostly what appears to be vegetated fill that was placed in former tidal marshes starting sometime between 1908 and 1953 (U.S. Geological Survey [USGS] 2024a, 2024b). Today, the areas along the northern shoreline of the Delta in the action area include tidal marshes, freshwater wetlands, upland vegetation communities, and some rip rap.

PG&E's existing Pittsburg Substation is surrounded by industrial land uses bordered by recreational areas, low- and medium-density residential areas, and commercial land uses. The southern shoreline of the Delta in the action area, near PG&E's existing Pittsburg Substation, includes mainly rip rap, bare ground, and developed areas.

The Delta is the eastern portion of the San Francisco Estuary (Estuary) which consists of the Delta, Suisun Bay, San Pablo Bay, and San Francisco Bay (Moyle 2002). The Estuary drains all the major rivers of the Central Valley and funnels them through the Delta to the Pacific Ocean. The Delta is a transition zone between saline waters within the San Francisco Bay and freshwater marshes that extend inland throughout much of the Central Valley. Historically, there have been many land modifications and water diversions from the Delta, and many of those continue today (WRA, Inc. [WRA] 2024). The Central Valley Project and the State Water Project facilities play a key role in water management in the Delta and the local ecology of the Delta. The open water areas of the action area are within a unique location of the Delta where water is managed by these water projects to achieve required outflow criteria to ensure that the below 2 parts per thousand [ppt] isohaline measured at 1 meter from the bottom of the channel is maintained near Collinsville, Chipps Island, and Port Chicago monitoring stations during specific times of year; which is necessary to maintain habitats and water quality in this transition zone. This measurement is known as "X2" and is often used as an indicator of habitat for various fish species and as the low-salinity zone. This transition zone is also an important area for anadromous fishes as they make their physiological adaptations from fresh to saltwater and as a migratory area to natal streams.

The open water areas of the action area are very active areas of the Estuary with two major federal navigation channels (Suisun Bay Channel and Sacramento Deep Water Ship Channel) that are dredged and maintained by the USACE; active shipping lanes to the Ports of Stockton and Sacramento; and a subtidal California State Lands Commission lease to Lind Marine, Martin Marietta Marine Operations, LLC, and Suisun Associates for active sand mining operations in Suisun Bay.

2.2 PROJECT COMPONENTS

As depicted in Attachment A: Detailed Route Map and summarized in Table 1: LSPGC Proposed Project Component Summary, the main LSPGC components of the Proposed Project include the following:

- Constructing the proposed LSPGC Collinsville Substation, a new 500/230 kV substation.
- Constructing the new approximately 6-mile-long, double-circuit LSPGC 230 kV Transmission Line to connect PG&E's existing Pittsburg Substation to the proposed LSPGC Collinsville Substation. The new transmission line is divided into the following three segments:
  - Underground Segment – This segment includes the installation of aboveground conductors between the point of interconnection at PG&E's existing Pittsburg Substation and two proposed riser structures on PG&E property in Pittsburg. At those riser structures, the segment will transition from an aboveground to underground configuration. Two underground duct banks, one approximately 1,100 linear feet and the other approximately 1,635 linear feet, will be installed between the riser structures and four new underground utility vaults constructed near the south shore of the Delta. Within the underground utility vaults, the proposed LSPGC 230 kV Underground Segment will transition to the proposed LSPGC 230 kV Submarine Segment.
  - Submarine Segment – This segment includes installing approximately four 4.5-mile-long submarine cables running in a southwest-to-northeast direction (the proposed LSPGC 230 kV Submarine Segment). Open trenching will be used at the southern shore of the Delta to install the cables between the four utility vaults and the mean high water (MHW) line. Open trenching may continue for approximately 30 feet into the Delta, as necessary, to clear any obstructions. Within the Delta, the cables will be installed 6 to 15 feet below the sediment surface using a hydroplow. The remainder of the proposed LSPGC 230 kV Submarine Segment, between the northern shoreline of the Delta and two proposed onshore riser structures (a distance of approximately 250 feet), will be installed using the open trench method of construction.
  - Overhead Segment – This segment includes constructing an overhead transmission line (the proposed LSPGC 230 kV Overhead Segment) measuring 1 to 2 miles long between the two new riser structures (constructed near the north shore of the Delta) and the proposed LSPGC Collinsville Substation.
- Installing a new fiber optic path between existing fiber in the City of Pittsburg and the proposed LSPGC Collinsville Substation. An underground telecommunications line (the proposed LSPGC Telecommunications Line) will be installed in the City of Pittsburg and connect to a new fiber hub at PG&E's existing Pittsburg Substation.

Table 1: LSPGC Proposed Project Component Summary

Proposed Project Component	Approximate Size/Length
LSPGC Collinsville Substation	11.2 acres
LSPGC 230 kV Transmission Line	6.1 miles
LSPGC Telecommunications Line	1.2 miles

2.3 ACCESS

LSPGC Proposed Project components within the action area will be accessed using existing paved and unpaved roads, new temporary and permanent access roads, and by boats and barges.

2.3.0 New and Existing Access Roads

As shown in Attachment A: Detailed Route Map, work areas located to the north of the Delta will primarily be accessed using Stratton Lane, which is a county-maintained and owned road. Some temporary access roads will need to be constructed for access to construction areas in the upland areas. Temporary access roads will be established using timber mats for access road alignments or work areas that pass through existing wetlands. All temporary access roads will be restored to pre-construction conditions following construction of the Proposed Project. Proposed work areas south of the Delta will be accessed using existing roads in the City of Pittsburg and through PG&E's existing Pittsburg Substation.

2.3.1 Vessels and Ports

Boats will be used to deliver crews and equipment to portions of the Proposed Project in open water. In addition, boats will be used to deliver and place barges that will be used during construction, including maneuvering the cable-laying barge during cable installation. Boats will be launched from boat ramps located within the existing docks or marinas near the Proposed Project (i.e., the Pittsburg Marina, Manson's Dock in the City of Richmond, and/or the Amports Dock in the City of Benicia). It is anticipated that most of the day-to-day marine activities, including crew transfer and launching and berthing of smaller vessels, will be conducted from the Pittsburg Marina. The Amports Dock may be used to load the cabling onto the cable-laying barge, and the Manson waterfront facility may be used for pre-construction outfitting and staging activities. The Proposed Project does not include construction of a new port, marina, or vessel-launching facility, or improvement to such a waterfront facility.

2.3.2 Barges

Barges of varying sizes will be used to deliver construction materials and equipment and to support the installation of the proposed submarine cables. The barges required for cable installation will be moved into place using boats launched from the ports described in Section 2.3.1 Vessels and Ports. Some barges will operate as staging areas during cable installation because construction materials and equipment will be stored on the barges. Approximately 24-inch-diameter support spuds may be embedded into the sediment in shallow waters on the south shore and north shore landings to temporarily anchor the barges while the submarine cables are installed across the shorelines, or where the cable-laying barge needs to hold in a location to

accommodate vessel traffic. Once each submarine cable is installed across the northern shoreline of the Delta, the barges will be moved to the reloading area at the southern shoreline and will be prepared for installation of the next submarine cable.

2.4 CONSTRUCTION METHODS

This section provides details on the construction methods, workforce, and equipment anticipated to be used for the construction of the Proposed Project components located in the Delta and nearshore areas. Construction will be considered complete once all electric system components are installed, the required testing has been completed, the Proposed Project components are fully in service, and cleanup has been completed.

2.4.0 Construction Methods by Project Component

LSPGC 230 kV Underground Segment

Construction of the proposed LSPGC 230 kV Underground Segment will include trenching near the southern shore of the Delta, installation of two duct banks, and four utility vaults to install underground cables that transition from overhead lines at two new riser structures located adjacent to PG&E's existing Pittsburg Substation.

Duct Banks and Utility Vaults

The proposed LSPGC 230 kV Underground Segment includes installation of two duct banks and four utility vaults underground near the shoreline to transition the underground electric cables to the proposed LSPGC 230 kV Submarine Segment. The two duct banks will be installed between PG&E's existing Pittsburg Substation fence line and the utility vaults using a long-reach excavator and other earth-moving equipment to establish trenches 3 to 6 feet deep and 7 to 10 feet wide. As the trenches for the underground duct banks are excavated, polyvinyl chloride cable conduits (separated by spacers) will be installed to house the underground cables. Steel plating will be placed over or fencing installed around open trenches, where appropriate, and across those areas that are not under active construction. The duct banks will be routed to four utility vaults, each measuring approximately 10 feet wide, 40 feet long, and 8 feet deep. Excavated soil will be used to backfill the trenches. Only the excavated materials deemed suitable may be utilized for backfill. Any excess material will be either reused on-site or disposed of at an appropriate licensed facility. Sheet piles may be installed on land to stabilize the soils around the utility vaults using either a vibratory or impact hammer. These sheet piles would be removed following construction.

LSPGC 230 kV Submarine Segment

Installation of the proposed LSPGC 230 kV Submarine Segment requires trenching activities at the southern and northern shorelines of the Delta and use of a hydroplow to install the cables beneath the riverbed of the Delta.

Pre-Installation Grapnel Runs

Prior to the installation of each submarine cable, a grapnel run will be conducted along each of the planned cable routes. This operation involves dragging a train of hooks across the bottom of the waterway along the planned cable route to clear debris, fishing nets, trash, and anything else

that may either damage the cable or impede burial. Any obstructions encountered will be either relocated to a nearby position on the riverbed or removed from the riverbed and disposed of at an approved upload disposal site.

Trenching – South Shore

The four submarine cables will be installed between the utility vaults and the MHW line for 70 to 80 feet in trenches dug by a long-reach excavator, which will be positioned on land and will pull the hydroplow over each trench. Along each submarine cable path, the trench may need to extend approximately 30 feet north into the Delta to clear each cable path of any buried/submerged obstructions and achieve the target burial depth. Each trench will be approximately 6 feet deep below the existing grade and 4 to 23 feet wide. The width of each trench will depend on soil/sediment stability and whether it is feasible to use trench boxes. Cable installation at the shoreline will be completed in stages in which one trench will be opened, a cable will be placed within the trench, the hydroplow will be towed over the cable, and then the trench will be backfilled before starting work on the next trench for the subsequent cable. Limited material from the trench excavations located landward of the mean high water line may be sidecast. Soil/sediment removed during trenching that is not sidecast will be temporarily stored in a stockpile located in upland areas. It is anticipated that the majority of the excavated soil/sediment will be used to backfill the trenches. Only the excavated materials deemed suitable may be utilized for backfill. Any excess material will be either reused on-site or disposed of at an appropriate licensed facility. It is expected that each trench will be opened and returned to pre-construction contours within 6 days, including 3 days for excavation work and cable installation and 3 days for backfill activities.

A turbidity curtain will be installed in the Delta to surround the work area at the south shore during cable installation activities, as operationally feasible. The turbidity curtain will enclose approximately 0.3 acre of open water. The purpose of the turbidity curtain is to contain the temporary turbidity plume within the work area during cable installation activities.

Hydroplow

The proposed LSPGC 230 kV Submarine Segment will be installed beneath the bed of the Delta using a hydroplow that uses a process known as “simultaneous-lay & burial,” in which the hydroplow will be towed along the bay floor and create a trench/furrow, and the submarine cable length will be spooled off the barge and laid into the furrow simultaneously. The hydroplow has a jetting blade that will fluidize the sediment in front of the cable by pumping river water into hydraulic pressure nozzles on the front of the blade to fluidize the riverbed sediments as the hydroplow is towed. It is estimated that the operation of the hydroplow will typically require 6,000 to 8,000 gallons of river water per minute (13.4 to 17.8 cubic feet per second, respectively), which will be a typical daily volume of between 8,640,000 and 11,520,000 gallons in a 24-hour period during the cable installation. The hydroplow process will create a furrow that the cable settles into, embedding the cable in the sediment to a target burial depth of 6 to 15 feet below the river bottom. The angle of the hydroplow blade can be adjusted to achieve the target burial depth of the cable. The pressure nozzles on the blade create a direct forward and outward (left or right) “swept flow” force inside the furrow that reduces the resistance and allows the hydroplow to be easily towed. The hydroplow’s hydrodynamic forces do not work to produce a substantial upward movement of sediment into the water column, and most of the fluidized

sediment (approximately 75 percent) will settle back into the cable furrow. Sediment that is displaced from the cable furrow (approximately 25 percent) will create a temporary, localized plume of increased suspended sediment that is predicted to dissipate within 24 hours (ERM 2024). It is typical for the hydroplow to leave small, shallow impressions on the riverbed, including impressions from the tracks and an approximately 16-inch-wide furrow above the embedded cable. The hydroplow tracks and associated cable furrow typically disappear after a few tidal cycles due to natural sediment dispersion. Cables will be installed beneath the Delta consecutively from the southern shoreline to the northern shoreline. The same method will be repeated to install each of the four submarine cables. This cable-laying method causes considerably less benthic disturbance than traditional mechanical trenching methods.

It is anticipated that construction of the proposed LSPGC 230 kV Submarine Segment will require approximately 25 crew members and support from the following vessels:

- Anchor handling tug boat (two to three)
- Auxiliary crane barge (one to two)
- Materials barge (one to two)
- Crew boat (one to two)
- Survey boat (one to two)
- Work boat (one to two)

Trenching – North Shore

The four submarine cables will be installed across the northern shoreline of the Delta using the hydroplow. As explained above in the Trenching – South Shore section, trenching is also required at the north shore to achieve the target burial depth. Along each submarine cable path, a trench will be excavated from the shoreline to a point approximately 50 feet waterward of the MHW line to clear each cable path of any buried/submerged obstructions and achieve the target burial depth. Landward of the shoreline, a long-reach excavator will dig four trenches on land, each approximately 270 linear feet. Limited material from the trench excavations may be temporarily sidecast into the Delta. It is anticipated that the majority of the excavated soil/sediment will be used to backfill the trenches. Backfilling will occur as previously described in the Trenching – South Shore section. It is expected that each trench will be opened and returned to pre-construction contours within 6 days, which includes 3 days for excavation work and cable installation and 3 days for backfill activities.

A turbidity curtain will be installed in the Delta to surround the work area at the north shore during cable installation activities, as operationally feasible. The turbidity curtain will enclose approximately 0.3 acre of open water. The purpose of the turbidity curtain is to contain the temporary turbidity plume within the work area during cable installation activities.

LSPGC 230 kV Overhead Segment

Construction of the proposed LSPGC 230 kV Overhead Segment will require the installation of poles using a direct-bury method and tubular steel poles (TSPs) on concrete pier foundations before the electric conductors are strung between the poles; these activities are further described in the following sections. Stratton Lane will serve as the primary access point for construction of the proposed LSPGC Collinsville Substation and the proposed LSPGC 230 kV Overhead

Segment. Where existing access is not available and surface conditions are suitable, approximately 16-foot-wide temporary access roads will be established by approximately 12 crew members to access construction areas. Prior to use, vegetation will be removed and the area may be lightly bladed to establish a safe path for construction equipment and vehicles.

Direct-buried poles ranging in height from 70 to 150 feet will be installed along the proposed LSPGC 230 kV Overhead Segment to an embedment depth of 15 to 25 feet. TSPs ranging in height from 70 to 150 feet will be installed on a concrete pier to an embedment depth of 20 to 50 feet. Pole installation will require approximately 12 crew members. Each pole will require a hole to be excavated using an auger, backhoe, foam, or hydraulic or pneumatic equipment (e.g., jackhammers and drills). In some locations of direct-bury poles, steel casing may be placed to stabilize the excavation walls prior to installation of the pole, and concrete-pier foundations may require steel rebar cages prior to pouring concrete. For poles requiring concrete-pier foundations, the hole will be backfilled with concrete following excavation. The base will be secured by backfilling with the excavated material, gravel, controlled low-strength material, or concrete. Following excavation of the pole hole or the curing of concrete, the pole will then be installed with a crane or a line truck with an attached boom.

Conductor installation activities will occur at pulling sites and structure work areas and will require approximately 30 crew members. Pull sites along the proposed LSPGC 230 kV Overhead Segment will be approximately 550 feet long and 120 feet wide and spaced approximately 2,000 feet apart. Using a bucket truck, a lightweight sock line will be threaded through wire rollers attached to each structure and secured. The sock line will be used to pull in the conductor pulling rope and/or cable that is attached to the conductor. The new conductor will be installed by utilizing conductor tensioning equipment at the pulling site and sagged to proper tension and dead-ended to structures. After the conductor is dead-ended, the conductors will be secured to all tangent structures in a process called “clipping in.”

2.4.1 Work Areas and Staging Areas

Work Areas

Construction and installation of the Proposed Project components—including the proposed LSPGC Collinsville Substation, LSPGC 230 kV Underground Segment, LSPGC 230 kV Submarine Segment, and LSPGC 230 kV Overhead Segment—will result in temporary and permanent impacts to terrestrial habitats and temporary impacts to open water habitats. Most of the work areas (i.e., areas for electric facilities, guard stations, and pulling sites) are temporary, with the exception of the permanent Proposed Project components that will be installed. Work areas are depicted in Attachment A: Detailed Route Map, and the dimensions are provided in Table 2: Work Area Disturbance. Vegetation removal and/or clearing, grading, and excavation may be required in these areas. The work area at the south shore of the Delta may require trenching activities, and the work area at the north shore will require trenching. Some portions of the work areas north of the Delta may require the placement of temporary timber matting during construction if the work areas have saturated soils. Following construction, temporary work areas will be returned to pre-construction conditions.

Table 2: Work Area Disturbance

Disturbance Area Type	Position of the Activity	Disturbance Type	Typical Dimensions	Approximate Quantity	Approximate Disturbance Area (acres)
Temporary Access Road	On Land	Temporary	16 feet wide	2	0.3
Structure Work Area (LSPGC 230 kV Overhead Segment)	On Land	Temporary	120 by 200 feet	2	1.4
	On Land	Permanent	20-foot-diameter (TSP and Riser Pole)	3	<0.1
Pulling Site (LSPGC 230 kV Overhead Segment)	On Land	Temporary	600 feet by 140 feet	1	1.0
North Shore Trenching Work Area	On Land, at shoreline, and in Delta	Temporary	Irregular dimensions	1	1.2
Hydroplow Tracks and Cable Furrow (LSPGC 230 kV Submarine Segment)	Delta	Temporary	6 feet wide (two skis) by 4.5 miles (Hydroplow Tracks) 1.3 feet wide by 4.5 miles (Cable Furrow)	4	16.4
South Shore Trenching Work Area	On Land, at shoreline, and possibly in Delta	Temporary	Irregular dimensions	1	0.2
South Shore Utility Vaults Work Area	On Land	Temporary	Irregular dimensions	1	1.0
South Shore Utility Vaults	On Land	Permanent	42 feet by 12 feet	4	<0.1
Underground Duct Bank Work Area	On Land	Temporary	480 feet by 50 feet	1	0.4

Notes:

- The South Shore Trenching Work Area includes the area enclosed by the temporary turbidity curtain.
- All salvaged topsoil will be stored on site in the immediate vicinity of temporary disturbance areas, at a nearby approved work area, or at a staging area. Exact stockpile locations have not been identified as geotechnical investigations have not been completed and quantities of stockpile salvage are unknown.
- The estimated disturbance areas include any required excavation limits.
- The reported disturbance area removes overlap between work areas and trenching.

Staging Area Locations

Construction of the Proposed Project will require the establishment of temporary staging areas for vehicle and equipment parking, as well as materials storage. Preparing these staging areas will require vegetation clearing, topsoil salvage, grubbing, and limited grading prior to use. The planned staging areas are depicted in Attachment A: Detailed Route Map. It is anticipated that approximately five staging areas will be used to support construction of the Proposed Project; three staging areas will be located in the Collinsville area in Solano County to support the Proposed Project components located north of the Delta, and two staging areas will be located near PG&E's existing Pittsburg Substation to support the Proposed Project components south of the Delta. The staging areas will be located in disturbed upland areas, primarily within grasslands, bare ground, developed areas, dirt roads, and/or road shoulders. Temporary perimeter and/or security fencing with gates will be installed at the staging areas as appropriate. The type and extent of fencing will be adjusted at each staging area to match the planned activities and storage requirements. The staging areas will be connected to access roads via a temporary driveway or existing access roads.

For the marine construction activities associated with the installation of the proposed LSPGC 230 kV Submarine Segment, vehicles and equipment will either be staged at one of the five upland staging areas, at the marina/dock (e.g., the Pittsburg Marina or Manson's Dock in the City of Richmond) from which the vessels and/or barges are operating, or from facilities being used for cable offloading (e.g., the Amports Dock in the City of Benicia). Marine construction crews will meet at the marina or dock at the beginning of each shift to park their vehicles. All construction equipment and vehicles will be parked within the staging area while inactive and at the completion of each workday, where and when practical. Temporary lighting may be installed as a security measure at the staging areas.

No habitat for ESA-listed fish species or EFH for coastal pelagic species, Pacific coast groundfish species, and Pacific salmonid species covered in the FMPs exists within any of the proposed terrestrial staging areas; therefore, terrestrial staging areas will not be discussed further in this BA.

2.4.2 Construction Schedule

Based on preliminary planning, it is anticipated that all components of the Proposed Project will be installed during a single phase of construction. On-land construction within the action area is anticipated to begin in mid 2027, and in-river construction is anticipated to begin in mid-2027. Construction within the action area will take approximately 6 months to complete. Submarine cable installation is anticipated to take up to 3 months. In-water work will be restricted to between July 1 and November 30 to protect listed fish species. Land-based construction will occur year-round or as authorized by permits and authorizations. Per the CAISO technical specifications, the Proposed Project is required to be energized by June 1, 2028.

2.4.3 Operation and Maintenance

Terrestrial Components

Routine maintenance of the proposed LSPGC 230 kV Underground Segment and LSPGC 230 kV Overhead Segment is expected to require approximately one trip per year by crews composed of

one to four people. Annual comprehensive checks and maintenance will be performed by LSPGC maintenance personnel or qualified contractors. Should structures require direct access during maintenance, access will occur consistently with easement access rights and in coordination with the landowner. In addition, a vegetation management program will be implemented to trim and remove flammable vegetation. One crew member typically conducts this work using mechanical equipment (e.g., weed trimmers, rakes, shovels, and leaf blowers). State-approved herbicides may also be applied to treat bare ground areas, as needed, during operations and maintenance (O&M) activities. Pesticides will not be used during O&M activities. Typical ROWs will be 100 to 230 feet for the proposed LSPGC 230 kV Overhead Segment.

LSPGC 230 kV Submarine Segment

The proposed LSPGC 230 kV Submarine Segment cables will be buried within the sediment in the Delta at depths that should eliminate the need for O&M activities after construction. Therefore, no planned maintenance of the proposed LSPGC 230 kV Submarine Segment is included in the Proposed Project. Should any portion of the cable become defective, a replacement cable segment would be spliced to repair it, and the defective portion would be abandoned in place. Any required maintenance or repair activities conducted on the LSPGC 230 kV Submarine Segment would involve similar methods and impacts as those associated with initial construction, and any such work that would involve a regulated activity in waters of the U.S. would be conducted in accordance with applicable permit conditions, with advance notice to the applicable regulatory agencies as required.

2.5 AVOIDANCE AND MINIMIZATION MEASURES

LSPGC has developed general and species-specific applicant-proposed Avoidance and Minimization Measures (AMMs) to minimize or reduce the potential impacts to federally listed species and their habitats that are located within the action area. These AMMs are described in Table 3: Avoidance and Minimization Measures.

3 – ACTION AREA

The “action area” is defined in the implementing regulations of Section 7(a)(2) of the federal ESA as “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action” (50 CFR Section 402.02). Further, the effects of the action are considered “all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action but that are not part of the action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action.” Such effects may include the physical, chemical, and/or biological effects of considerable likelihood (USFWS and NOAA Fisheries 1998 and 50 CFR Section 402.02).

Proposed Project construction activities under USACE jurisdiction may affect federally listed species and critical habitat. Proposed Project O&M activities will be conducted within terrestrial ROWs, but no O&M activities are anticipated in the Estuary/Delta. For the purposes of this BA,

the action area includes areas on land and within open water areas. The terrestrial portion of the action area north of the Delta is defined as any habitats that fall within a 400-foot-wide buffer around the LSPGC 230 kV Transmission Line and up to Stratton Lane. The terrestrial portion of the action area south of the Delta is defined as the Proposed Project footprint, staging areas, and work areas that occur within 400 feet of the southern shoreline plus a 20-foot-wide buffer around these Project components to account for potential effects of the action on federally listed species.

The action area also includes open water of the Delta. To account for potential effects of the action that could occur to federally listed fish species in open water habitats (e.g., hydroacoustic disturbance, turbidity, and unanticipated spills), the action area in open water habitats includes a 1,000-foot-wide buffer on the proposed submarine cable corridor. The 1,000-foot-wide buffer is a similar distance to some visible plumes that have been observed from clamshell dredging in San Francisco Bay (USACE 2015). However, hydroplow activities will have less disturbance than typical clamshell dredging because the hydroplow does not require the sediment to be lifted through the water column and there is no associated spillage of sediment during transfer to a barge. Because the effects of the action resulting from turbidity and hydroacoustic disturbance are not localized, the 1,000-foot buffer was established on either side of the cable corridor to account for the attenuation radius of noise within estuaries and the increased turbidity and sedimentation resulting from hydroplow operations during construction.

The action area is approximately 1,265 acres (1.97 square miles), with the open water portion accounting for approximately 1,227 acres (1.92 square miles). Figure 1: Project Overview Map depicts an overview of the action area and the Proposed Project location.

4 – CONSULTATION HISTORY

No Section 7 consultation with NOAA Fisheries has occurred for the federal action to date; however, because the Proposed Project is located within Section 10 waters, Section 404 waters, and crosses a Section 408 USACE civil works project (which are all regulated by the USACE), LSPCG is requesting that the USACE initiate Section 7 consultation with NOAA Fisheries for the federal action.

LSPGC introduced the Proposed Project during a pre-application interagency meeting attended by the USACE, NOAA Fisheries, and other agencies on June 8, 2023. During that interagency meeting, NOAA Fisheries staff advised that submarine cable installation should occur during a work window of June 15 to November 30 to avoid impacts to federally listed salmonids.

5 – SPECIES AND CRITICAL HABITAT CONSIDERED

5.0 METHODOLOGY

The methodology for this BA is applicable to federally listed species managed by NOAA Fisheries.

Table 3: Avoidance and Minimization Measures

Measure	Effects to be Avoided or Minimized	Applicable Species
General		
NOAABA-AMM-01: Worker's Environmental Awareness Program (WEAP) Training. All workers on the Proposed Project site will be required to attend a WEAP training. Training will inform all construction personnel of the resource protection and avoidance measures, as well as procedures to be followed upon the discovery of environmental resources. Additionally, the WEAP will train all construction personnel on hazardous materials management, hazardous wastes and stained or odiferous soils identification, and applicable regulations. The WEAP training will include, at a minimum, the following topics so crews can understand their obligations: • Environmentally sensitive area boundaries, • Housekeeping (i.e., trash and equipment cleaning), • Safety, • Work stoppage, • Communication protocol, and • Consequences of non-compliance.	• Exposure to potential spills or release of contaminated sediment • Incidental encroachment into sensitive, regulated areas	• Chinook salmon Central Valley spring-run ESU • Chinook salmon Sacramento River winter-run ESU • North American green sturgeon Southern DPS • Steelhead California Central Valley DPS
NOAABA-AMM-02: Staging Area Maintenance and Restoration. The Proposed Project work areas will be maintained in a clean and orderly state. Temporary nighttime lighting will be directed away from residential areas and have shields to prevent light spillover effects. Upon completion of Proposed Project construction, staging and temporary work areas will be returned to pre-Proposed Project conditions, including regrading of the site and revegetation or repaving of disturbed areas to match pre-existing contours and conditions.	• Exposure to potential spills or release of contaminated sediment • Habitat disturbance and degradation	• Chinook salmon Central Valley spring-run ESU • Chinook salmon Sacramento River winter-run ESU • North American green sturgeon Southern DPS • Steelhead California Central Valley DPS
NOAABA-AMM-03: Dust Control. Measures to control fugitive dust emissions will be implemented as needed during construction. These measures will be included in a Fugitive Dust Control Plan. These measures will include, but may not be limited to the following: • Surfaces disturbed by construction activities will be covered or treated with a dust suppressant or water until the completion of activities at each site of disturbance. • Inactive, disturbed (e.g., excavated or graded areas) soil and soil piles will be sufficiently watered or sprayed with a soil stabilizer to create a surface crust, or will be covered. • Vehicles hauling soil and other loose material will be covered. • Vehicles will adhere to a speed limit of 15 miles per hour (mph) on unpaved access roads without a posted speed limit, Proposed Project-specific construction routes, and within temporary work areas. • Visible mud or dirt trackout onto an adjacent public road will be removed at least once per day using wet power vacuum streetsweepers. • Excavation, grading, and/or demolition activities will be suspended when average wind speeds exceed 20 mph and dust cannot be suppressed in accordance with the requirements of the Bay Area Air Quality Management District. • Unpaved dirt roads providing access to sites located 100 feet or farther from a paved road will be treated with a 6- to 12-inch layer of compacted wood chips, mulch, or gravel.	• Increased turbidity from sediment and ground disturbance	• Chinook salmon Central Valley spring-run ESU • Chinook salmon Sacramento River winter-run ESU • North American green sturgeon Southern DPS • Steelhead California Central Valley DPS
NOAABA-AMM-04: Develop and Implement Restoration Plan. A Project-specific restoration plan will be prepared for the Proposed Project and submitted to applicable regulatory agencies for approval prior to the start of construction activities. The restoration plan will include procedures for restoration activities, including passive restoration for some habitats, plant species to be planted, procedures to reduce weed encroachment, and expected timeframes and success criteria for restoration and revegetation. Revegetation activities will be conducted in accordance with the Proposed Project restoration plan.	• Invasive species introduction • Habitat degradation • Habitat disturbance and permanent loss	• Chinook salmon Central Valley spring-run ESU • Chinook salmon Sacramento River winter-run ESU • North American green sturgeon Southern DPS • Steelhead California Central Valley DPS
NOAABA-AMM-05: Delineation of Sensitive Resources. All sensitive biological areas (e.g., aquatic resources) within Proposed Project work areas will be clearly marked prior to construction to restrict construction activities and equipment from entering these areas to the extent feasible. Signage will be placed at regular intervals along the boundaries to prohibit entry by Proposed Project personnel and identify the delineated area as a sensitive resource, except for in delineated work areas. A buffer of at least 5 feet from all construction activities will be established around these areas. The signs will be inspected regularly to ensure that they remain in place.	• Habitat disturbance and degradation of sensitive resources • Incidental encroachment into sensitive, regulated areas • Death or injury to federally listed wildlife species	• Chinook salmon Central Valley spring-run ESU • Chinook salmon Sacramento River winter-run ESU • North American green sturgeon Southern DPS • Steelhead California Central Valley DPS

Measure	Effects to be Avoided or Minimized	Applicable Species
NOAABA-AMM-06: Delineation of Work Areas. All work areas within the Proposed Project area will be clearly delineated prior to construction commencing with fencing, staking, or flags. Construction activities will be restricted to delineated work areas and all delineations will be maintained in working order until completion of construction.	• Habitat disturbance and degradation • Incidental encroachment into sensitive, regulated areas	• Chinook salmon Central Valley spring-run ESU • Chinook salmon Sacramento River winter-run ESU • North American green sturgeon Southern DPS • Steelhead California Central Valley DPS
NOAABA-AMM-07: Project Lighting. The use of outdoor lighting during construction will be minimized whenever practicable. Photocell-controlled lighting (i.e., motion detection) will be provided at a level sufficient to provide safe entry and exit to the proposed LSPGC Collinsville Substation and control enclosures. All lighting will be selectively placed, shielded, and directed downward and away from sensitive habitat and resources to the maximum extent practicable. Lighting for vessels and barges will be down shielded away from adjacent waters at night, to the extent feasible.	• Lighting-inducted behavioral changes	• North American green sturgeon Southern DPS
NOAABA-AMM-08: Access Restrictions in the Delta. Construction crews will coordinate with the U.S. Coast Guard's (USCG's) San Francisco Waterways Branch, the San Francisco Vessel Traffic Center, and the City of Pittsburg's harbor master prior to any temporary in-water access restrictions to ensure that Delta users are aware of upcoming restrictions. In addition, a Local Notice to Mariners will be submitted to the USCG's District 11 at least 15 days prior to the start of in-water construction.	• Habitat disturbance and degradation • Exposure to potential spills if a marine accidents or collisions occur	• Chinook salmon Central Valley spring-run ESU • Chinook salmon Sacramento River winter-run ESU • North American green sturgeon Southern DPS • Steelhead California Central Valley DPS
Water Quality Measures		
NOAABA-AMM-09: Aquatic Spill Prevention and Control. A spill prevention and control plan will be developed and implemented for the Proposed Project throughout all phases of construction. This plan will, at a minimum, include the following parameters to reduce potential effects from spills: • Procedures to ensure any equipment used in water (e.g., a hydroplow or excavators) are cleaned of excess lubricants and fuels. • Identification of any hazardous materials used by the Proposed Project. • Storage locations and procedures for such materials. • Spill prevention practices, as well as best management practices (BMPs), employed for various activities. • Requirements to inspect equipment regularly such that it is maintained to be free of leaks. • Spill kit location, cleanup, and notification procedures.	• Exposure to potential spills or release of contaminated sediment	• Chinook salmon Central Valley spring-run ESU • Chinook salmon Sacramento River winter-run ESU • North American green sturgeon Southern DPS • Steelhead California Central Valley DPS

NOAABA-AMM-10: Aquatic Sediment Screening and Testing. Prior to the installation of submarine cables, screening of the cable alignment based on available background resources (e.g., EnviroStor) will be conducted to determine if there have been any known spills or other hazardous materials releases that potentially intersect with the alignment. If any known spills or other hazardous materials releases are discovered, an aquatic sediment screening and testing program will be developed to evaluate the risk of exposing hazardous sediments to the marine environment. The program will entail the following:
• Representative aquatic sediment samples will be collected at a minimum of three locations placed evenly along the alignment. The depth of the samples will be consistent with the target cable burial depth at each sample location.
• Sediment samples will be tested according to methods prescribed in the Guidelines for Implementation of the Inland Testing Manual in San Francisco Bay or updated similar manual approved by the San Francisco Bay Dredge Material Management Office (DMMO) (DMMO 2001). The results of this test will be compared to concentrations allowed for in-bay disposal by the San Francisco Bay DMMO to determine if sediments are clean or require special handling.
• Aquatic sediments that exceed San Francisco Bay DMMO testing standards will:
  ○ Be avoided by the cable installation route; or
  ○ Be removed through dredging and disposed at an appropriate facility approved by the RWQCB, USACE, and/or BCDC as required; or
  ○ Be controlled via use of a turbidity curtain or other appropriate BMP approved by the RWQCB, USACE, and/or BCDC as required.
• Cable installation and hydroplow use will be limited to the specified areas and the minimum length necessary.
	• Disturbance of contaminated aquatic sediments and exposure to elevated levels of contaminants	• Chinook salmon Central Valley spring-run ESU
		• Chinook salmon Sacramento River winter-run ESU
		• North American green sturgeon Southern DPS
		• Steelhead California Central Valley DPS

NOAABA-AMM-11: Utilize In-Water Sediment Containment during Open Trenching in Marine Environments. In-water sediment control BMPs (e.g., sediment curtains, silt barriers, turbidity curtains, or similar technologies) will be utilized when open trenching will occur in marine environments to reduce the amount of disturbed sediment discharged to the surrounding area and to reduce potential short-term impacts from mobilized sediment on surrounding benthic environments.	• Increased turbidity from sediment and ground disturbance • Habitat disturbance and degradation	• Chinook salmon Central Valley spring-run ESU • Chinook salmon Sacramento River winter-run ESU • North American green sturgeon Southern DPS • Steelhead California Central Valley DPS

Measure	Effects to be Avoided or Minimized	Applicable Species
Estuary/Open Water and Tidal Marsh Habitat Measures		
NOAABA-AMM-12: In-Water Work Window. To minimize potential impacts to fish during in-water work (i.e., disturbance to the Delta substrate or operation of construction equipment below the waterline) both from general disturbance or from the potential introduction of deleterious materials that may disrupt both migratory events and cause impacts to species during key times of year when more sensitive life stages (i.e., eggs and fry) are present, a work window of July 1 to November 30 is planned. This work window may be extended, if LSPGC provides a request to the applicable agencies, along with any applicable information regarding construction schedule or other relevant information for NOAA Fisheries to evaluate potential impacts to fish species as a result of the Proposed Project.	• Impact to aquatic habitat when sensitive life stages are likely present in the action area	• Chinook salmon Central Valley spring-run ESU • Chinook salmon Sacramento River winter-run ESU • Steelhead California Central Valley DPS
NOAABA-AMM-13: Sheet Pile Driving. The following measures will be implemented during the driving of all sheet piles near the shoreline: • To the greatest extent feasible, the driving of sheet piles will be conducted with a vibratory hammer. • For installation of sheet piles adjacent to the onshore utility vaults, use of a soft start (i.e., gradually increasing energy and frequency) will be employed at the start of driving, or after a cessation of driving for more than 1 hour.	• Behavioral changes • Physiological harm	• Chinook salmon Central Valley spring-run ESU • Chinook salmon Sacramento River winter-run ESU • North American green sturgeon Southern DPS • Steelhead California Central Valley DPS
NOAABA-AMM-14: Intake and Pump Screening. To minimize the potential for fish to be entrained by the Proposed Project, any pumps or water intakes used by the Proposed Project will be screened in accordance with the CDFW and NOAA Fisheries screening requirements for water diversions within the Delta (CDFW 2000, NOAA Fisheries 1997), or more strict criteria that may be required by other agencies. If any variation from these criteria is necessary, LSPGC will consult with the agency responsible for the species for recommendations to protect fish.	• Entrainment or impingement of fish • Death, mortality, or harm to fish	• Chinook salmon Central Valley spring-run ESU • Chinook salmon Sacramento River winter-run ESU • North American green sturgeon Southern DPS • Steelhead California Central Valley DPS
NOAABA-AMM-15: Fish Exclusion Plan. To minimize potential for fish to be trapped in the trenches on the northern and southern shorelines of the Delta, LSPGC, or its contractor, will prepare and implement a Fish Exclusion Plan.	• Entrapment of fish in trenches • Death, mortality, or harm to fish	• Chinook salmon Central Valley spring-run ESU • Chinook salmon Sacramento River winter-run ESU • North American green sturgeon Southern DPS • Steelhead California Central Valley DPS
NOAABA-AMM-16: Invasive Species Management for In-Water Work. To reduce the risks of introducing or spreading invasive species from construction of the Proposed Project in the Delta, the following measures will be implemented: • Aquatic vessels brought to the action area from ports outside of San Francisco Bay and/or the Delta for marine construction will follow all maritime regulations relating to the exchange of ballast water to prevent the spread of invasive species from outside ports. • Any pumps or in-water equipment that may be needed during construction will be cleaned and dried for at least 72 hours prior to first being used on the Proposed Project. Continual presence on site will not require drying between uses.	• Invasive species introduction	• Chinook salmon Central Valley spring-run ESU • Chinook salmon Sacramento River winter-run ESU • North American green sturgeon Southern DPS • Steelhead California Central Valley DPS

5.0.0 Literature and Database Review

LSPGC contracted WRA to conduct preliminary investigations that included a review of aerial photographs, USGS topographic maps, and waters data from the National Hydrography Dataset (NHD) and National Wetlands Inventory (NWI) to identify potential habitat for federally listed fish species. The following resources were reviewed during a literature and database search to identify the federally listed species managed by NOAA Fisheries that have the potential to occur in the action area:

- Antioch North and Honker Bay 7.5-minute USGS quadrangle maps (USGS 2023a);
- contemporary aerial photographs (Google Earth 2023);
- NOAA Fisheries' Critical Habitat Portal (NOAA Fisheries 2024b);
- NOAA Fisheries' EFH Mapper (NOAA Fisheries 2024a);
- NOAA Fisheries recovery plans, 5-year reviews, and technical reports;
- California Natural Diversity Database (CNDDB) maintained by the California Department of Fish and Wildlife (CDFW) (CDFW 2024);
- CDFW Biogeographic Information and Observation System (CDFW 2023a);
- CDFW trawl sampling data (CDFW 2023b, 2023c); and
- side-scan sonar and bathymetry data collected from September 18 to October 25, 2023 by eTrac Inc, a Woolpert Company.

Federally listed species with CNDDB occurrences within 5 miles of the action area, occurrences based on CDFW fish monitoring data collected near the action area, or species with geographic ranges overlapping the action area were evaluated to determine the potential to occur in the action area. Critical habitat designations provided by NOAA Fisheries and the primary constituent elements,[5] hereafter referred to as physical and biological features (PBFs), for species with designated critical habitat were also reviewed to identify any critical habitat that could occur within the action area. The potential for each species to occur in the action area was analyzed based on the results of the desktop analysis; presence of suitable habitat; known occurrences; and the geographic range, distribution, and abundance of each species. Species recovery plans, survey reports, and 5-year reviews were also studied to gain further information regarding the potential for these species to occur. Section 8 – References provides a complete list of references used in the preparation of this BA. Additionally, the components and features of EFH were also identified within the action area.

5.0.1 Species' Potential to Occur Determination

The potential for federally listed species managed by NOAA Fisheries to occur in the action area was evaluated by first determining which federally listed species occur in the vicinity of the action area through the literature and database review. The presence of suitable habitat for federally listed species was evaluated based on physical and biological conditions of the action area, as well as the professional expertise of the investigating biologists. The potential for each

[5] "Primary constituent elements" was a term introduced in the critical habitat designation regulations and published in the Federal Register to describe aspects of "physical or biological features," which are referenced in the statutory definition of "critical habitat." In 2014, the USFWS and NOAA Fisheries proposed to remove the term "primary constituent elements" and return to the statutory term "physical or biological features" (USFWS and NOAA Fisheries 2014).

federally listed species to occur in the action area was then determined according to the following criteria:

- **Present Year-Round.** According to the CNDDB or other sources, the species has been observed in the action area in the past 30 years, or certain life stages are known to occur year-round.

- **Present Seasonally.** According to the CNDDB or other sources, the species has been observed or has been recorded in the action in the past 30 years during certain portions of the year, or certain life stages are known to occur seasonally during migrations.

- **No Potential.** Habitat within the action area is unsuitable for the species' requirements (e.g., foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, or disturbance regime).

5.0.2 Habitat Assessments

Between May and December 2023, Insignia biologists conducted field surveys to characterize the existing conditions within an approximately 325-acre survey area (with buffers ranging from 100 to 500 feet) around the Proposed Project, and to identify potential biological resources (e.g., habitat for federally listed species, sensitive natural communities, and jurisdictional waters) that may occur. The surveys occurred on May 23 to 26, 30, and 31; June 9; July 10, 11, and 12; September 21 and 22; and December 19. The biologists conducted a habitat assessment, floristic botanical surveys, and a preliminary assessment of water features potentially under the jurisdiction of the USACE, Regional Water Quality Control Board (RWQCB), and CDFW between May 23 and July 12, 2023. Following these initial surveys in May and July 2023, the original survey area was expanded by approximately 244 acres, and a habitat assessment and preliminary assessment of water features were conducted on September 21 and 22 and December 19 within this expanded survey area, which included terrestrial areas north of the Delta and terrestrial areas south of the Delta in the vicinity of PG&E's existing Pittsburg Substation.

Field investigations were not conducted to characterize the open water or benthic habitats in the Delta portion of the action area, with the exception of the side-scan sonar and bathymetry data collected for the Proposed Project. The Mean Higher High Water (MHHW) line elevation at the action area is 5.8 feet North American Vertical Datum of 1988 [NAVD88], based on data from the Pittsburg station (NOAA Station ID 9415096; MHHW calculated to be 5.78 feet NAVD88) and Montezuma Slough station (NOAA Station ID 9415205; MHHW calculated to be 5.83 feet NAVD88). For the purpose of USACE permitting, the MHHW elevation is being used as a proxy for the high tide line. All evaluations of open water, benthic, and mudflat habitats in this BA are based on a desktop analysis of existing publicly available data and information.

In the Attachment C: Vegetation Communities and Land Covers maps, portions of the upland areas have been classified as "not surveyed" if they were inaccessible during the field surveys due to tall, non-transparent fencing and/or lack of landowner permission. Additionally, some land near the brackish tidal marsh habitat north of the Delta is also shown as "not surveyed" because the action area was expanded to account for potential impacts to California Ridgway's rail, but these areas were not field-surveyed because no work will occur in these areas.

5.0.3 Estimating Suitable Fish Habitat in the Action Area

On behalf of LSPGC, WRA conducted a fisheries habitat assessment for the Proposed Project within the action area based on publicly available data and side-scan sonar and bathymetry data collected for the portion of the Proposed Project in the Delta. Proposed Project activities within the action area were analyzed to determine which fish habitat areas could be impacted by Proposed Project activities. Open water and tidal marsh habitats in the action area were evaluated in this BA and were defined as waters below the high tide line that are subject to tidal action, including estuaries, mudflats, tidal marshes, and sloughs. Potential areas of SAV were mapped in the action area using side-scan sonar data, which was cross-referenced against bathymetric data to confirm the potential distribution of SAV in the action area, and aerial imagery; however, the distribution, composition, and extent of the SAV has not been verified through field surveys.

5.1 RESULTS

5.1.0 Vegetation Communities and Land Covers

Insignia conducted field investigations to document the vegetation community composition and land covers within the action area; and WRA conducted a fisheries habitat assessment of the estuarine, open water habitats within the action area. Attachment B: Representative Photographs provides photographs of the vegetation communities within the action area. The extent and locations of the vegetation communities and estuarine, open water areas within the action area are depicted in Attachment C: Vegetation Communities and Land Covers. Eleven vegetation communities and five land cover types were identified in the action area during field surveys and are summarized in Table 4: Vegetation Communities and Land Cover Types. The open water habitat is approximately 1,226 acres and constitutes most of the action area, and approximately 22.48 acres of tidal brackish marsh habitat are also present within the action area. Upland areas (e.g., previously disturbed vegetation, levee roads, developed areas, and paved areas) are described in Table 4: Vegetation Communities and Land Cover Types, but are not further discussed in this BA or included in the calculation of impacts because these areas do not provide suitable habitat for the federally listed species considered in this BA.

5.1.1 Federally Listed Species

The federally listed species generated from the background database and literature searches were analyzed for their potential to occur within the action area. Table 5: Species Potential to Occur in the Action Area provides a summary of the potential for federally listed species to occur within the action area.

The following species occur in geographic ranges that do not overlap with the action area or typically occur in habitats that are not present within the action area, and therefore were not further analyzed in this BA:

- Coho salmon Central California coast ESU (*Oncorhynchus kisutch*)
- Steelhead central California coast DPS (*Oncorhynchus mykiss irideus*)

Table 4: Vegetation Communities and Land Cover Types

Vegetation Community or Land Cover Type	Total Size in Action Area (acres)	Current Conditions within Action Area
Developed	**2.52**	
Developed	0.79	Developed areas are highly modified and contain some form of human-constructed infrastructure. Maintained paved surfaces, structures, or buildings may be included in this cover type. Most of the developed land cover is found south of the Delta on land along the proposed LSPGC Telecommunications Line and in the vicinity of PG&E's existing Pittsburg Substation and the proposed LSPGC 230 kV Underground Segment.
Disturbed, Bare Ground, and Roads	1.42	Disturbed areas are found throughout the action area as barren dirt lots segregated by dirt or paved roads; however, most of the disturbed land cover is found south of the Delta in close proximity to PG&E's existing Pittsburg Substation. In addition, some areas of bare ground and roads exist north of the Delta mainly on levees or in the upland portions of the action area that lack vegetation.
Rip Rap	0.31	Rip rap includes areas of large boulders for shoreline protection and bank stabilization. Rip rap is present within the action area along the southern shoreline of the Delta.
Upland/Ruderal	**14.59**	
Brassica nigra - Centaurea (*solstitialis, melitensis*) Herbaceous Semi-Natural Alliance (SNA)	0.02	Within the action area north of the Delta, this community generally occurs in dense colonies between stands of non-native grassland in areas where heavy cattle grazing historically occurred.
Lolium perenne Herbaceous SNA	11.60	This community is the most widespread of the terrestrial vegetation communities, and it is found in upland areas that lack native species and have low species diversity. It can be found throughout the sites for the proposed LSPGC Collinsville Substation and LSPGC 230 kV Overhead Segment. Additionally, this community shows evidence of heavy grazing, landowner maintenance, and agriculture use. During the September 2023 survey, large tracts of this community were being actively converted into access roads as part of the SMUD Solano 4 Wind Project.
Rosa californica Shrubland Alliance	2.53	This community is found within the action area on the northern shore of the Delta adjacent to the proposed LSPGC 230 kV Overhead Segment and intertidal sloughs. Himalayan blackberry (*Rubus armeniacus*) is common, and in some cases co-dominant, among thick patches of California wild rose (*Rosa californica*). Isolated red willows (*Salix laevigata*) are scattered throughout this community.

Vegetation Community or Land Cover Type	Total Size in Action Area (acres)	Current Conditions within Action Area
Salix exigua Shrubland Alliance	0.44	This community is found north of the Delta near the proposed LSPGC 230 kV Overhead Segment and between tidally influenced sloughs and estuarine marshes containing sandy soil. Heavy cattle grazing was observed to have a direct impact on this community, leading to a sparse shrub layer dominated by sandbar willows that are in the process of regrowing.
Open Water	**1,226.64**	
Estuarine/Open water	1,226.64	Portions of the estuarine open water habitat include deep channels, soft bottom sediments, and some rock substrate; while the portions closer to shore are intertidal mudflat and shallow waters potentially supporting SAV. More specifically within the action area, the bathymetry near the southern portion of the Delta has a steep slope from the shoreline to the Suisun Bay Channel with a depth of approximately 65 to 70 feet below Mean Lower Low Water (MLLW); the center portion of the action area has a bathymetry that ranges between 20 to 40 feet below MLLW until reaching the and Sacramento Deep Water Ship Channel with a depth of approximately 65 feet below MLLW; and the northern portion of the Delta slopes from the Sacramento Deep Water Ship Channel to a plateau with a depth of approximately 20 feet below MLLW before a steep slope up to the shoreline. Water quality within the action area can be highly variable both seasonally and depending on daily wind and outflow conditions from the Sacramento River. Within the Sacramento River and Delta, turbidity generally ranges between 20 to 40 nephelometric turbidity units (NTUs) during the summer, but can increase to range as high as 250 to 500 NTUs when high winds stir light sediments (California Department of Water Resources [CDWR] 2013). Once sediments are resuspended, high turbidity zones can spread (via tides and river flow) within the action area. As such, natural water quality conditions, especially turbidity, within the action area can be highly variable independent of human action. SAV is potentially present along the northern and southern edges of the river in the action area, as well as near Winter Island. There are some species of invasive SAV that can be detrimental to aquatic life; however, the majority of SAV is typically widgeon grass (*Ruppia maritima*) within this portion of the Delta. In the Delta, widgeon grass can serve as nursery rearing sites for different species of native fish that take cover in the vegetation.
Brackish/Tidal Marsh	**13.70**	
Distichlis spicata Herbaceous Alliance	1.01	This community generally occurs north of the Delta near the proposed LSPGC Collinsville Substation site within standing water and in tidally influenced brackish areas along the alignment of the proposed LSPGC 230 kV Submarine Segment and LSPGC 230 kV Overhead Segment.

Vegetation Community or Land Cover Type	Total Size in Action Area (acres)	Current Conditions within Action Area
Frankenia salina Herbaceous Alliance	2.07	This community is found near the proposed LSPGC Collinsville Substation at the highest point of the marsh and adjacent to water that seasonally and tidally inundates this community. Additionally, this community occurs around the edges of brackish tidal marsh along the proposed LSPGC 230 kV Overhead Segment just north of the Delta.
*Juncus arcticus (*var. *balticus, mexicanus)* Herbaceous Alliance	0.28	This community generally occurs in wet meadows with poorly drained soils between estuarine marshes and sloughs. This community is sparsely vegetated and is found near the proposed LSPGC 230 kV Overhead Segment on the northern shore of the Delta adjacent to the shoreline and in upland areas of the marsh between sloughs.
Schoenoplectus (acutus, californicus) Herbaceous Alliance	9.60	This community occurs north of the Delta adjacent to the shoreline, within sloughs, and in tidally influenced areas that are semi-brackish. Community composition varies depending on the salinity of the water and proximity to the shoreline, as hardstem bulrush (*Schoenoplectus acutus*) is generally less tolerant of brackish conditions.
Schoenoplectus acutus/Rosa californica Association	0.73	This association occurs primarily on man-made earthen levees bordering adjacent to the shoreline on the north side of the Delta. California wild rose is present in high quantities among stands of bulrush (*Scirpus* spp.), sometimes achieving 20 to 30 percent relative cover.
Not Surveyed*	**7.23**	No survey data.
Total*	***1,264.68***	

*Includes upland areas that were inaccessible due to tall, non-transparent fencing and/or lack of landowner permission during habitat surveys and areas added to action area after the habitat surveys were conducted, as further described in Section 5.0.2 Habitat Assessments.
**Due to rounding, totals may not sum.

Table 5: Species Potential to Occur in the Action Area

Species	Listing Status[6]	Potential to Occur in the Action Area
Chinook salmon – Central Valley spring-run ESU (*Oncorhynchus tshawytscha*)	FT	**Present Seasonally.** Individuals in this ESU spawn within tributaries of the Sacramento and San Joaquin rivers and must pass through the action area in route to and from the Pacific Ocean. This ESU is considered seasonally present during migratory periods. No CNDDB records for this ESU occur within 5 miles of the Proposed Project components. The CDFW Summer Townet Sampling survey data for June, July, and August near Collinsville at Station 513 from 2012 to 2022 show no catch for this species during the sampling period. Similarly, the CDFW Fall Midwater Trawl Survey data at the same station from 2012 to 2022 show no catch of this species from August through November, but some individuals were caught in December (WRA 2024).
Chinook salmon – Sacramento River winter-run ESU (*Oncorhynchus tshawytscha*)	FE	**Present Seasonally.** Individuals in this ESU spawn within the mainstem of the Sacramento River. Adults and juveniles must pass through the action area in route to and from the Pacific Ocean. This ESU is considered seasonally present. No CNDDB records for this ESU occur within 5 miles of the Proposed Project components. The CDFW Summer Townet Sampling survey data for June, July, and August near Collinsville at Station 513 from 2012 to 2022 show no catch for this species during the sampling period. Similarly, the CDFW Fall Midwater Trawl Survey data at the same station from 2012 to 2022 show no catch of this species from August through November, but some individuals were caught in December (WRA 2024).
Coho salmon – central California coast ESU (*Oncorhynchus kisutch*)	FE	**No Potential.** This ESU is considered extirpated from San Francisco Bay and its tributaries (WRA 2024). No CNDDB records for this ESU occur within 5 miles of the Proposed Project components.
North American Green sturgeon – southern DPS (*Acipenser medirostris*)	FT	**Present Year-Round.** The action area is at the downstream terminus of the Sacramento River. North American green sturgeon Southern DPS individuals are known to spawn in the upper portions of the Sacramento River. Individuals in this DPS are also known to rear within the greater San Francisco Bay region year-round. As such, the species is considered present year-round. One CNDDB record for this DPS occurs within 0.25 mile of the action area (CDFW 2024). The CDFW Summer Townet Sampling survey data for June through August and the CDFW Fall Midwater Trawl Survey data for August through December from 2012 to 2022 collected near Collinsville at Station 513 show no catch for this DPS during the sampling periods. However, the species is known to be present throughout the Estuary and the action area (WRA 2024).

[6] Federal listing codes:
-FE: Federally listed as endangered
-FT: Federally listed as threatened

Species	Listing Status[6]	Potential to Occur in the Action Area
Steelhead central California coast DPS (*Oncorhynchus mykiss irideus*)	FT	**No Potential.** This DPS is found within watersheds that extend as far inland as the Carquinez Bridge, approximately 20 miles west of the action area. Any steelhead present are therefore likely to be Central Valley DPS, not central California coast DPS. No CNDDB records for this DPS occur within 5 miles of the action area.
Steelhead California Central Valley DPS (*Oncorhynchus mykiss irideus*)	FT	**Present Seasonally.** This DPS is known to spawn and rear within tributaries of the Sacramento and San Joaquin rivers. As such, adults and juveniles must migrate through the action area when moving to and from spawning streams and are considered seasonally present. One CNDDB record for this DPS occurs within 0.25 mile of the action area (CDFW 2024). The CDFW Summer Townet Sampling survey data for June through August near Collinsville at Station 513 from 2012 to 2022 show no catch for this species DPS during the sampling period. Similarly, the CDFW Fall Midwater Trawl Survey data at the same station from 2012 to 2022 show no catch of this DPS from August through December (WRA 2024).

Sources: CDFW 2024, WRA 2024

Based on the desktop analysis and literature review, it was determined that the following four federally listed fish species under the jurisdiction of NOAA Fisheries have the potential to occur either seasonally or year-round within the action area:

- Chinook salmon Central Valley spring-run ESU,
- Chinook salmon Sacramento River winter-run ESU,
- North American green sturgeon Southern DPS, and
- Steelhead California Central Valley DPS.

The action area also overlaps critical habitat for three of these federally listed species, including Chinook salmon Sacramento River winter-run ESU, North American green sturgeon Southern DPS, and steelhead California Central Valley DPS. Proposed Project activities within the action area are also located within EFH for coastal pelagic species, Pacific salmonid species, and Pacific coast groundfish species. Portions of the action area that are located within critical habitat and EFH are described in the following subsections.

Chinook Salmon Central Valley Spring-Run ESU

The Central Valley spring-run Chinook salmon ESU was originally listed in 1999 as a threatened species. NOAA Fisheries concluded in the 2016 5-Year Review that this ESU will remain classified as a threatened species (NOAA Fisheries 2016a).

The Chinook salmon Central Valley spring-run ESU includes all naturally spawned spring-run Chinook salmon populations from the Sacramento and San Joaquin River mainstem and its tributaries, including the Feather River; Butte, Mill, Deer, Antelope, and Beegum creeks; and the stock from the Feather River Fish Hatchery. Chinook salmon Central Valley spring-run ESU returns from the ocean and enters the Sacramento River between February and June. They move upstream and enter tributary streams from February through July, peaking from May to June.

These fish migrate into the headwaters and hold in pools until they spawn, starting as early as mid-August, ending in mid-October, and peaking in September. They are relatively faithful to the natal streams in which they were spawned, using visual and chemical cues to locate these streams. While migrating and holding in the river, spring-run Chinook salmon do not feed, relying instead on stored body fat reserves for maintenance and gonadal maturation.

Eggs are laid in large depressions (i.e., redds) hollowed out in gravel beds. Some fish remain in the stream until the following October and emigrate as “yearlings,” usually with the onset of storms starting in October through the following March, peaking from November to December. Large pools with cold water are essential over-summering habitat for this species (WRA 2024).

Individuals of this species ESU are rare within the action area during the time of year when the Proposed Project activities will occur. No spawning or freshwater rearing locations occur within the action area; however, this species ESU occurs seasonally when migrating to natal streams within the Sacramento and San Joaquin rivers in the spring, or when migrating to the ocean in late fall. As such, the Chinook salmon Central Valley spring-run ESU is considered seasonally present within the action area when migrating to or from natal streams. Portions of the action area that are within estuarine areas accessible to the Chinook salmon Central Valley spring-run ESU are considered to be suitable estuarine foraging habitat for this run and are depicted in

Attachment D: Fish Habitat Overview Map. Approximately 1,226.64 acres of suitable migratory habitat is present in the action area for this species.

Chinook Salmon Sacramento River Winter-Run ESU

The Chinook salmon Sacramento River winter-run ESU was originally listed in 1989 as a threatened species under the ESA; however, the species was reclassified as endangered in 1994. NOAA Fisheries concluded in the 2016 5-Year Review that this ESU will remain classified as an endangered species (NOAA Fisheries 2016b).

The Chinook salmon Sacramento River winter-run ESU includes all naturally spawned populations of winter-run Chinook salmon in the Sacramento River and its tributaries in California, as well as two artificial propagation programs: winter-run Chinook salmon from the Livingston Stone National Fish Hatchery, and winter-run Chinook salmon in a captive broodstock program maintained at Livingston Stone National Fish Hatchery and the University of California Bodega Marine Laboratory. Chinook salmon Sacramento River winter-run are unique because they spawn during summer months when air temperatures usually approach their yearly maximum. As a result, these salmon require stream reaches with cold water sources that protect embryos and juveniles from the warm ambient conditions in summer (WRA 2024).

Individuals of this species ESU are rare within the action area during the time of year when the Proposed Project activities are planned to occur. No spawning or freshwater rearing locations occur within the action area; however, this ESU occurs seasonally when migrating to natal streams in the spring near the headwaters of the Sacramento River, or when migrating to the ocean. As such, the Chinook salmon Sacramento River winter-run ESU is considered seasonally present within the action area when migrating to or from natal streams. Portions of the action area are within estuarine areas accessible to the Chinook salmon Sacramento River winter-run ESU and located within suitable estuarine foraging habitat for this run, as depicted in Attachment D: Fish Habitat Overview Map. Approximately 1,226.64 acres of suitable migratory habitat is present in the action area for this species.

North American Green Sturgeon Southern DPS

The North American green sturgeon Southern DPS was listed as threatened by NOAA Fisheries in 2006. The Southern DPS consists of coastal and Central Valley populations south of the Eel River, with the only known spawning population found in the Sacramento River. North American green sturgeon are long-lived, slow-growing fish. Males do not mature until they are at least 15 years old, and females do not mature until they are at least 17 years old. North American green sturgeon can live to be 70 years old.

North American green sturgeon are found in marine waters from the Bering Sea to Ensenada, Mexico; however, spawning populations have been found only in medium-sized rivers in or north of the Delta system. North American green sturgeon Southern DPS are only known to spawn within the headwaters of the Sacramento River near the City of Redding, or within the Feather River. Spawning occurs in the Sacramento River between March and June, and it may extend into July in the Klamath River. The water temperature during spawning is likely 50 degrees Fahrenheit (°F) to 70°F. Spawning occurs in deep, fast water. The fertilized eggs are slightly adhesive and hatch after 4 to 12 days. Larvae stay close to the bottom and appear to rear

primarily in rivers well upstream of estuaries. Young sturgeon (i.e., ≤ 8 inches long) feed primarily on small crustaceans such as amphipods and opossum shrimp (*Neomysis mercedis*). As they develop, they take a wider variety of benthic invertebrates, including various species of clams, crabs, and shrimp. The diet of larger North American green sturgeons includes fish (WRA 2024).

No spawning habitat occurs within the action area, but this species' DPS is known to rear within the greater Estuary year-round. North American green sturgeon typically inhabit estuaries near or within deep channels or holes, or upper reaches of estuaries and may move into tidal flats, particularly at night, to feed. North American green sturgeon are adapted to survive in turbid waters and can tolerate the naturally variable turbidity fluctuations in the Estuary. North American green sturgeon are potentially present year-round both as adults and juveniles prior to migrating to and from the Pacific Ocean. The Carquinez Strait, located approximately 13 miles seaward (west) of the Proposed Project area, is a known sturgeon feeding ground and migratory corridor to access spawning habitat (NOAA Fisheries 2021). Post-spawn adults may hold in the Sacramento River for months and out-migrate to the Pacific Ocean, but the outmigration time varies with some individuals spending only a matter of days in the Estuary while others stay for months before migrating out to the Pacific Ocean. Portions of the action area include estuarine open water habitats that provide suitable rearing and foraging habitat for this species DPS, as depicted in Attachment D: Fish Habitat Overview Map. Approximately 1,226.64 acres of suitable habitat is present in the action area for this species.

Steelhead California Central Valley DPS

The California Central Valley steelhead DPS was listed as threatened by NOAA Fisheries in 1998, and the listing was reaffirmed in 2006. In addition, NOAA Fisheries concluded in the 5-Year Review in 2016 that the species should remain listed as threatened.

Steelhead California Central Valley DPS includes all naturally spawned populations (and their progeny) in the Sacramento and San Joaquin rivers and their tributaries, excluding San Francisco and San Pablo bays and their tributaries. This DPS also includes three California Central Valley steelhead artificial propagation programs, including the Coleman National Fish Hatchery, the Feather River Fish Hatchery, and the Mokelumne River Hatchery. The preferred spawning habitat for steelhead is in perennial streams with cool to cold water temperatures, high dissolved oxygen levels, and fast-flowing water. During the winter or early spring, the spawning fish reach suitable gravel riffles (i.e., shallow areas with gravel or cobble substrate) in the upper sections of streams and dig their redds. Abundant riffle areas for spawning and deeper pools with sufficient riparian cover for rearing are necessary for successful breeding. When steelhead spawn, they nearly always return to the stream where they were hatched. At that time, they may weigh 2 to 12 pounds or more.

This species is rare within the action area during the time of year when the Proposed Project activities are planned to occur. No spawning or freshwater rearing locations occur within the action area; however, this species occurs seasonally when migrating to natal streams within the Sacramento and San Joaquin rivers in the spring, or when migrating to the ocean in the spring. As such, the species is considered present within the action area, but only seasonally and for short periods when migrating to or from natal streams. Portions of the action area that are within estuarine, open water areas are considered to be suitable migratory habitat for this species and

are depicted in Attachment D: Fish Habitat Overview Map. Approximately 1,226.64 acres of suitable migratory habitat is present in the action area for this species.

5.1.2 Critical Habitat

The estuarine, open water habitat within the action area surrounding the proposed LSPGC 230 kV Submarine Segment is designated as critical habitat for the following three species:

- Chinook salmon Sacramento River winter-run ESU,
- North American green sturgeon Southern DPS, and
- Steelhead California Central Valley DPS.

In cases such as this, where critical habitat is within a bay or estuary, the landward extent of critical habitat is the high tide line. Therefore, the extent of critical habitat extends to all portions of the action area described as open water in Table 4: Vegetation Communities and Land Cover Types, and the critical habitat is depicted in Attachment D: Fish Habitat Overview Map. The following subsections define the essential PBFs required for critical habitat for these three species.

Chinook Salmon Sacramento River Winter-Run ESU and Steelhead California Central Valley DPS

The PBF of critical habitat that is essential for the conservation of the Chinook salmon Sacramento River winter-run ESU and steelhead California Central Valley DPS and applicable to the Proposed Project is element 4, which is quoted as follows (70 CFR Section 52488):

> PBF 4. Estuarine areas free of obstruction with water quality, water quantity, and salinity conditions supporting juvenile and adult physiological transitions between fresh- and saltwater; natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels; and juvenile and adult forage, including aquatic invertebrates and fishes, supporting growth and maturation. These features are essential to conservation because without them juveniles cannot reach the ocean in a timely manner and use the variety of habitats that allow them to avoid predators, compete successfully, and complete the behavioral and physiological changes needed for life in the ocean. Similarly, these features are essential to the conservation of adults because they provide a final source of abundant forage that will provide the energy stores needed to make the physiological transition to fresh water, migrate upstream, avoid predators, and develop to maturity upon reaching spawning areas.

North American Green Sturgeon Southern DPS

NOAA Fisheries has defined essential PBFs for North American green sturgeon critical habitat separately for freshwater riverine systems and estuarine areas. The action area is located within the lower Delta, which is considered part of the estuaries for North American green sturgeon. The following PBFs are essential for the conservation of the North American green sturgeon southern DPS in estuarine habitats (74 CFR Section 52299):

- Food resources. Abundant prey items within estuarine habitats and substrates for juvenile, subadult, and adult life stages.

- Water flow. Within bays and estuaries adjacent to the Sacramento River (i.e., the Delta and Suisun, San Pablo, and San Francisco bays), sufficient flow into the bay and estuary to allow adults to successfully orient to the incoming flow and migrate upstream to spawning grounds.

- Water quality. Water quality—including temperature, salinity, oxygen content, and other chemical characteristics—necessary for normal behavior, growth, and viability of all life stages.

- Migratory corridor. A migratory pathway necessary for the safe and timely passage of Southern DPS fish within estuarine habitats and between estuarine and riverine or marine habitats.

- Water depth. A diversity of depths necessary for shelter, foraging, and migration of juvenile, subadult, and adult life stages.

- Sediment quality. Sediment quality (i.e., chemical characteristics) necessary for normal behavior, growth, and viability of all life stages.

5.1.3 Essential Fish Habitat

The action area encompasses estuarine habitats in the lower Delta as shown in Attachment D: Fish Habitat Overview Map. Therefore, the action area is within EFH that has been designated for various life stages of fish species managed under the Magnuson-Stevens Fishery Conservation and Management Act. These species include the following:

- The Coastal Pelagic FMP (Pacific Fishery Management Council [PFMC] 2024a) is designed to protect habitat for migratory pelagic species, such as Pacific sardine (*Sardinops sagax*), Pacific mackerel (*Scomber japonicus*), northern anchovy (*Engraulis mordax*), market squid (*Doryteuthis opalescens*), jack mackerel (*Trachurus symmetricus*), and various species of krill or euphausiids. The east-west geographic boundary of EFH for coastal pelagic species is defined as all marine and estuarine waters from the shoreline along the coasts of California, Oregon, and Washington offshore to the limits of the exclusive economic zone and above the thermocline where sea surface temperatures range between 10 degrees Celsius (°C) and 26°C. Species most likely to occur in the action area include northern anchovy and Pacific sardine (WRA 2024).

- The Pacific Groundfish FMP (PFMC 2023) is designed to protect habitat for approximately 80 species of fish, including various species of flatfish, rockfish, groundfish, and several species of sharks and skates. EFH for Pacific coast groundfish is defined as the aquatic habitat necessary to allow groundfish production to support long-term sustainable fisheries for groundfish and for groundfish contributions to a healthy ecosystem. Species most likely to occur in the action area include starry flounder (*Platichthys stellatus*) and English sole (*Pleuronectes vetulus*) (NOAA Fisheries 2020).

- The Pacific Salmon FMP (PFMC 2024b) is designed to protect habitat for commercially important salmonid species (specifically Chinook salmon and Coho salmon) occurring within the action area. While Coho salmon are extirpated from San Francisco Bay and its

tributaries (WRA 2024), two ESUs of Chinook salmon seasonally occur within waters surrounding the action area. In the estuarine and marine areas, Chinook salmon EFH extends from the nearshore and tidal submerged environments within state territorial waters out to the full extent of the exclusive economic zone 200 miles offshore of California north of Point Conception.

Along the West Coast, the PFMC also identifies habitats that fall within Habitat Areas of Particular Concern (HAPCs). HAPCs are high-priority areas for conservation, management, or research because they are important to ecosystem function, sensitive to human activities, stressed by development, or rare. These areas provide important ecological functions and/or are especially vulnerable to degradation and can be designated based on either specific habitat types or discrete areas. HAPCs are a discrete subset of EFH. The following HAPCs are relevant to the Proposed Project:

- HAPCs for Pacific coast groundfish are estuaries, rocky reefs, canopy-forming kelp, seagrasses, and "areas of interest" as described in Amendment 19 to the Pacific Groundfish FMP (PFMC 2023).

- HAPCs for Chinook salmon include complex channel and floodplain habitat, spawning habitat, thermal refugia, estuaries, and SAV as described in Appendix A to the Pacific Salmon FMP (PFMC 2024b).

- Within the action area, only "estuary" habitat is present among the HAPCs listed by the Pacific Salmon FMP.

6 – EFFECTS ANALYSIS

Under Title 50, Section 402.02 of the CFR, effects of the action of a project on listed species and critical habitat are all consequences that are caused by a proposed action, including "consequences of other activities that are caused by the proposed action but that are not part of the action." A consequence "is caused by a proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences outside the immediate area involved in the action." The following subsections describe the potential effects of the proposed action to species and critical habitat, or lack thereof, which are reasonably expected from the Proposed Project.

6.0 PROPOSED PROJECT IMPACTS WITHIN THE ACTION AREA

During construction, temporary impacts will occur to benthic habitat and overlying open water areas, and possibly SAV habitat, within the proposed LSPGC 230 kV Submarine Segment temporary work areas where the cables will be brought on land and transition to the proposed LSPGC 230 kV Underground Segment on the south side of the Delta. No permanent impacts are anticipated to occur in these habitats. The Proposed Project will result in approximately 16.78

acres[7] (730,822 square feet) of temporary impacts to benthic habitats and the overlying water column. Within this area, approximately 1.26 acres (54,885 square feet) of presumed SAV habitat will be temporarily impacted. These areas serve as habitat for the following species:

- Chinook salmon Central Valley spring-run ESU,
- Chinook salmon Sacramento River winter-run ESU,
- North American green sturgeon Southern DPS, and
- Steelhead California Central Valley DPS.

Upland areas—including grasslands, shrublands, previously disturbed vegetation, access roads, undeveloped areas—were not included in the calculations of impacts because these areas do not provide suitable habitat for the federally listed species considered in this BA.

6.1 EFFECTS TO INDIVIDUALS

Under the federal ESA, a "may affect, but not likely to adversely affect" determination means that all effects are beneficial, insignificant, or discountable. Beneficial effects have contemporaneous positive effects without any adverse effects to the species or habitat. Insignificant effects relate to the size of the impact and include those effects that are undetectable, not measurable, or cannot be evaluated. Discountable effects are extremely unlikely to occur. Under the federal ESA, a "likely to adversely affect" determination means that there may be adverse effects to listed species as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not discountable, insignificant, or beneficial (USFWS and NOAA Fisheries 1998). This section describes the anticipated effects of the Proposed Project on the Chinook salmon Central Valley spring-run ESU, Chinook salmon Sacramento River winter-run ESU, North American green sturgeon Southern DPS, and steelhead California Central Valley DPS.

Chinook salmon Central Valley spring-run ESU, Chinook salmon Sacramento River winter-run ESU, and steelhead California Central Valley DPS individuals are not anticipated to be present in the action area while in-water work is conducted for the Proposed Project between July 1 and November 30 of any year. However, juvenile salmonids and North American green sturgeon Southern DPS may reside in Estuary year-round, so complete avoidance of all life stages may not be possible. Potential effects of the action on individuals may be associated with water quality impacts, potential exposure to contaminants in the sediment, invasive species introduction, entrainment during pumping, trapping in trenches, noise, lighting, and exposure to electromagnetic fields induced during cable operation. Effects on individual salmonids are unlikely to occur for most life stages because individuals will not likely occur in the action area at the time of in-water construction activities. Additionally, spawning grounds for all four

[7] For each of the submarine cables, the temporary impacts to benthic/open water habitat were calculated by assuming each of the two hydroplow skis (each with a 3-foot-wide footprint) will temporarily impact benthic habitat as a result of hydroplow tracks, plus a 16-inch-wide cable furrow will be created during cable installation. In addition, temporary impacts along the northern shoreline also included the nearshore trenching areas. Along the southern shoreline, the entire nearshore area within the boundaries of the turbidity curtain was assumed to be temporarily impacted by submarine cable construction activities.

federally listed species occur upstream of the action area and the Proposed Project activities are anticipated to have no effect on the eggs or larvae for these four species.

6.1.0 Water Quality Impacts

In-water construction requires specialized mechanical equipment, including workboats (e.g., tugboats), a hydroplow with intake pumps, floating barges, and excavators. These larger pieces of equipment require generators, pumps, or compressors to run the equipment, and a variety of petroleum and plant-based fuels or lubricants, many of which can be toxic to aquatic organisms if spilled and introduced accidentally. An inadvertent spill of such materials could cause degradation of the aquatic environment, which could affect habitat for these species, and cause injury and possible mortality of fish if any are present in waters within the action area. However, LSPGC will implement AMMs, such as NOAABA-AMM-09 that requires preparation and implementation of an aquatic spill prevention program to reduce potential for a spill to occur and result in these effects. LSPGC will implement NOAABA-AMM-01 and 03 to educate workers on the appropriate measures for handling hazardous materials and for dust control to ensure that construction site materials do not end up in aquatic ecosystems. Additionally, NOAABA-AMM-08 will ensure appropriate vessel safety during in-water construction to prevent any collisions or accidents that may result in an inadvertent release of contaminants into waters within the action area. To further reduce potential effects to federally listed salmonids, LSPGC will implement NOAABA-AMM-12 and conduct work at a time of year when salmonids are not likely to be present in the action area. With the implementation of the AMMs, the water quality effects from release of hazardous materials are anticipated to be discountable or insignificant.

Certain contaminants (e.g., metals, polyaromatic hydrocarbons, pesticides) can bind to fine grained sediment; however, sandy substrates are generally free of contaminants (EPA and USACE 1998). Historically, sediment testing conducted within the USACE Suisun Bay Channel, which crosses through the action area, and New York Slough has shown that much of the sediment located within the federal navigation channels has regularly been over 80 percent sand (USACE 2023). Six sediment cores collected by LSPGC along the submarine cable alignment show that the sediment in the shallower areas (approximately 20 feet below MLLW or less) on the northern portion of the open water habitat have a thin layer of sand overlaying clay and peat; the center portion of the cable is mostly sandy sediment with some clay intermixed in the channels; and the southern portion shoreline near the Suisun Bay Channel was mostly clay (ERM 2024). The majority of the submarine cables will be installed in sandy substrates that are unlikely to have contaminants present in the sediment. Aquatic sediments along the submarine alignment will be screened and tested in compliance with NOAABA-AMM-10, if warranted, before the sediment is disturbed; thereby reducing the risk of exposing contaminants within the sediment to the aquatic environment and to fish occurring in the action area. Potential impacts to water quality from resuspension of contaminants are expected to be insignificant through implementation of this AMM.

Background turbidity within the Delta is generally between 20 and 40 NTUs, but can increase to 250 to 500 NTUs during high river flows and is high (between 50 and 100 NTUs) in the nearby Suisun Bay from tidal resuspension of sediments and during high-wind events (CDWR 2013). Prior studies of turbidity in San Francisco Bay showed that turbidity increases from dredging activities—which have greater disturbance to benthic habitats than hydroplow activities—

typically return to background levels within one tidal cycle. The suspended sediment plume created during hydroplow activities will be localized to areas around the submarine cable corridor during hydroplow operation and is predicted to be substantially less than plumes created during bucket dredging, in terms of concentration and dispersion.

Increases in turbidity due to hydroplow operations and installation of the proposed LSPGC 230 kV Submarine Segment are expected to create short-term, localized increases in turbidity. Sediment dispersion modeling conducted for the Proposed Project showed that the maximum suspended sediment concentrations created in the plume during the hydroplow activities will be approximately 45 NTUs (15 mg/L) during slow currents or slack tide and 60 NTUs (20 mg/L) during fast currents. According to the model results, the highest concentrations of jetting induced suspended sediment and re-deposition will occur on the benthic habitat adjacent to the submarine cable centerlines. Concentrations of suspended sediment and re-deposition thicknesses are predicted to decrease rapidly with distance from the cable centerlines. The modeling predicted that suspended sediment concentrations will dissipate to background levels within one day (approximately 24 hours) of completing hydroplow activities (ERM 2024). The actual plume distance and dissipation rate will depend on the tides, river flow, and other environmental conditions present at the time of in-water construction. As described previously in this section, ambient turbidity within the action area tends to be relatively high. While increases in turbidity may affect sensitive life stages of certain fish species, especially eggs or fry, or the health for individual fish, the construction of the proposed LSPGC 230 kV Submarine Segment will not occur at a time of year when these more sensitive life stages of the ESA-listed species are present in the action area. The most sensitive life stages, such as eggs and fry, for these species will be found upstream in the natal streams during the planned timeframe for in-water construction work; therefore, effects to these more sensitive life stages will be extremely unlikely to occur (i.e., discountable).

Increases in turbidity due to grapnel runs along the riverbed to prepare the area for the submarine cable installation are expected to create short-term, localized increases in turbidity. While the suspended sediment concentrations and turbidity associated with this activity have not been modeled, these activities are expected to result in minimal resuspension of sediment and to be similar to an anchor dragging on the sediment surface and will occur within the temporary impact area for the submarine cables that will be subsequently installed. Additionally, any debris or trash encountered during the grapnel run will be removed and disposed of at an appropriate facility.

In the case of North American green sturgeon Southern DPS individuals that may be present in the open water portion of the action area year-round, these individuals can tolerate elevated turbidity levels and will have the ability to swim away from or avoid the grapnel run and hydroplow work areas, as needed. Based on the sediment dispersion modeling performed for the Proposed Project (ERM 2024) and available data for the Delta (CDWR 2013), the proposed operation of the hydroplow is predicted to create a temporary, localized turbidity plume at a concentration of up to approximately 60 NTUs (20 mg/L), above background levels. The temporary elevated levels of turbidity to be caused by the hydroplow are considerably less than the thresholds commonly cited as potentially causing behavioral or physical impacts on sturgeon (NOAA Fisheries 2025). Further, any areas of suspended sediment that would result in altered behavior and avoidance by fish would be temporary and localized and not create a barrier to fish

passage. The localized and short-lived nature of the suspended sediment plume from the hydroplow operations and grapnel runs provides the opportunity for sturgeon and other mobile fish species that may detect effects from elevated turbidity to move to portions of the Delta where concentrations are at background levels. Therefore, effects to North American green sturgeon Southern DPS are anticipated to be insignificant.

Trenching and backfilling activities along the northern and southern shorelines will also cause localized increases in suspended sediment. Sediment dispersion modeling showed that suspended sediment concentration from trenching and backfilling activities are very high but are transient and dissipate quickly; backfilling activities showed higher maximum suspended sediment concentrations. With the implementation of NOAABA-AMM-11, a turbidity curtain will be used to contain the suspended sediment during trenching and backfilling activities on the northern and southern shorelines, which will minimize turbidity effects on fish occurring in waters near these activities. Green sturgeon are typically found in deeper waters and are not likely to be in the nearshore shallow water areas where trenching and backfilling activities are proposed. With the implementation of NOAABA-AMM-11 and NOAABA-AMM-12, and considering the relatively small size of the aquatic habitat to be impacted by the trenching/backfilling, the effects from increased turbidity from trenching and backfilling activities on federally-listed fish will be insignificant. Additionally, LSPGC will implement NOAABA-AMM-03, 05, and 06 to ensure that workers understand the areas where there are sensitive resources located near work areas or staging areas. Sensitive resources will be flagged to ensure they are avoided and materials, such as soils, from construction areas do not inadvertently affect sensitive aquatic resources. With the implementation of the AMMs, effects associated with increased turbidity from trenching and backfilling activities will be insignificant.

Given the limited in-water work window that is protective of salmonids, natural variability in water quality within the action area, and implementation of AMMs for water quality, effects to these federally listed fish species will be insignificant or discountable and the federal action may affect but is not likely to adversely affect these species.

6.1.1 Pumping

A hydroplow will be used to install the submarine cables beneath the sediment surface in the Delta. During cable installation, mechanical pumps will draw water from the Delta water column and transfer the water to the jets on the front blade of the hydroplow. While individual salmonids are not likely to be present during the planned timeframe for in-water construction activities, migrating juveniles and adults may occur in the action area in late fall and early winter; however, in-water construction activities will be completed by that time. Although rare, juvenile salmonids may occur in the estuary/bay habitat year-round, and the North American green sturgeon Southern DPS may occur year-round.

Hydroplow operations will involve pumping water from approximately 3 feet below the surface of the water and may result in entrainment of fish into the intakes. However, no pumping will occur near the benthic foraging habitat typically used by adult or juvenile North American green sturgeon. Potential for fish entrainment in the hydroplow intakes will also be minimized through the use of appropriately sized fish screens on all water intakes in accordance with NOAABA-AMM-14, which will prevent entrainment of fish above a certain size. LSPGC will design the fish screens on the hydroplow intakes in accordance with the applicable CDFW and NOAA

Fisheries (CDFW 2000, NOAA Fisheries 1997) fish screen criteria, as well as the USFWS fish screen requirements for Delta smelt.

Fish located near the screened hydroplow intakes during pumping may be impinged on the fish screens, which may result in injury or death of individuals. However, North American Green sturgeon Southern DPS are not anticipated to occur near the fish screen near the surface of the water column and therefore are extremely unlikely to be impinged on the fish screens on the hydroplow intakes. Additionally, LSPGC will implement NOAABA-AMM-12 to limit work to a time of year when salmonids are not likely to occur in the action area and therefore effects to salmonids are discountable. In addition, LSPGC will also implement NOAABA-AMM-14 and design the fish screens in accordance with the CDFW and NOAA Fisheries (CDFW 2000, NOAA Fisheries 1997) fish screen criteria, as well as the USFWS requirements for Delta smelt, which require that appropriate sweeping velocities are achieved on the screens to minimize impingement. The hydroplow intake(s) will also be moving through the water as the hydroplow is pulled through the water and the fish screen will be operated such that the appropriate sweeping velocities across the screen can be achieved to minimize impingement. With the implementation of the AMMs, the effects from impingement will be discountable.

With the implementation of these AMMs and low likelihood of individuals being present near the hydroplow intake(s), the effects from entrainment and impingement on these federally listed fish species will be discountable and the federal action may affect but is not likely to adversely affect these species.

6.1.2 Trapping

Trenching activities will occur near the northern and southern shoreline work areas and require a land-based excavator to remove sediment within the trenches for the submarine cables to transition onto land. The North American green sturgeon Southern DPS individuals are typically located in deeper water areas and will likely be deterred from these shoreline areas during in-water construction as a result of the noise and activity generated during the construction. With the implementation of NOAABA-AMM-12, salmonids are unlikely to be present or affected by the trenching and backfilling activities. However, LSPGC will implement NOAABA-AMM-15 to develop a Fish Exclusion Plan that will include use of a barrier (e.g., fish exclusion netting, screens, or other methods) to minimize the potential for fish to enter the trenching work areas and become trapped in the trenches along the northern and southern shorelines of the Delta. With the implementation of the AMMs, the effects from trenching will be insignificant or discountable.

6.1.3 Noise Disturbance

No in-water sheet pile driving is anticipated. Temporary sheet piles may be installed with a vibratory or impact hammer on land near the utility vaults on the southern side of the Delta and no closer than 50 feet from the shoreline. Sheet pile driving on land can result in sound propagation caused by the vibration of the ground that can re-radiate as noise into the adjacent waters (California Department of Transportation [Caltrans] 2020). However, temporary sheet piles are not typically driven into the ground as deep as is required for structural sheet piles, and therefore do not require as much energy or time to install. Underwater sound can affect fish species and result in mortality, damage to their internal organs, or behavioral changes. Ambient

underwater sound levels within San Francisco Bay are generally 120 to 155 decibels (dB) (Caltrans 2020). The Fisheries Hydroacoustics Working Group (2008) has designated interim threshold criterion for effects to fish, including the following:

- A peak injury threshold criterion of 206 dB sound pressure level for all sizes of fish, which is the maximum sound level associated with a single strike during pile driving. Fish that are exposed to noise levels at or above this level during a single strike are subject to injury or potentially death.

- A 183 dB cumulative sound exposure level (SEL) was set as the threshold criterion for injury or mortality of small fish (less than 2 grams).

- A 187 dB cumulative SEL was set as the threshold criterion for injury or mortality of fish larger than 2 grams.

Because juveniles or adult salmonids and North American Green sturgeon Southern DPS may be present in the action area during the planned in-water construction and will likely be more than 2 grams, the 187 dB cumulative SEL would be the applicable standard; however, the 183 dB cumulative SEL was used to analyze noise disturbance and potential hydroacoustic effects on all federally-listed fish for this BA and the USFWS BA because Delta smelt and longfin smelt may be less than 2 grams. For the purposes of this BA, a 183 dB cumulative SEL was used as a conservative estimate of potential hydroacoustic effects to all fish species managed by NOAA Fisheries, and a 150 dB (Root Mean Square [RMS]) sound pressure behavioral modification threshold was used to determine the distance at which sound may cause behavioral changes for fish in the action area (Caltrans 2020). Modeled distances for sound thresholds for on land sheet pile driving (WRA 2024) are provided in Table 6: Sheet Pile Driving Installation Scenarios with No Attenuation. If no sound attenuation is used, impact driving of steel sheet piles on land could cause injury to fish within approximately 82 feet of the sheet piles and behavioral changes by fish within approximately 330 feet of the sheet pile driving (WRA 2024).

Table 6: Sheet Pile Driving Installation Scenarios with No Attenuation

Sheet Pile Installation Scenarios*	Distance to 206 dB Peak (Injury)	Distance to 183 dB SEL (Injury)	Distance to 150 dB RMS (Behavioral Disturbance Threshold)
Sheet pile (on land) with an unattenuated impact hammer at 2,000 strikes per day	3.4 meters (11.2 feet)	25.1 meters (82.4 feet)	100 meters (328.1 feet)
Sheet pile (on land) with vibratory hammer installation for 480 minutes (8 hours) per day.	N/A**	N/A**	1.6 meters (5.2 feet)

*Sound levels from on land pile driving were assumed to be naturally attenuated by 10 dB (Caltrans 2020).
**Sound levels will not exceed threshold limit at the source of the noise.
Source: WRA 2024

Temporary sheet pile installation on land will occur no closer than 50 feet from the shoreline and the 183 dB injury zone will extend approximately 30 feet into the Delta. However, marine construction equipment will be operating in this area and small fish are likely to be deterred from this area and move to other available habitat areas nearby. Therefore, the sheet pile installation is unlikely to result in injury to fish species that may occur in the shallow water area near the southern shoreline. Depending on the distance from the shoreline and the soils types on site, there may be some sound propagation into adjacent waters that may cause behavioral disturbance for fish; however, the area of potential behavioral modification will be limited within approximately 280 feet from the shoreline, which leaves abundant room in the action area for fish to avoid the potential temporary increase in underwater sound levels. Where the LSPGC 230 kV Submarine Segment intersects the southern shoreline, the width of the open water channel (Suisun Bay Channel) is approximately 0.7 mile (4,000± feet). Therefore, adjacent to the south shore cable landfall, ample open water migratory habitat greater than 3,700 feet in width will remain unaffected by noise from onshore pile driving and available for fish passage.

Installation with a vibratory hammer would not result in any propagation of sound into the Delta. North American green sturgeon Southern DPS individuals are unlikely to be present in the shallow water adjacent to the southern shoreline of the Proposed Project during sheet pile driving activities, as this species prefers deeper water habitats. Further, any North American green sturgeon Southern DPS individuals or salmonids that may occur near the southern shoreline will likely be deterred by the marine vessels, barges, and equipment that will be active along the shoreline during the Proposed Project. Busy ports and bays frequently have background noise levels measured at or above the 150 dB threshold for behavioral effects, and the action area is a high-traffic shipping area that is likely to have similarly high background noise levels. Given the modeled sound levels and the high background noise levels that exist in the action area, it is extremely unlikely that sheet pile driving on land will affect North American green sturgeon Southern DPS individuals or salmonids that occur in the action area. LSPGC will implement NOAABA-AMM-13 and utilize attenuation methods to further reduce sound level propagation from pile driving at the utility vaults; therefore, the federal action may affect but is not likely to adversely affect these species.

In addition, installation of the submarine cables will require the use of marine construction equipment that will create noise during the in-water construction activities. The action area is located within one of the busiest shipping lanes and recreational channels on the West Coast, and the area is subject to daily disturbance by recreational boat traffic and trans-Pacific cargo ships navigating their way up the Suisun Bay Channel and into the Sacramento Deep Water Shipping Channel or Stockton Ship Channel. This typical vessel traffic creates noise that exceeds the behavioral thresholds for fish (Caltrans 2020), resulting in a baseline condition of regular behavioral noise disturbance. Any potential noise impacts from operation of the hydroplow and marine vessels for the Proposed Project will be a temporary incremental increase to the background noise condition in the action area. The Proposed Project's exceedance of the behavioral threshold for fish during in-water construction may result in fish avoiding the active work area during the in-water construction activities. LSPGC will implement NOAABA-AMM-12 to conduct in-water construction during the in-water work window from July 1 to November 30 of any year to avoid impacts to salmonids. North American green sturgeon Southern DPS individuals may be present in the action area during the planned in-water construction timeframe, but will be in deeper waters and effects to North American green sturgeon Southern DPS

individuals from noise disturbance from the marine equipment is likely to be discountable against the existing background noise of the non-project vessel traffic.

Therefore, the noise disturbance from marine equipment and sheet pile driving on land may affect but is not likely to adversely affect ESA-listed fish that may be present in the action area.

6.1.4 Artificial Lighting

In-water construction activities for the Proposed Project will require marine vessels and equipment to operate 24 hours a day to minimize the overall duration of the activities and the successful installation of the four submarine cables. Using the marine equipment 24 hours a day will minimize the total time needed for cable installation and the associated period of potential impact on estuarine species in the action area. In-water construction equipment will be required to display lights when operating at night, and deck lighting will be required for any work areas. A study conducted in the Delta showed that artificial lighting at night can attract juvenile Chinook salmon and their predators to the illuminated waters and increase predation risk on juvenile Chinook salmon, especially late in the night (Nelson *et al*. 2021). With the implementation of NOAABA-AMM-12 in-water work window, it is unlikely that salmonids will be present in the action area at the time of year that in-water construction is planned. North American green sturgeon Southern DPS individuals may be present in the action area during the in-water construction work and are likely to be located in deeper waters or deterred by the marine construction equipment disturbance, resulting in individuals not being attracted to any temporary night lighting introduced by the Proposed Project. However, LSPGC will implement NOAABA-AMM-07 to ensure lighting will be down-shielded to illuminate the decks of vessels or shoreline work areas, to the extent feasible, to further minimize the potential for illuminating the surrounding waters. Therefore, the effects of night lighting on salmonids and North American green sturgeon Southern DPS individuals are extremely unlikely to occur (i.e., discountable). The federal action may affect but is not likely to adversely affect these species.

6.1.5 Invasive Species

Marine equipment that has been used in other areas outside of the Delta may be used to perform the in-water construction activities associated with the Proposed Project. Marine equipment has the potential to transfer invasive species between waterbodies, if not properly cleaned or handled according to appropriate maritime regulations. The introduction of invasive species may result in death or injury of individuals caused by invasive species that prey on juvenile fish in the action area; or in increased competition for resources; or reduction in habitat quality. LSPGC will implement NOAABA-AMM-16 that requires that all marine equipment be used in accordance with maritime regulations to minimize project-related introduction or transfer of invasive species into the action area. With implementation of the AMM, the effects will be discountable. The federal action may affect but is not likely to adversely affect these species.

6.1.6 Electromagnetic Field

The transmission of direct current (DC) or alternating current (AC) electricity through a cable will produce an electromagnetic field. Concerns have been raised about the impacts of these electromagnetic fields from submarine cables, including the potential for distortion of the earth's main magnetic field and disruption of the ability for marine mammals and some fish species that perceive and orient to the earth's magnetic field for navigation. Some migratory fish species,

such as North American green sturgeon or salmonids, may be particularly sensitive to electromagnetic fields created by submarine cables. The Trans Bay Cable Project in San Francisco Bay installed an approximately 53-mile-long high voltage DC cable from the City of Pittsburg to the City of San Francisco. Studies conducted on the energized Trans Bay Cable evaluated the potential impacts of the submarine cable on the ability of salmonids (Klimley *et al.* 2017) and North American green sturgeon Southern DPS (Klimely *et al.* 2017, Wyman *et al.* 2023) migration or navigation patterns before and after the submarine cable installation. The Trans Bay Cable lies along the migratory route for these species and the studies generally found that the energized cable did not affect migration or navigation patterns. More specifically, these studies found that North American green sturgeon Southern DPS inbound migrating individuals were more likely to successfully transit through the Trans Bay Cable study area after the cable was energized and there was no effect on successful outbound transits, but further studies on the effects is needed (Wyman *et al.* 2023). Additionally, it appears that the distortion of the earth's magnetic field from bridges in the San Francisco Bay Delta Estuary are much greater than distortions from the Trans Bay Cable. The Proposed Project includes AC transmission cables and will cross the migration corridor for the Chinook salmon Sacramento River winter-run ESU, Chinook salmon Central Valley spring-run ESU, North American green sturgeon Southern DPS, and the steelhead California Central Valley DPS. However, the submarine cables are anticipated to have no greater impact than the Trans Bay Cable and the effects are anticipated to be insignificant. Based on LS Power's experience with permitting other 230 kV submarine transmission cables in critical habitat for sturgeon, and considering the shielding effects of the cable armoring and proposed burial depths beneath the riverbed, the EMF levels to be generated above the submarine cables at the sediment/water interface at the non-emergency rating of the cables are expected to be below reported minimum thresholds for detection by sturgeon.[8] The federal action may affect but is not likely to adversely affect these species.

6.2 EFFECTS TO CRITICAL HABITAT

The action area is located within NOAA Fisheries-designated critical habitat for the Chinook salmon Sacramento River winter-run ESU, North American green sturgeon Southern DPS, and steelhead California Central Valley DPS. Impacts to critical habitat within the action area are provided in Table 7: Impacts to NOAA Fisheries-Designated Critical Habitat.

Table 7: Impacts to NOAA Fisheries-Designated Critical Habitat

Critical Habitat	Approximate Temporary Impacts (acres)	Approximate Permanent Impacts (acres)
Chinook salmon Sacramento River winter-run ESU (Estuarine and open water)	16.78	0
North American green sturgeon Southern DPS (Estuarine, Marsh, and open water)	16.78	0
Steelhead California Central Valley DPS (Estuarine)	3.79	0

[8] The literature indicates that sturgeon are expected to detect magnetic fields above thresholds of 10 to 20 G and detect electric fields above thresholds of 20 to 60 mV/m.

The Proposed Project will result in approximately 16.78 acres (730,822 square feet) of temporary impacts to critical habitat, and will not result in any permanent effects to waters or benthic habitats during installation of the proposed LSPGC 230 kV Submarine Segment. The temporary impacts of the Proposed Project will be relatively small compared to the overall size of the critical habitat available to these species; the habitat in the action area contains sufficient food resources and space for these species.

6.2.0 Chinook Salmon Sacramento River Winter-Run ESU and Steelhead California Central Valley DPS

Critical habitat for Chinook salmon Sacramento River winter-run ESU and the steelhead California Central Valley DPS in the action area includes estuarine, open water habitat that serves as the migration corridor for these species. The essential PBFs for critical habitat for these species that may be affected by the federal action include estuarine water quality conditions and natural cover, including potential SAV habitat, side channels, and undercut banks supporting juvenile and adult mobility and survival. Potential effects to these critical habitat features for Chinook salmon Sacramento River winter-run ESU and steelhead California Central Valley DPS may occur from increased turbidity, a potential spill of contaminants or release of contaminated sediment, and disturbance to benthic habitat as a result of in-water construction activities.

Within the action area, temporary disturbance of the sediment during grapnel runs, hydroplow activities, and trenching and backfilling activities will result in localized increases in turbidity that may result in reduced water quality; however, with the implementation of NOAABA-AMM-12, the juveniles or adult fish for these species are not anticipated to be in the action area during the planned timeframe for in-water construction. Water quality and critical habitat may be degraded if there is an accidental spill of hazardous materials during construction, but NOAABA-AMM-09 will be implemented to reduce the potential for a spill or release of contaminants. LSPGC will implement NOAABA-AMM-08 to minimize the potential for any accidental spills resulting from vessel collisions. Additionally, the in-water construction activities may resuspend contaminated sediment, which could result in degraded critical habitat; however, LSPGC will implement NOAABA-AMM-10 requiring sediment testing to be conducted, if warranted, prior to the installation of the submarine cables to ensure that resuspension of contaminants into the water column is avoided. LSPGC will also implement NOAABA-AMM-02, 05, and 06 to ensure that workers understand the areas where there are sensitive resources located near work areas or staging areas. Sensitive resources will be flagged to ensure they are avoided and materials, such as soils, from construction areas do not inadvertently affect sensitive aquatic resources. With the implementation of these AMMs, effects to the water quality features of critical habitat will be extremely unlikely to adversely affect critical habitat required during migration.

Most of the in-water construction activities associated with the hydroplow in the action area will occur in the deeper channels of the Delta; however, some in-water construction activities will occur in shallow water habitat along the northern and southern shorelines of the Delta, including areas potentially supporting SAV. The grapnel runs and hydroplow activities will disturb approximately 1.26 acres of potential SAV, which may provide shelter for juvenile and adult fish to avoid predators as they migrate through the action area. However, the disturbance to benthic

habitat, including SAV, will occur along a small portion of the linear alignment of each of the four submarine cables and will be spread out over four distinct areas along each shoreline. Disturbance and temporary removal of SAV would result in a small temporary loss of shelter for these species until the SAV regrows. In addition, sediment that is released into the water column from trenching and backfilling activities and the hydroplow may settle on adjacent SAV and result in reduced photosynthesis and growth, which may temporarily affect the physical quality of the critical habitat. However, the action area naturally has periods of high turbidity, and LSPGC will minimize turbidity effects on adjacent areas during trenching and backfilling activities by implementing NOAABA-AMM-11 that includes installation of a turbidity curtain to contain suspended sediment to a localized area. The cable furrow typically disappears after a few tidal cycles as the sediment is reworked by the tides, fills in the impact areas, and as the SAV regrows the following growing season. Additionally, LSPGC will implement NOAABA-AMM-04 to develop and implement a restoration plan that includes restoration of disturbed tidal marsh habitat along the northern shoreline of the Delta, which will restore the connections (e.g., sediment transport, primary production) between tidal marsh areas and open water habitats to pre-construction conditions.

Based on this information and the relatively small area of impacts to critical habitat, the federal action may affect, but is not likely to adversely affect the essential PBFs associated with critical habitats for the Chinook salmon Sacramento River winter-run ESU and the steelhead California Central Valley DPS.

6.2.1 North American Green Sturgeon Southern DPS

Critical habitat for North American green sturgeon Southern DPS in the action area includes estuarine, open waters, marshes, and stream habitat types. The essential PBFs of critical habitat for the North American green sturgeon Southern DPS that may be affected by the federal action include food resources, water quality, depth, and sediment quality. The potential impacts on water flow and the migratory corridor features of the critical habitat are undetectable or not measurable, and these features are not further discussed in this BA. Potential impacts to critical habitat for North American green sturgeon Southern DPS may occur from increased turbidity, a potential spill of contaminants or release of contaminated sediment, and disturbance and modification to benthic foraging habitat as a result of in-water construction activities.

Within the action area, grapnel runs, hydroplow activities, and trenching and backfilling on both shorelines of the Delta will result in temporary, localized increases in turbidity as the sediment is resuspended into the water column. Localized turbidity will affect water quality in areas around the in-water construction activities and may result in health impacts to juvenile or adult North American green sturgeon Southern DPS or from degraded habitat due to the exposure of potential contaminants from the sediment. Sediment dispersion modeling showed that the increased turbidity associated with in-water construction activities will be temporary and is anticipated to dissipate to background levels within one day. Additionally, increased turbidity and sedimentation due to hydroplow activities is anticipated to extend 600 to 1,000 feet from the cable furrow, but this will depend on the tide cycle and currents. Dispersion modeling showed that sediment settlement outside of the cable furrow will be less than 0.01 inches (0.1 mm) (ERM 2024). LSPGC will implement NOAABA-AMM-10 to screen and test sediment along the submarine cable alignment, if warranted, before the sediment is disturbed; thereby, reducing the

risk of exposing contaminants within the sediment to the aquatic environment and affecting the surface sediment quality. Additionally, LSPGC will implement NOAABA-AMM-11 and utilize sediment containment, such as a turbidity curtain, to minimize turbidity effects from trenching activities. With implementation of these AMMs, effects to water quality and sediment quality will be insignificant.

The Proposed Project requires operation of marine equipment in the Delta. There is a chance that there could be a spill of hazardous materials during construction, which may also affect the water quality of critical habitat. LSPGC will implement NOAABA-AMM-09 that requires preparation and implementation of an aquatic spill prevention program to reduce potential effects on water quality. LSPGC will implement NOAABA-AMM-01 and 03 to educate workers of the appropriate means for handling hazardous materials and using appropriate dust control measures to ensure that construction site materials do not end up in aquatic ecosystems. Additionally, NOAABA-AMM-08 will ensure appropriate vessel safety to prevent any collisions or accidents that may result in the inadvertent release of contaminants into waters of the action area. With the implementation of the AMMs, the water quality effects from release of hazardous materials are anticipated to be discountable or insignificant.

The Proposed Project includes grapnel runs and hydroplow activities that will occur in water with various depths as described in Table 4: Vegetation Communities and Land Cover Types, including the deeper channels (approximately 60 to 70 feet below MLLW) of the Sacramento and San Joaquin rivers and shallow habitats (less than 20 feet below MLLW) along the margins of the Delta. The grapnel runs and hydroplow activities will temporarily disturb benthic sediment during the installation of the four submarine cables and may result in temporary, localized changes in bathymetry and a reduction in available benthic food resources from direct removal and the smothering of non-mobile prey. Most sediment is anticipated to settle back into the cable furrow immediately and sediment that settles adjacent to the cable furrow is anticipated to only form a thin layer that is less than 0.01 inch thick (ERM 2024) for each submarine cable. The furrow will typically disappear after a few tidal cycles due to natural sediment dispersion and allow for recolonization of the area by benthic species, including prey items for the North American green sturgeon Southern DPS. Additionally, LSPGC will implement NOAABA-AMM-04 which requires a restoration plan to be developed and implemented which will restore disturbed tidal marsh habitat along the northern shoreline of the Delta. This will restore the connections (e.g., sediment transport, primary production) between tidal marsh areas and open water habitats to pre-construction conditions.

Operation of the submarine cable will generate heat, which will dissipate into the surrounding sediment and will affect the temperature of the sediment and may affect the recolonization of the benthic impact areas by prey species. However, modeled soil temperatures around the cables during operations show that the heat generated by each of the submarine cables is anticipated to dissipate to ambient soil temperatures within 2 to 3 feet below the sediment surface. Cable operations are not anticipated to affect the ability of benthic organisms to live within the sediment overlying the cable and this effect will be insignificant. Additionally, the operation of the submarine cable will produce an electromagnetic field that may result in a small distortion of the earth's magnetic field, but this effect is not likely to degrade the quality or quantity of critical habitat for the North American green sturgeon Southern DPS.

Based on this information and the relatively small area of effects to critical habitat, the federal action may affect, but is not likely to adversely affect the essential PBFs associated with critical habitat for the North American green sturgeon Southern DPS.

6.3 EFFECTS TO ESSENTIAL FISH HABITAT

Under the EFH implementing regulations in Title 50, Section 600.810(a) of the CFR, the term "adverse effect" is defined as any "impact that reduces quality and/or quantity of EFH." Adverse effects also "may include direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quantity and/or quality of the EFH." Federal activities that occur outside of an EFH, but may nonetheless have an impact on EFH waters and substrate, must also be considered in the consultation process. Temporary impacts to EFH are anticipated during the in-water work associated with the installation of the four submarine cables for the proposed LSPGC 230 kV Submarine Segment. The Proposed Project may adversely affect EFH for federally managed species through the exposure to increased underwater sound levels, degradation of water quality, and temporary modifications to food resources, habitat disturbance, and production of an electromagnetic field. However, the Proposed Project incorporates measures to avoid, minimize, or otherwise offset adverse effects to EFH.

The installation of the submarine cables will require the use of marine construction equipment that will create noise during the in-water construction activities; however, the action area is located within one of the busiest shipping lanes and recreational channels on the West Coast, and the area is subject to daily disturbance by recreational boat traffic and trans-Pacific cargo ships making their way up the Sacramento Deep Water Shipping Channel and Stockton Ship Channel. Sound levels associated with the hydroplow operations will not increase noise in the action area to levels that could cause injury or behavioral effects to fish. In addition, sheet pile driving on land at the proposed utility vaults may temporarily increase sound levels that will be confined to a small area near the southern shoreline of the Delta, but these activities are not anticipated to greatly increase noise in the action area above background levels. Further, the sheet pile driving will be short in duration and LSPGC will implement NOAABA-AMM-13 to attenuate sound and minimize potential sound effects on fish occurring near the southern shoreline of the action area.

The Proposed Project may result in temporary impacts to EFH for federally managed fish species from the use of marine vessels, barges, tugs, generators, and the staging of equipment within in-water work areas. Diesel fuel or other chemicals could inadvertently spill into the Delta, resulting in degraded habitat, injury, and possibly mortality to managed fish species or prey items present in the water column and on the sediment surface in the action area. Based on the previous definition of "adverse effect," it is anticipated that inadvertent exposure to these chemicals may affect EFH in the action area. However, the LSPGC will implement NOAABA-AMM-09 to implement an aquatic spill prevention and control plan to minimize potential for adverse effects. LSPGC will implement NOAABA-AMM-01 and 03 to educate workers of the appropriate means for handling hazardous materials to ensure that construction site materials do not end up in aquatic ecosystems. Additionally, NOAABA-AMM-08 will ensure appropriate vessel safety to prevent any collisions or accidents that may result in the inadvertent release of contaminants into waters of the action area.

The Proposed Project may also affect water quality and EFH by generating increased turbidity during grapnel runs, hydroplow activities, and the trenching and backfilling activities near the northern and southern shorelines of the Delta. Turbidity associated with the hydroplow activities is expected to be temporary and dissipate within one day. Once the hydroplow activities begin, the hydroplow will be operated continuously and take approximately 10 to 15 days to complete installation of each submarine cable; the hydroplow will be operated for a total of 28 to 40 days. Elevated turbidity may affect water quality for EFH for managed fish species and result in reduced food availability, disruption of normal feeding behavior, reduced growth rates, increased stress levels, and reduced respiratory function in fish. However, any increases in turbidity will be localized to a small portion of the action area where the grapnel runs, hydroplow activities, and trenching and backfilling activities occur and will be short in duration. Most of the action area will be unaffected and provide abundant habitat areas for fish to use. LSPGC will implement NOAABA-AMM-11 to contain suspended sediment during trenching and backfilling activities to minimize turbidity effects on fish. Additionally, LSPGC will implement NOAABA-AMM-03 to educate workers on using appropriate dust control measures to ensure that construction site materials do not end up in aquatic ecosystems.

Grapnel runs, hydroplow activities, and in-water trenching and backfilling activities will result in benthic disturbance from the hydroplow tracks, cable furrow, and trenches. Direct disturbance and removal of benthic habitat during in-water construction of the Proposed Project may affect EFH and the species that depend on EFH, resulting in the temporary loss of foraging habitat and associated food resources, as well as potential loss of shelter provided by potential SAV present in the action area. The SAV may be affected through direct disturbance of the vegetation and through potential reduction in growth as a result of increased turbidity or sediment settling on the vegetation and causing reduced photosynthetic ability. Disturbance to the benthic habitat will be relatively small and linear, with the disturbance areas spread out over a large area of the benthic habitat. The furrow created by the hydroplow on the bed of the Delta will be temporary and will typically disappear after a few tidal cycles due to natural sediment dispersion, allowing recolonization and utilization of the benthic habitat. The Proposed Project activities will not result in any permanent loss of EFH within the lower Delta nor any permanent modifications to channel depth, water flow, or salinity in the action area. LSPGC will implement NOAABA-AMM-04 to develop and implement a restoration plan that includes restoration of disturbed tidal marsh habitat along the northern shoreline of the Delta, which will restore the connections (e.g., sediment transport, primary production) between tidal marsh areas and open water habitats to pre-construction conditions. The impacted areas are not anticipated to constitute a significant effect on the overall availability of EFH for coastal pelagic species, Pacific coast groundfish species, or Pacific salmonid species.

LSPGC does not anticipate that any maintenance of the LSPGC 230 kV Submarine Segment will be necessary over the life of the Proposed Project. During the operation of the Proposed Project, the exterior temperature of the cable will vary from approximately 60ºC during the steady state operations of the cable to approximately 71ºC during peak operations times. The conductors used for the transmission of electricity within each of the submarine cables are surrounded by insulating material, protective sheaths, and armoring that help protect the conductors and limit the heat that reaches the exterior of the cable. Each of the submarine cables will be covered by 6 to 15 feet of sediment, and this burial depth is deeper than the existing Trans Bay Cable that runs from the City of Pittsburg to the City of San Francisco (USACE Permit No. 28512S; NOAA

Fisheries File No. 2006/06890). Modeled soil temperatures around the Proposed Project submarine cables during operations show that the heat generated by each of the cables is anticipated to dissipate to ambient soil temperatures within 2 to 3 feet below the sediment surface. Cable operations are not anticipated to affect the ability of benthic organisms to live within the sediment overlying the cable. It was previously determined by NOAA Fisheries that the heat produced during the operation of the Trans Bay Cable will sufficiently dissipate within the surrounding sediment and not impact the upper layers of the sediment, and that benthic organisms should recolonize the disturbed sediment in the hydroplow impact area within 1 year. Similar recovery is anticipated for the Proposed Project, especially once sediment bathymetry is restored following construction.

Additionally, the operation of the submarine cables will produce an electromagnetic field that may result in a small distortion of the earth's magnetic field, but this effect is not likely to degrade the quality or quantity of EFH, based upon studies (Klimely *et al.* 2017, Wyman *et al.* 2023) conducted in San Francisco Bay on the effects of the Trans Bay Cable on North American green sturgeon Southern DPS and salmonids.

Therefore, the Proposed Project may affect EFH for coastal pelagic, Pacific coast groundfish, and Pacific salmonid species; however, the Proposed Project contains adequate measures to avoid, minimize, mitigate, or otherwise offset the adverse effects to EFH.

6.4 CUMULATIVE EFFECTS

Cumulative effects include those effects of future state, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this BA. Future federal actions that are unrelated to the proposed action do not meet the definition of cumulative effects and are therefore not considered in this BA. As any action in wetlands or waters is likely to involve fill or the discharge of materials, those actions will require federal authorization under Section 404 of the Clean Water Act. As a result, no reasonably certain future state, local, or private actions that do not require federal authorization are anticipated to occur in the action area. As a result, no cumulative effects were identified for the Chinook salmon Central Valley spring-run ESU, Chinook salmon Sacramento River winter-run ESU, the North American green sturgeon Southern DPS, the steelhead California Central Valley DPS, or EFH for coastal pelagic species, Pacific Coast groundfish species, and Pacific salmonid species.

7 – CONCLUSION AND DETERMINATION OF EFFECTS

As described in the previous sections, the in-water and shoreline construction activities will be short in duration and will occur at a time of year when salmonids are not likely to occur in the area. Additionally, these activities are not anticipated to increase effects on species present year-round, like North American green sturgeon Southern DPS individuals, above background levels (i.e., high suspended sediment concentrations, noise from vessel traffic, and lighting from vessels using shipping lanes) within the action area. As part of the Proposed Project, LSPGC will implement the AMMs described in Section 2.5 Avoidance and Minimization Measures to avoid and/or minimize the potential effects of the action on federally listed fish species covered in this BA. The activities associated with the Proposed Project may affect but are not likely to adversely affect the Chinook salmon Central Valley spring-run and the Sacramento River winter-run ESUs,

North American green sturgeon Southern DPS, and steelhead California Central Valley DPS, or NOAA Fisheries-designated critical habitat for these species.

The activities associated with the Proposed Project may affect EFH for coastal pelagic species, Pacific coast groundfish species, and Pacific salmonid species covered in the FMPs under the Magnuson-Stevens Act. However, the Proposed Project contains adequate measures to avoid, minimize, mitigate, or otherwise offset the adverse effects to EFH, as described in Section 2.5 Avoidance and Minimization Measures. Based on its review of this BA, NOAA Fisheries will determine if any other conservation recommendations are appropriate.

8 – REFERENCES

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ATTACHMENT A: DETAILED ROUTE MAP

Attachment A:
Detailed Route Map
Page 1 of 3

Collinsville 500/230 Kilovolt Substation Project

- Temporary Access Road
- Exisiting Road
- Proposed LSPGC 230 kV Overhead Segment
- Action Area
- Proposed LSPGC 230 kV ROW
- Permanent Structure Area
- Pulling Site
- Temporary Structure Work Area
- Delineated State Wetlands new
- Delineated Federal Wetlands new

Note: The basemap imagery used in this attachment is provided for illustrative purposes only. It may not accurately depict recent ground disturbances or changes near the Proposed Project, as the imagery was taken 3/16/2023.

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Attachment A:
Detailed Route Map
Page 2 of 3

Collinsville 500/230 Kilovolt Substation Project

- Temporary Access Road
- Exisiting Road
- Proposed LSPGC 230 kV Overhead Segment
- Proposed LSPGC 230 kV Submarine Segment
- Action Area
- Proposed LSPGC 230 kV ROW
- Permanent Structure Area
- Pulling Site
- Turbidity Curtain
- Temporary Structure Work Area
- Trench
- Underground Work Area
- Delineated State Wetlands new
- Delineated Federal Wetlands new

Proposed LSPGC 230 kV Submarine Segment continues toward PG&E's Existing Pittsburg Substation

Note: The basemap imagery used in this attachment is provided for illustrative purposes only. It may not accurately depict recent ground disturbances or changes near the Proposed Project, as the imagery was taken 3/16/2023.

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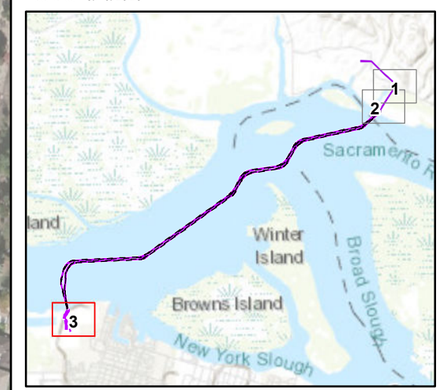
Attachment A:
Detailed Route Map
Page 3 of 3

Collinsville 500/230 Kilovolt Substation Project

- Proposed Fiber Hut
- Proposed Handhole
- Proposed LSPGC 230 kV Submarine Segment
- Proposed LSPGC 230 kV Underground Segment
- Proposed LSPGC Telecommunications Line
- Action Area
- Permanent Structure Area
- Riser Structure Work Area
- Turbidity Curtain
- Staging Area
- Trench
- Underground Work Area
- Utility Vault
- Existing PG&E Pittsburg Substation

Note: The basemap imagery used in this attachment is provided for illustrative purposes only. It may not accurately depict recent ground disturbances or changes near the Proposed Project, as the imagery was taken 3/16/2023.



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ATTACHMENT B: REPRESENTATIVE PHOTOGRAPHS

ATTACHMENT B: REPRESENTATIVE PHOTOGRAPHS

Photograph 1: South-facing view of the northern shoreline and the Delta taken on 5/9/2024.

Photograph 2: East-facing view of *Schoenoplectus* (*acutus*, *californicus*) Herbaceous Alliance taken on 5/25/2023.

Photograph 3: South-facing view of the northern shoreline and the Delta taken on 6/3/2024.

Photograph 4: Southeast-facing view of the northern shoreline and the Delta taken on 6/4/2024.

Photograph 5: West-facing view of *Schoenoplectus acutus*/*rosa californica* Association taken on 5/25/2023.

Photograph 6: West-facing view of shoreline at the PG&E's existing Pittsburg Substation taken on 12/19/2023.

Attachment B: Photo Locations Map 1 of 2 **Collinsville 500/230 Kilovolt Substation Project**

Photo Location

Action Area

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Attachment B: Photo Locations Map 2 of 2 **Collinsville 500/230 Kilovolt Substation Project**

Photo Location

Action Area

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ATTACHMENT C: VEGETATION COMMUNITIES AND LAND COVERS

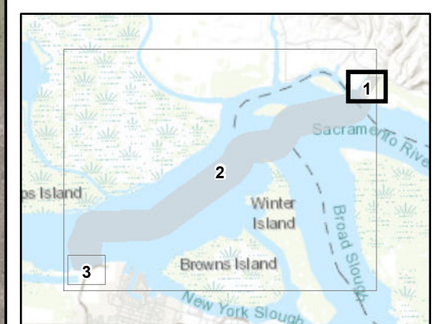
Attachment C:
Vegetation Communities and Land Covers
Map 1 of 3

Collinsville 500/230 Kilovolt Substation Project

- Action Area
- Delineated Federal Wetlands
- Delineated State Wetlands

Vegetation Community And Land Cover

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Distichlis spicata* Herbaceous Alliance
- *Frankenia salina* Herbaceous Alliance
- *Juncus arcticus (var. balticus, mexicanus)* Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Rosa californica* Shrubland Alliance
- *Salix exigua* Shrubland Alliance
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- *Schoenoplectus acutus/rosa californica* Association
- Road/Bare Ground
- Open Water
- Not Surveyed



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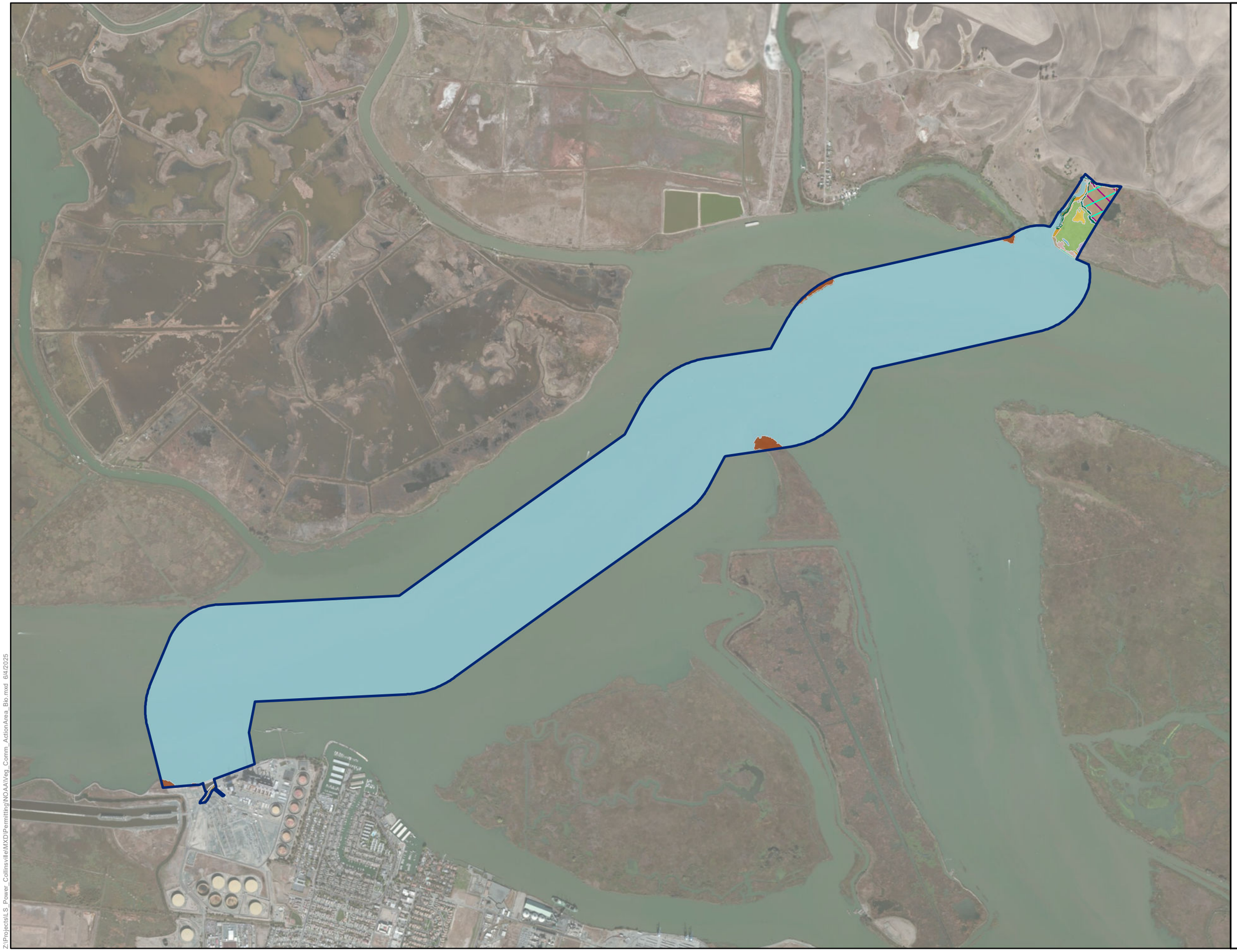


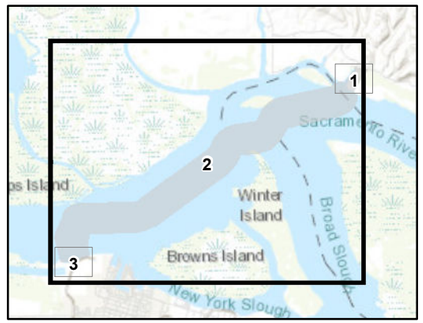
Attachment C:
Vegetation Communities and Land Covers
Map 2 of 3

Collinsville 500/230 Kilovolt Substation Project

- Action Area
- Delineated Federal Wetlands
- Delineated State Wetlands

Vegetation Community And Land Cover

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Distichlis spicata* Herbaceous Alliance
- *Frankenia salina* Herbaceous Alliance
- *Juncus arcticus (var. balticus, mexicanus)* Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Rosa californica* Shrubland Alliance
- *Salix exigua* Shrubland Alliance
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- *Schoenoplectus acutus/rosa californica* Association
- Disturbed
- Road/Bare Ground
- Rip Rap
- Open Water
- Developed
- Not Surveyed



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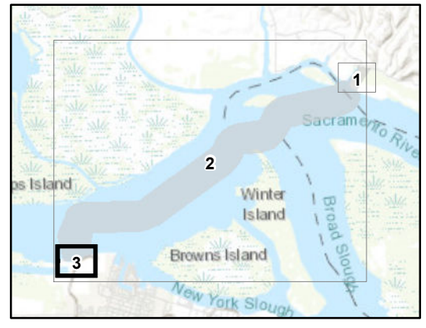
Attachment C:
Vegetation Communities and Land Covers
Map 3 of 3

Collinsville 500/230 Kilovolt Substation Project

Action Area

Vegetation Community And Land Cover

- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- Disturbed
- Rip Rap
- Open Water
- Developed
- Not Surveyed



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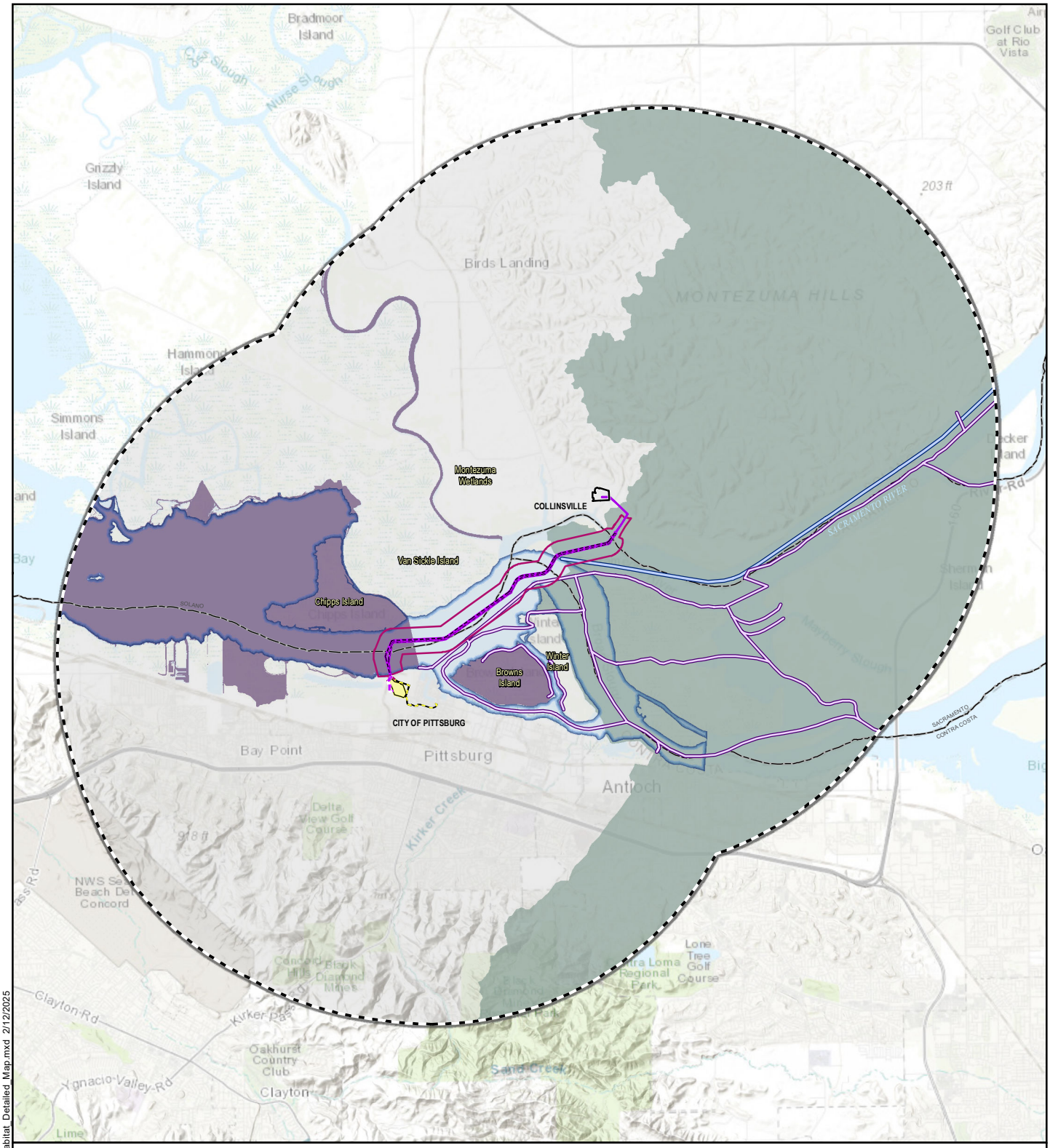
ATTACHMENT D: FISH HABITAT OVERVIEW MAP



Attachment D: Fish Habitat Overview Map - Critical Habitat

Collinsville 500/230 Kilovolt Substation Project

- Proposed LSPGC Telecommunications Line
- Proposed LSPGC 230 kV Overhead Segment
- Proposed LSPGC 230 kV Underground Segment
- Proposed LSPGC 230 kV Submarine Segment
- County Boundary
- Proposed LSPGC Collinsville Substation Site
- Existing Pittsburg Substation
- Action Area
- 5-Mile Buffer

Critical Habitat

- Green Sturgeon Southern DPS (Stream)
- Green Sturgeon Southern DPS (Estuary)
- Chinook Salmon Sacramento River Winter-Run ESU (River or Stream)
- Chinook Salmon Sacramento River Winter-Run (Estuary)
- Steelhead Central Valley DPS

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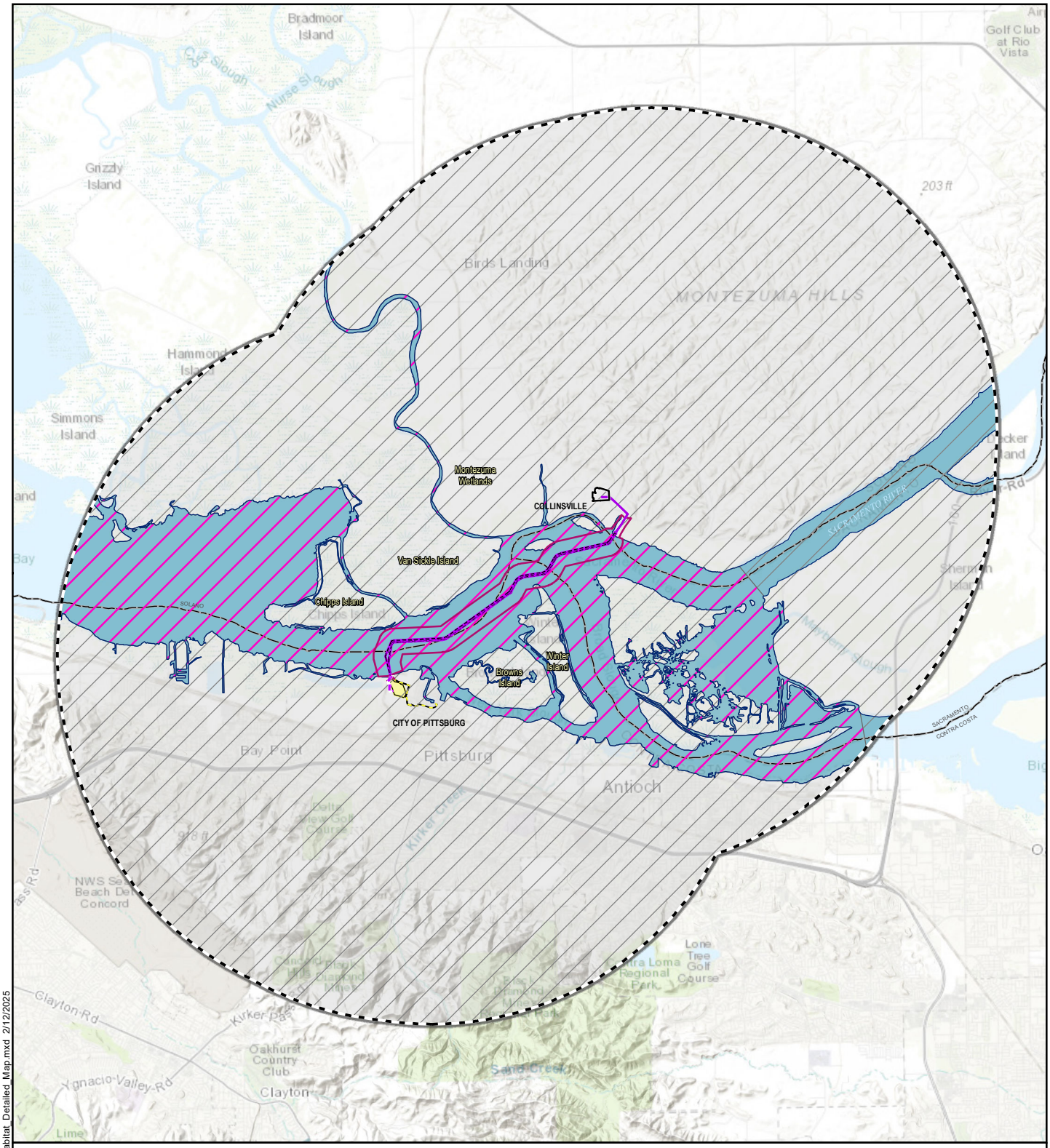

Attachment D: Fish Habitat Overview Map - Essential Fish Habitat

Collinsville 500/230 Kilovolt Substation Project

- Proposed LSPGC Telecommunications Line
- Proposed LSPGC 230 kV Overhead Segment
- Proposed LSPGC 230 kV Underground Segment
- Proposed LSPGC 230 kV Submarine Segment
- County Boundary
- Proposed LSPGC Collinsville Substation Site
- Existing Pittsburg Substation
- Action Area
- 5-Mile Buffer

Essential Fish Habitat

- Pacific Groundfish
- Pacific Salmonids
- Coastal Pelagic

1:140,000

0 2 4 Miles

LS POWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

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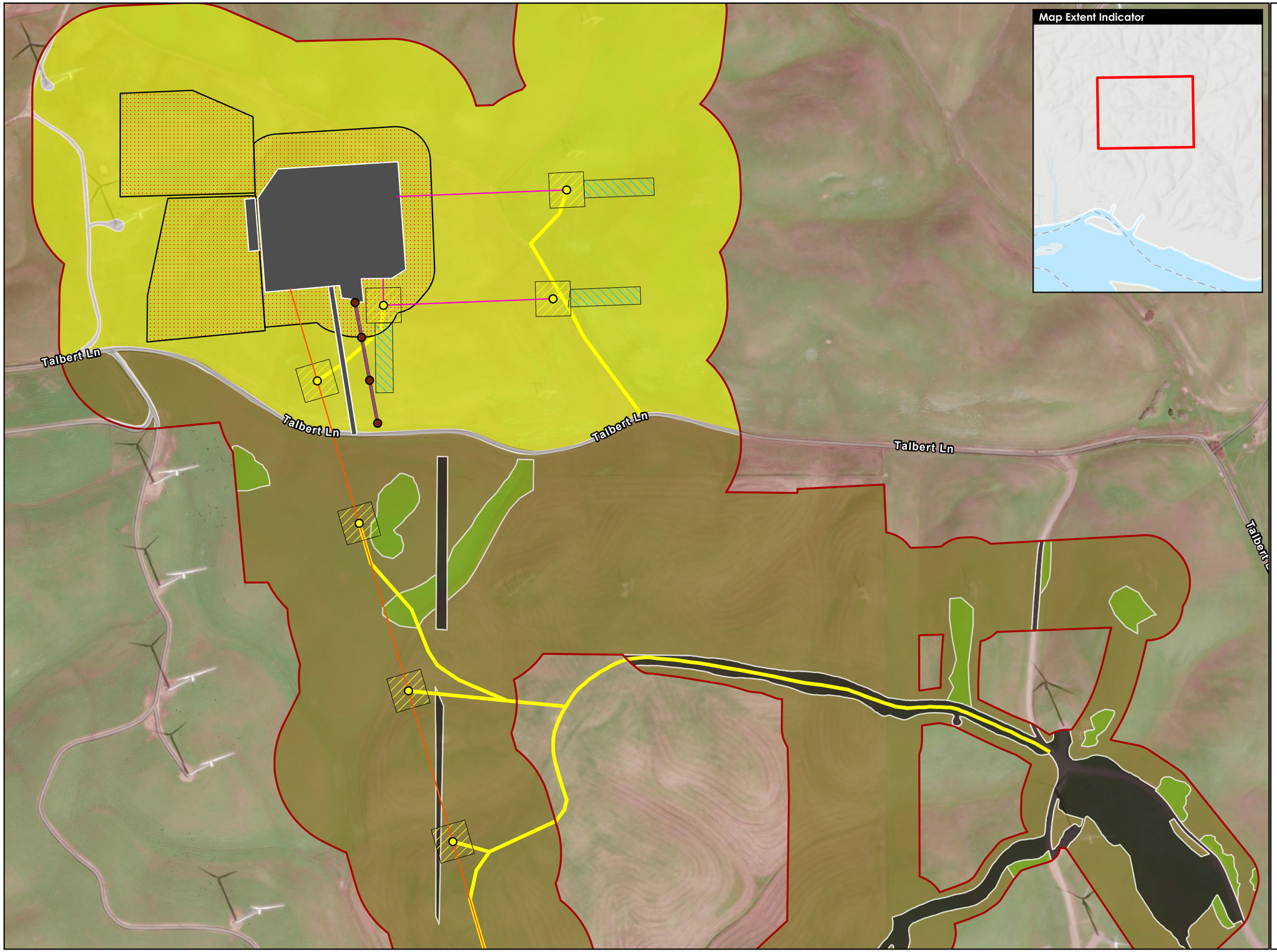
APPENDIX F.6

Alternatives Biological Resources Map Series



Vegetation Community Maps - Alternative 1 (1 of 2)

- Transmission Structures
- Distribution Structures
- 230kV Transmission Line (Overhead Segment)
- 500kV Interconnection Lines
- 12 kV Distribution Line
- Alternative Collinsville Substation Site; New Permanent Access
- Construction Access (Temporary)
- Structure Work Area
- Pull Site
- Staging Area
- Vegetation Mapping Survey Area

Vegetation Communities

- *Avena spp. - Bromus spp.* Heraceous SNA
- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- Disturbed
- Road

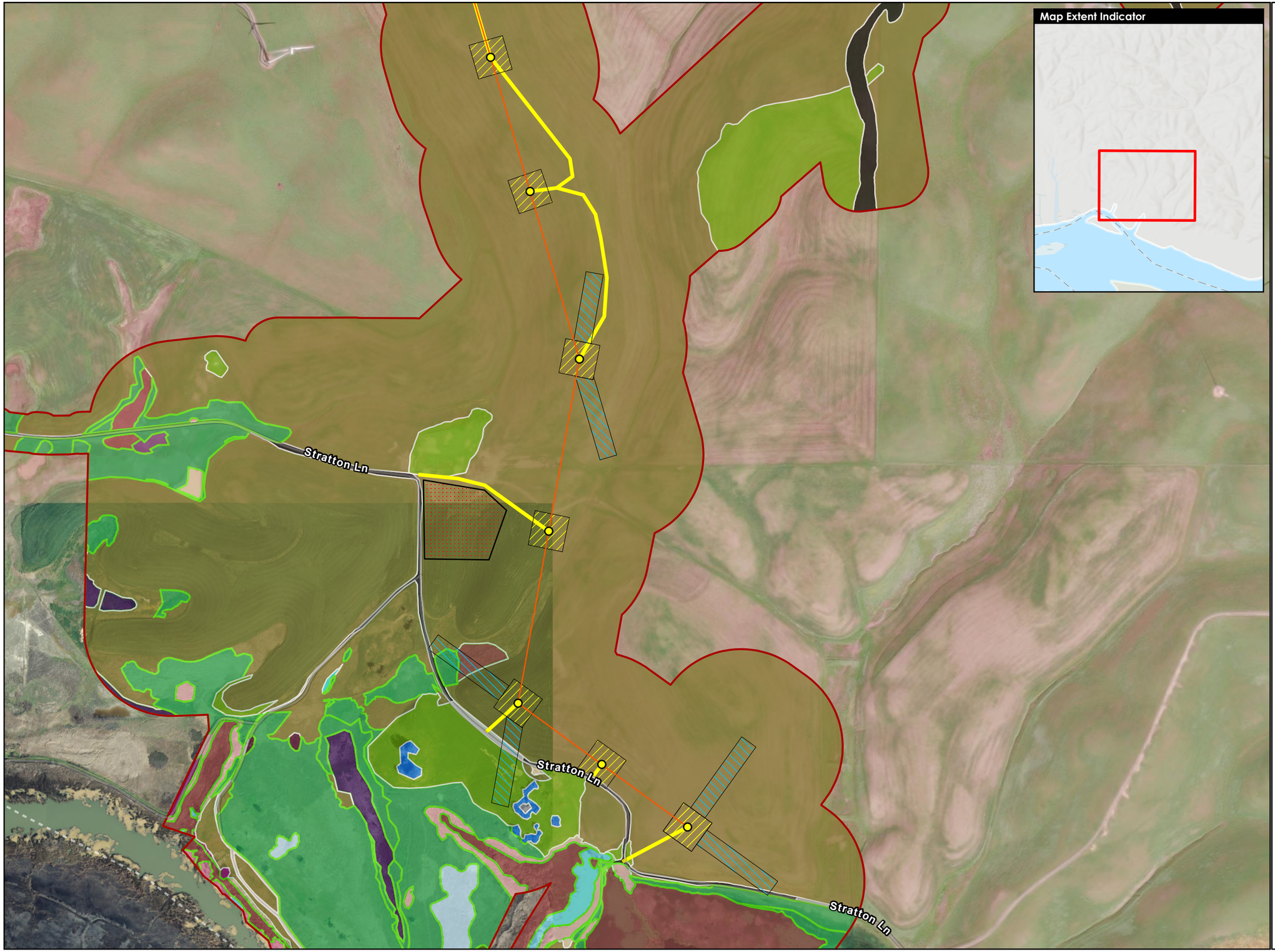
Scale = 1:6,500

0 300 600 Feet

N

Created: 10/10/2025

PANORAMA



Vegetation Community Maps - Alternative 1 (2 of 2)

- Transmission Structures
- 230kV Transmission Line (Overhead Segment)
- Construction Access (Temporary)
- Structure Work Area
- Pull Site
- Staging Area
- Vegetation Mapping Survey Area
- Sensitive Natural Communities

Vegetation Communities

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Carex barbarae* Herbaceous Alliance
- *Conium maculatum - Foeniculum vulgare* Herbaceous Semi-Natural Alliance
- *Distichlis spicata - Frankenia salina* Coastal Herbaceous Alliance
- *Juncus Arcticus (var. balticus, mexicanus)* Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Lotus scoparius - Lupinus albifrons - Eriodictyon spp.* Shrubland Alliance
- *Ludwigia (hexapetala, peploides) - Eichhornia crassipes* Herbaceous Semi-Natural Alliance
- *Polygonum lapathifolium - Xanthium strumarium* Herbaceous Alliance
- Populus fremontii - Fraxinus velutina - Salix gooddingii Forest & Woodland Alliance
- *Rosa californica* Shrubland Alliance
- *Sarcocornia pacifica* Herbaceous Alliance
- Schinus (molle, terebinthifolius) - Myoporum laetum Forest & Woodland Semi-Natural Alliance
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- *Schoenoplectus americanus* Herbaceous Alliance
- *Typha (angustifolia, domingensis, latifolia)* Herbaceous Alliance
- Open Water
- Bare Ground
- Developed
- Disturbed
- Road

Scale = 1:6,500

0 300 600 Feet

N

Created: 10/10/2025

PANORAMA

Birds Landing Rd

Montezuma Hills Rd

Montezuma Hills Rd

Map Extent Indicator

285 ft

286 ft

Map 1

Map 2

Map 3

Map 4

Vegetation Community Maps - Alternative 2 (1 of 4)

- Transmission Structure
- Distribution Structure
- 230kV Transmission Line (Overhead Segment)
- 500kV Interconnection Lines
- 12 kV Distribution Line
- Alternative Collinsville Substation Site
- Construction Access (Temporary)
- Construction Access (Existing)
- Structure Work Area
- Pull Site
- Staging Area
- Vegetation Mapping Survey Area

Vegetation Communities

- *Avena spp. - Bromus spp.* Heraceous SNA
- Developed
- Disturbed

Scale = 1:6,000

0 300 600 Feet

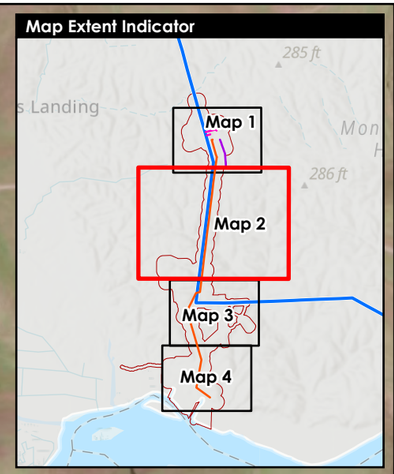
N

Created: 10/10/2025

PANORAMA

Montezuma Hills Rd

Map Extent Indicator



Vegetation Community Maps - Alternative 2 (2 of 4)

- Transmission Structure
- Distribution Structure
- 230kV Transmission Line (Overhead Segment)
- 12 kV Distribution Line
- Construction Access (Temporary)
- Construction Access (Existing)
- Structure Work Area
- Pull Site
- Vegetation Mapping Survey Area

Vegetation Communities

- *Avena spp. - Bromus spp.* Heraceous SNA
- Disturbed

Scale = 1:10,000

0 300 600 Feet

N

Created: 10/10/2025

PANORAMA

Vegetation Community Maps - Alternative 2 (3 of 4)

- Transmission Structure
- 230kV Transmission Line (Overhead Segment)
- Construction Access (Temporary)
- Construction Access (Existing)
- Structure Work Area
- Pull Site
- Vegetation Mapping Survey Area

Vegetation Communities

- *Avena spp. - Bromus spp.* Heraceous SNA
- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- Disturbed
- Road

Scale = 1:6,000

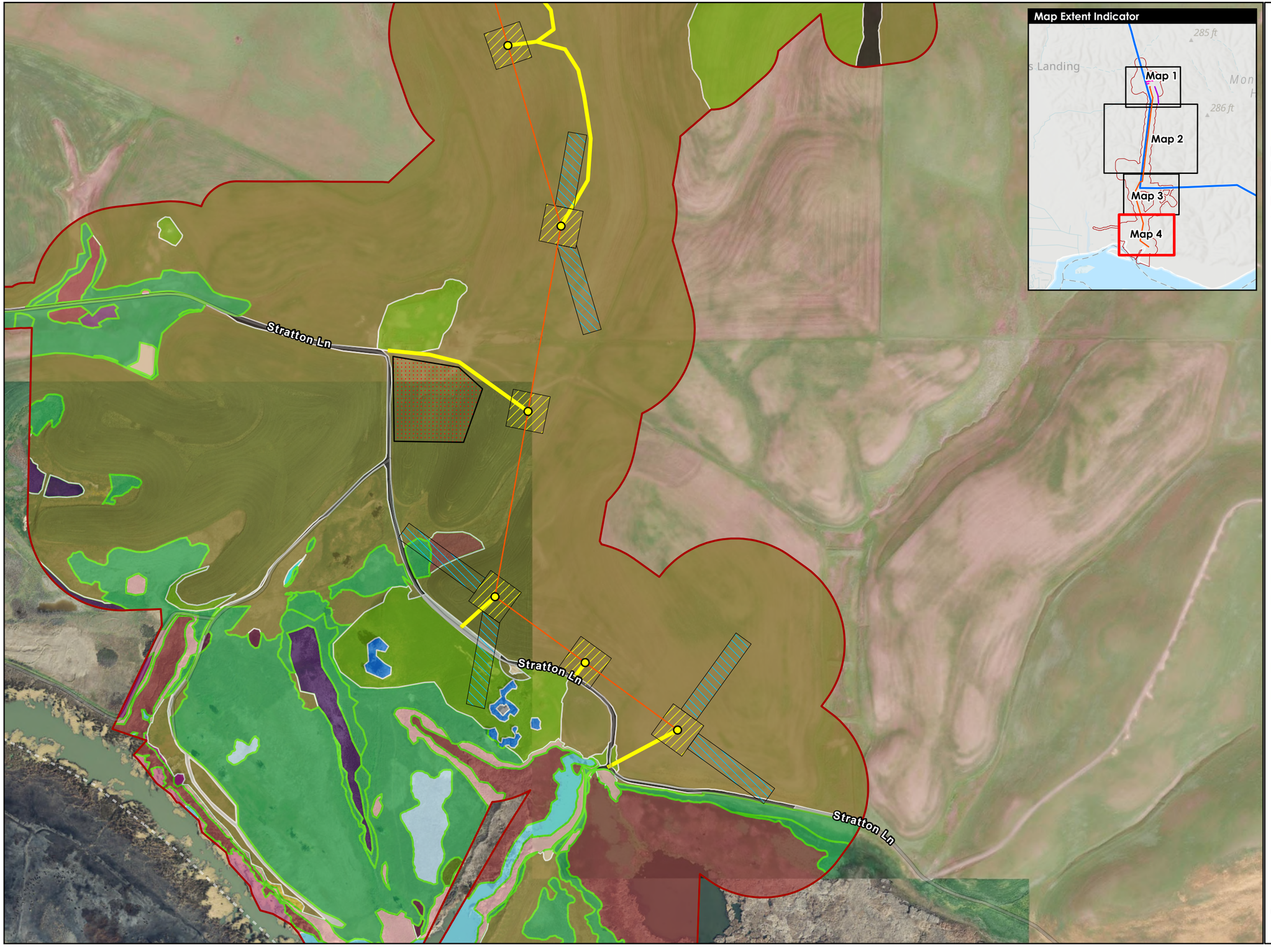
0 300 600 Feet

N

Created: 10/10/2025

PANORAMA

Vegetation Community Maps - Alternative 2 (4 of 4)



- Transmission Structure
- 230kV Transmission Line (Overhead Segment)
- Construction Access (Temporary)
- Structure Work Area
- Pull Site
- Staging Area
- Vegetation Mapping Survey Area

Vegetation Communities

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Carex barbarae* Herbaceous Alliance
- *Conium maculatum - Foeniculum vulgare* Herbaceous Semi-Natural Alliance
- *Distichlis spicata - Frankenia salina* Coastal Herbaceous Alliance
- *Juncus Arcticus (var. balticus, mexicanus)* Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Lotus scoparius - Lupinus albifrons - Eriodictyon spp.* Shrubland Alliance
- *Ludwigia (hexapetala, peploides) - Eichhornia crassipes* Herbaceous Semi-Natural Alliance
- *Phragmites australis - Arundo donax* Herbaceous Semi-Natural Alliance
- *Polygonum lapathifolium - Xanthium strumarium* Herbaceous Alliance
- Populus fremontii - Fraxinus velutina - Salix gooddingii Forest & Woodland Alliance
- *Rosa californica* Shrubland Alliance
- *Sarcocornia pacifica* Herbaceous Alliance
- Schinus (molle, terebinthifolius) - Myoporum laetum Forest & Woodland Semi-Natural Alliance
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- *Schoenoplectus americanus* Herbaceous Alliance
- *Typha (angustifolia, domingensis, latifolia)* Herbaceous Alliance
- Open Water
- Bare Ground
- Developed
- Disturbed
- Road

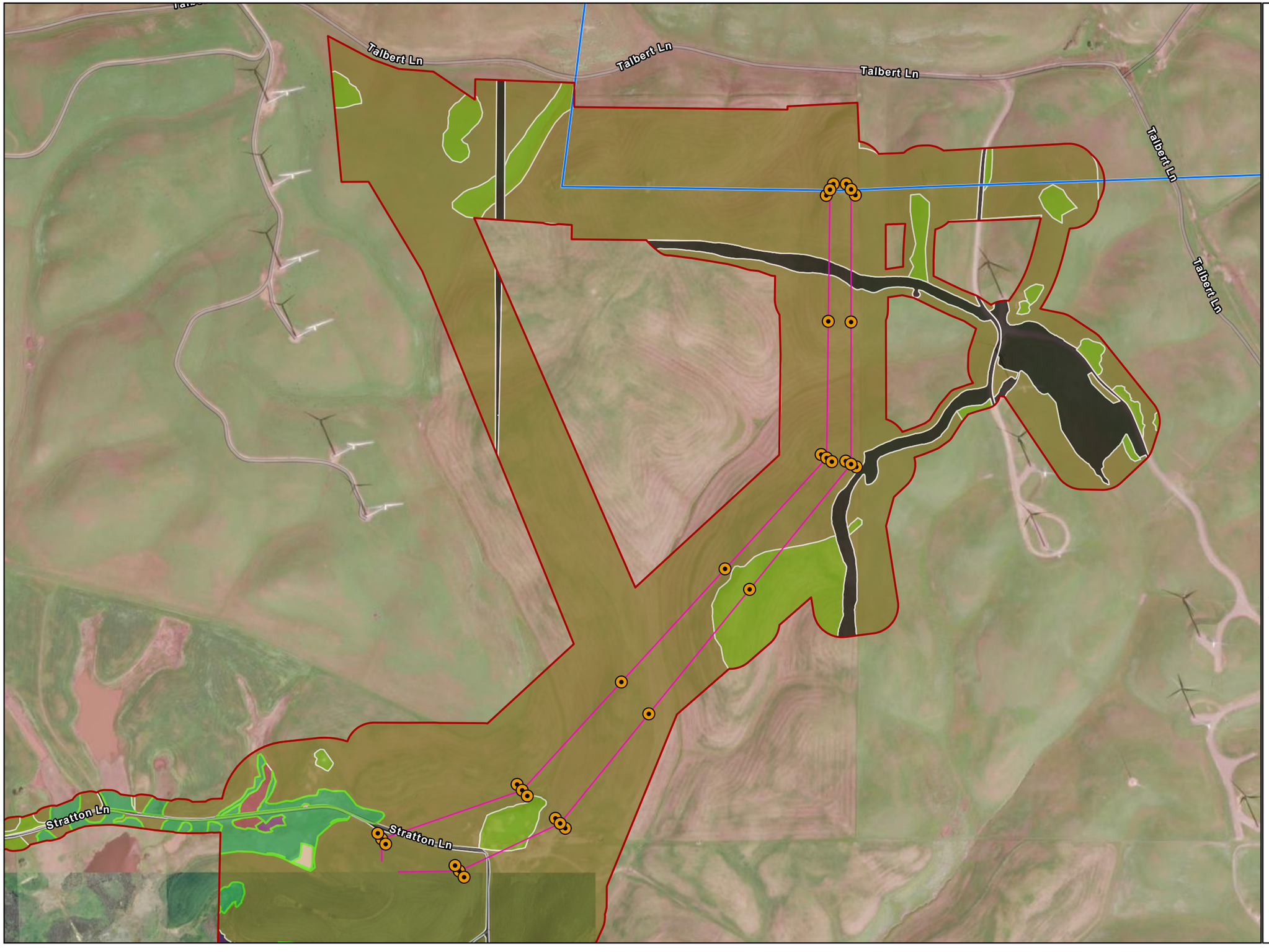
Scale = 1:6,000

0 300 600 Feet

N

Created: 10/10/2025

PANORAMA



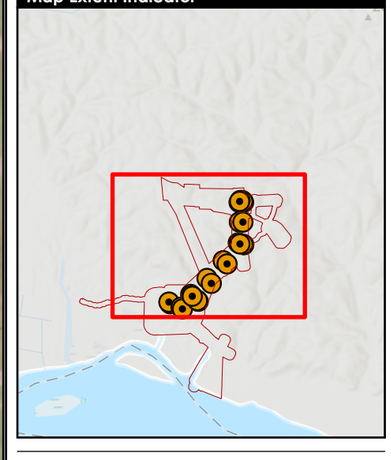
Vegetation Community Map - Alternative 3

- Tubular Steel Pole (TSP)
- Proposed PG&E 500 kV Interconnection Lines (Overhead)
- Existing PG&E Vaca Dixon-Tesla 500 kV Transmission Line
- Biological Study Area (same as Proposed Project)

Vegetation Communities

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Distichlis spicata - Frankenia salina* Coastal Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Sarcocornia pacifica* Herbaceous Alliance
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- *Schoenoplectus americanus* Herbaceous Alliance
- *Typha (angustifolia, domingensis, latifolia)* Herbaceous Alliance
- Bare Ground
- Road

Map Extent Indicator



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Created: 10/10/2025

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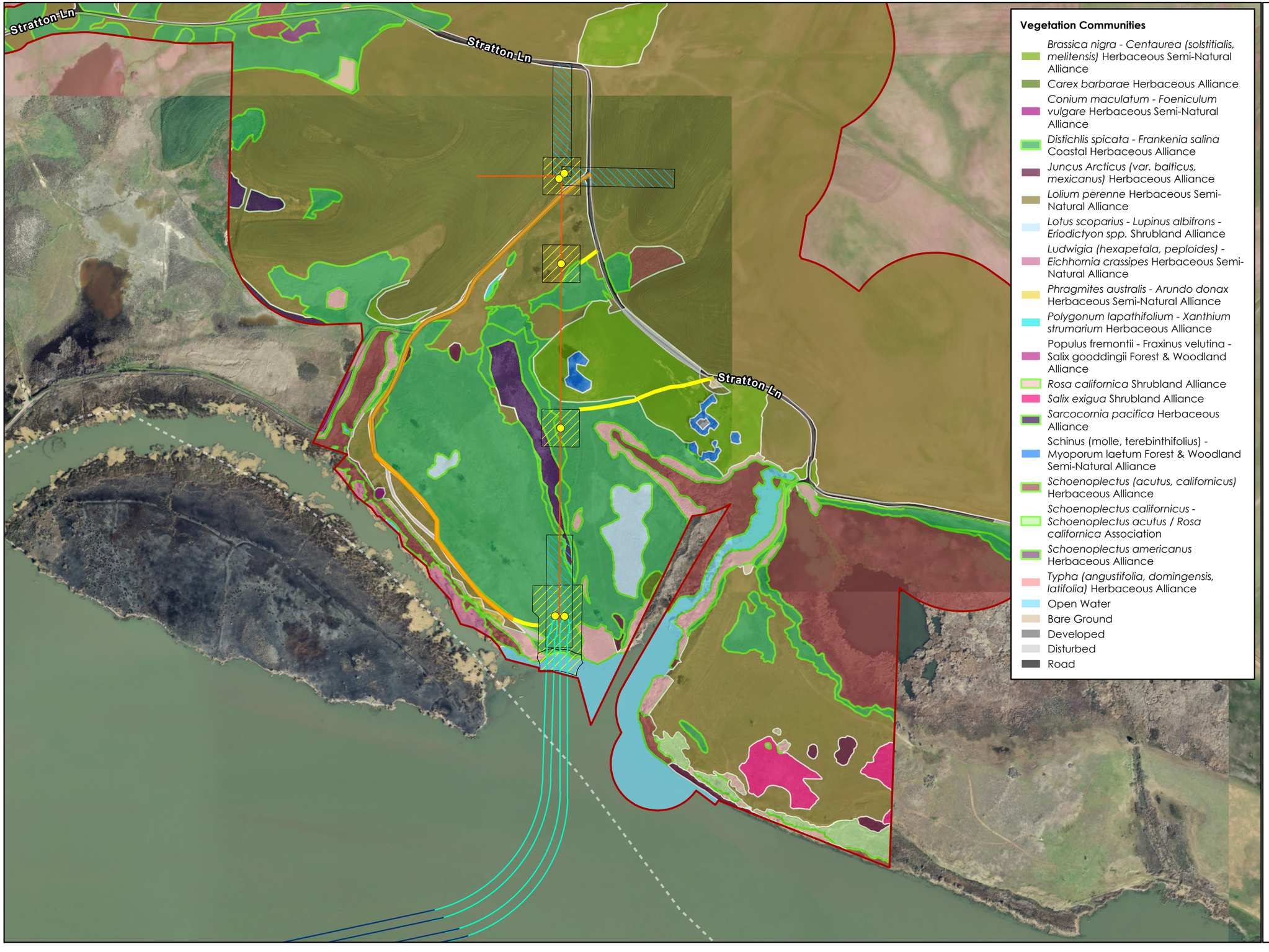


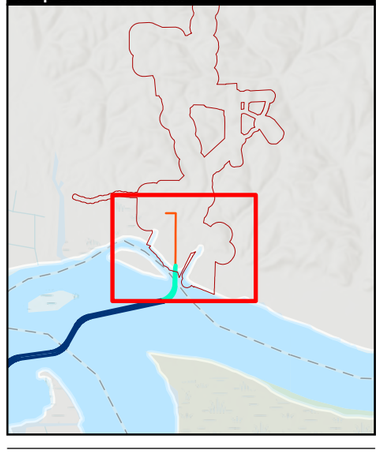
Vegetation Communities

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Carex barbarae* Herbaceous Alliance
- *Conium maculatum - Foeniculum vulgare* Herbaceous Semi-Natural Alliance
- *Distichlis spicata - Frankenia salina* Coastal Herbaceous Alliance
- *Juncus Arcticus (var. balticus, mexicanus)* Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Lotus scoparius - Lupinus albifrons - Eriodictyon spp.* Shrubland Alliance
- *Ludwigia (hexapetala, peploides) - Eichhornia crassipes* Herbaceous Semi-Natural Alliance
- *Phragmites australis - Arundo donax* Herbaceous Semi-Natural Alliance
- *Polygonum lapathifolium - Xanthium strumarium* Herbaceous Alliance
- Populus fremontii - Fraxinus velutina - Salix gooddingii Forest & Woodland Alliance
- *Rosa californica* Shrubland Alliance
- *Salix exigua* Shrubland Alliance
- *Sarcocornia pacifica* Herbaceous Alliance
- Schinus (molle, terebinthifolius) - Myoporum laetum Forest & Woodland Semi-Natural Alliance
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- *Schoenoplectus californicus - Schoenoplectus acutus / Rosa californica* Association
- *Schoenoplectus americanus* Herbaceous Alliance
- *Typha (angustifolia, domingensis, latifolia)* Herbaceous Alliance
- Open Water
- Bare Ground
- Developed
- Disturbed
- Road

Vegetation Community Map - Alternative 4

- Transmission Structures
- 230 kV Transmission Line (Overhead Segment)
- 230 kV Transmission Line (Submarine Segment - Alternative Route)
- 230 kV Transmission Line (Submarine Segment - Retained Proposed Route)
- Overhead/Underground Structure
- Construction Access (Existing)
- Construction Access (Temporary)
- Structure Work Area
- Pull Site

Map Extent Indicator



Scale = 1:6,000

0 300 600 Feet

N

Created: 10/10/2025

PANORAMA

Vegetation Community Map - Alternative 6a

Stratton Ln

Stratton Ln

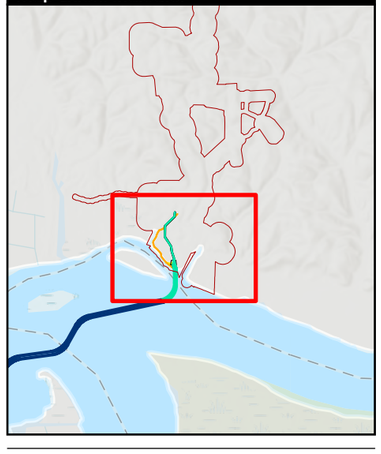
Stratton Ln

Vegetation Communities

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Carex barbarae* Herbaceous Alliance
- *Conium maculatum - Foeniculum vulgare* Herbaceous Semi-Natural Alliance
- *Distichlis spicata - Frankenia salina* Coastal Herbaceous Alliance
- *Juncus Arcticus (var. balticus, mexicanus)* Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Lotus scoparius - Lupinus albifrons - Eriodictyon spp.* Shrubland Alliance
- *Ludwigia (hexapetala, peploides) - Eichhornia crassipes* Herbaceous Semi-Natural Alliance
- *Phragmites australis - Arundo donax* Herbaceous Semi-Natural Alliance
- *Polygonum lapathifolium - Xanthium strumarium* Herbaceous Alliance
- Populus fremontii - Fraxinus velutina - Salix gooddingii Forest & Woodland Alliance
- *Rosa californica* Shrubland Alliance
- *Salix exigua* Shrubland Alliance
- *Sarcocornia pacifica* Herbaceous Alliance
- Schinus (molle, terebinthifolius) - Myoporum laetum Forest & Woodland Semi-Natural Alliance
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- *Schoenoplectus californicus - Schoenoplectus acutus / Rosa californica* Association
- *Schoenoplectus americanus* Herbaceous Alliance
- *Typha (angustifolia, domingensis, latifolia)* Herbaceous Alliance
- Open Water
- Bare Ground
- Developed
- Disturbed
- Road

- Transmission Structure
- 230 kV Transmission Line (Underground Segment)
- 230 kV Transmission Line (Submarine Segment - Alternative Route)
- 230 kV Transmission Line (Submarine Segment - Retained Proposed Route)
- Underground Structure
- Structure Work Area
- Construction Access (Existing)
- Construction Access (Temporary)
- Vegetation Mapping Survey Area

Map Extent Indicator



Scale = 1:6,000

0 300 600 Feet

N

Created: 10/10/2025

PANORAMA

Vegetation Community Map - Alternative 6b

Stratton Ln

Stratton Ln

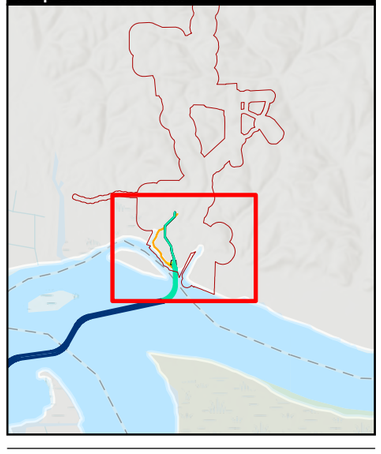
Stratton Ln

Vegetation Communities

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Carex barbarae* Herbaceous Alliance
- *Conium maculatum - Foeniculum vulgare* Herbaceous Semi-Natural Alliance
- *Distichlis spicata - Frankenia salina* Coastal Herbaceous Alliance
- *Juncus Arcticus (var. balticus, mexicanus)* Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Lotus scoparius - Lupinus albifrons - Eriodictyon spp.* Shrubland Alliance
- *Ludwigia (hexapetala, peploides) - Eichhornia crassipes* Herbaceous Semi-Natural Alliance
- *Phragmites australis - Arundo donax* Herbaceous Semi-Natural Alliance
- *Polygonum lapathifolium - Xanthium strumarium* Herbaceous Alliance
- Populus fremontii - Fraxinus velutina - Salix gooddingii Forest & Woodland Alliance
- *Rosa californica* Shrubland Alliance
- *Salix exigua* Shrubland Alliance
- *Sarcocornia pacifica* Herbaceous Alliance
- Schinus (molle, terebinthifolius) - Myoporum laetum Forest & Woodland Semi-Natural Alliance
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- *Schoenoplectus californicus - Schoenoplectus acutus / Rosa californica* Association
- *Schoenoplectus americanus* Herbaceous Alliance
- *Typha (angustifolia, domingensis, latifolia)* Herbaceous Alliance
- Open Water
- Bare Ground
- Developed
- Disturbed
- Road

- Transmission Structures
- 230 kV Transmission Line (Submarine Segment - Retained Proposed Route)
- 230 kV Transmission Line (Underground Segment)
- 230 kV Transmission Line (Overhead Segment)
- 230 kV Transmission Line (Submarine Segment - Alternative Route)
- Overhead/Underground Structure
- Pull Site
- Structure Work Area
- Construction Access (Temporary)
- Construction Access (Existing)
- Vegetation Mapping Survey Area

Map Extent Indicator



Scale = 1:6,000

0 300 600 Feet

N

Created: 10/10/2025

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APPENDIX F.7

Species Potential to Occur Tables for Alternatives 1 and 2

Appendix F.7 Special-Status Species Potential to Occur within the Alternative 1 and 2 Study Areas

Alternative 1 and Alternative 2 work areas that were evaluated for special-status species potential to occur. This area associated with Alternative 1 is referred to as the *Alternative 1 study area* and the area associated with Alternative 2 is referred to as the *Alternative 2 study area*. Vegetation mapping was conducted for each alternative including a buffer of approximately 500 feet surrounding the areas alternative 230 kV overhead segment and proposed work areas. No surveys were completed within the Alternative 1 or 2 areas due to lack of site access; therefore, special-status species potential to occur within the *Alternative 1 study area* and the *Alternative 2 study area* were evaluated using the vegetation mapping data using satellite imagery and publicly available habitat data.

Potential to Occur Determination Criteria

Determinations on potential to occur for special status species were made based on the distances of documented occurrences from the *Alternative 1 study area* or the *Alternative 2 study area,* the species' known habitats and geographic and elevational ranges, and the habitats available within the biological study area. Potential to occur determinations were made according to the following criteria:

- **Present.** The species was observed incidentally within the *Alternative 1 study area* or *Alternative 2 study area* during the vegetation mapping survey or other site visits.
- **High.** Suitable habitat for the species is present within the *Alternative 1 study area* or *Alternative 2 study area* and recent (within the last 30 years) occurrences have been reported within 1 mile of the *Alternative 1 study area* or *Alternative 2 study area*. Alternatively, marginal habitat is present, and recent occurrences have been recorded within 0.25 mile of the *Alternative 1 study area* or *Alternative 2 study area*.
- **Moderate.** Suitable habitat for the species is present, and the *Alternative 1 study area* or *Alternative 2 study area* is located within the species' known range, but no recent (within 30 years) occurrences have been recorded between 1 and 5 miles from the *Alternative 1 study area* or *Alternative 2 study area*. Alternatively, marginal habitat is present, the *Alternative 1 study area* or *Alternative 2 study area* is located within the species' known range, and more than one recent occurrences have been recorded between 1 and 5 miles from the *Alternative 1 study area* or *Alternative 2 study area*.
- **Low.** Poor or marginal habitat for the species exists, and at least one recent occurrence has been recorded between 1 and 5 miles from the *Alternative 1 S study area* or *Alternative 2 study area*. Alternatively, suitable habitat for the species is

present within the *Alternative 1 study area* or *Alternative 2 study area*, but either no recent occurrences have been recorded between 1 and 5 miles from the *Alternative 1 study area* or *Alternative 2 study area* or the *Alternative 1 study area* or *Alternative 2 study area* is located outside of the species' known range. Barriers to migration/dispersal may be present.

- **None.** Either (1) no habitat exists for the species within the *Alternative 1 study area* or *Alternative 2 study area*, (2) no occurrences have been recorded between one and five miles from the *Alternative 1 study area* or *Alternative 2 study area* and the *Alternative 1 study area* or *Alternative 2 study area* is outside of the species' known geographic or elevational range, or (3) the species has been confirmed to be extirpated from the area. Species with no potential to occur in the *Alternative 1 study area* or *Alternative 2 study area* have been removed from this analysis.

Special-Status Plants

A total of 26 special-status plant species were determined to have some potential to occur (low, moderate, or high) or were incidentally observed within the *Alternative 2 study area* or *Alternative 1 study area* (Table 1). One species, large-flowered fiddleneck (*Amsinckia grandiflora*), was not previously analyzed for the Proposed Project because of a lack of records in the vicinity of the Proposed Project, but was determined to have low potential to occur within the *Alternative 1 study area* and *Alternative 2 study area*.

Table 1 Special-Status Plant Species with Potential to Occur

Common Name (*Scientific Name*)	Listing Status[a]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
alkali milk-vetch (*Astragalus tener var. tener*)	1B.2	This species occurs in alkali playas, valley and foothill grasslands, and vernal pools at elevations between 5 and 195 feet.	March-to June	Annual herb	**Alternative 1: Moderate.** Suitable habitat and conditions for this species are present. This species has been recently documented between 1 and 5 miles of the Alternative 1 study area based on CNDDB records. **Alternative 2: Moderate.** Suitable habitat and conditions for this species are present within the Alternative 2 study area. This species has been recently documented between 1 and 5 miles of the Alternative 2 study area based on CNDDB records.
Baker's navarretia (*Navarretia leucocephala ssp. bakeri*)	1B.1	This species occurs in a variety of habitats including cismontane woodland, lower montane coniferous forest, meadows and seeps. It may also be seen in valley or foothill grasslands and vernal pools at elevations between 16 and 5,709 feet.	April-July	Annual herb	**Alternative 1: Low.** Suitable habitat and conditions for this species are present within the Alternative 1 study area but no occurrences are documented within 5 miles of Alternative 1 study area based on CNDDB records. **Alternative 2: Low.** Suitable habitat and conditions for this species are present within the Alternative 2 study area. This species has been documented between 1 and 5 miles of the Alternative 2 study area based on CNDDB records; however, all records are greater than 30 years old.
bearded popcornflower (*Plagiobothrys hystriculus*)	1B.1	This species occurs in valley & foothill grassland and vernal pool at elevations between 0 to 900 feet.	April to May	Annual herb	**Alternative 1: Moderate.** This species has been recently documented between 1 and 5 miles of the Alternative 1 study area based on CNDDB records and suitable habitat and conditions for this species are present within the Alternative 1 study area. **Alternative 2: High.** Suitable habitat and conditions for this species are present within the Alternative 2 study

APPENDIX F.7 SPECIAL-STATUS SPECIES POTENTIAL TO OCCUR WIHTIN THE ALTERNATIVE 1 AND 2 STUDY AREAS

Common Name (*Scientific Name*)	Listing Status[a]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
					area. This species has been recently documented within 0.25 miles of Alternative 2 study area based on CNDDB records.
big tarplant (*Blepharizonia plumosa*)	1B.1	This species occurs within valley and foothill grasslands at elevations between 98 and 1,657 feet.	July to October	Annual herb	**Alternative 1: Low.** Suitable habitat and conditions for this species are present within the Alternative 1 study area. This species has been documented between 1 and 5 miles of the Alternative 1 study area based on CNDDB records; however, all records are over 30 years old. **Alternative 2: Low.** Suitable habitat and conditions for this species are present within the Alternative 2 study area. This species has been documented between 1 and 5 miles of the Alternative 2 study area based on CNDDB records; however, all records are over 30 years old.
Bolander's water-hemlock (*Cicuta maculata var. bolanderi*)	2B.1	This species occurs in marsh & swamp and salt marsh at elevations between 0 to 655 feet.	July to September	Perennial herb	**Alternative 1: Low.** Suitable habitat and conditions for this species are present within the Alternative 1 study area. This species has been documented between 0.25 and 1 mile of the Alternative 1 study area based on CNDDB records; however, all records are over 30 years old. **Alternative 2: Low.** Suitable marsh habitat and conditions for this species are present within the Alternative 2 study area. This species has been documented within 0.25 miles of Alternative 2 study area based on CNDDB records; however, all records are over 30 years old.
brittlescale (*Atriplex depressa*)	1B.2	This species occurs in a variety of habitats including alkali playa,	April to October	Annual herb	**Alternative 1: Low.** Suitable habitat and conditions for this species are present within the Alternative 1 study area. This species has been documented within 5

Common Name (*Scientific Name*)	Listing Status[a]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
		chenopod scrub, meadows and seep. It may also be observed in valley or foothill grasslands and vernal pools at elevations between 5 to 1,050 feet.			miles of the Alternative 1 study area based on CNDDB records; however, all records are over 30 years old. **Alternative 2: Low.** Suitable habitat and conditions for this species are present within the Alternative 2 study area. This species has been documented between 1 and 5 miles of the Alternative 2 study area based on CNDDB records; however, all records are over 30 years old.
broadleaf pondweed (*Stuckenia striata*)	2B.3	This species occurs in marshes, swamps, lakes, ponds, rivers, and drainage canals at elevations between -230 and 7,005 feet.	June to August	Perennial rhizomatous aquatic herb	**Alternative 1: Moderate.** This species has been recently documented between 1 and 5 miles of the Alternative 1 study area based on CNDDB records and suitable habitat is present within the Alternative 1 study area. **Alternative 2: Moderate.** This species has been recently documented between 1 and 5 miles of the Alternative 2 study area based on CNDDB records and suitable habitat is present within the Alternative 2 study area.
Carquinez goldenbush (*Isocoma arguta*)	1B.1	This species occurs in valley & foothill grassland at elevations between 5 to 65 feet.	August to December	Perennial shrub	**Alternative 1: Moderate.** Suitable habitat and conditions for this species are present within the Alternative 1 study area. This species has been recently documented between 1 and 5 miles of the Alternative 1 study area based on CNDDB records. **Alternative 2: Moderate.** Suitable habitat and conditions for this species are present within the Alternative 2 study area. This species has been recently documented between 1 and 5 miles of the Alternative 2 study area based on CNDDB records.
Colusa grass (*Neostapfia colusana*)	SE; 1B.2	Colusa grass is found in vernal pool, and	May - August	Annual grasslike herb	**Alternative 1: Low.** Suitable habitat may be present in the form of stock ponds or temporary pools following

Common Name (*Scientific Name*)	Listing Status[a]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
		seasonal stock pond habitat in the Sacramento and San Joaquin valleys. This species occurs in vernal pools at elevations between 15 and 655 feet.			precipitation. There are no documented CNDDB occurrences within 5 miles of the Alternative 1 study area but is within the known range of the species. **Alternative 2: Low.** Suitable habitat may be present in the form of stock ponds or temporary pools following precipitation. No CNDDB occurrences are documented within 5 miles of the Alternative 2 area.
Contra Costa goldfields (*Lasthenia conjugens*)	FE; 1B.1	This species occurs in a variety of habitats such as alkali playa, cismontane woodland, and valley or foothill grasslands. It may also be found in vernal pools at elevations between 0 to 1,540 feet.	March to June	Annual herb	**Alternative 1: Low.** Suitable habitat and conditions for this species are present within the Alternative 1 study area. However, no occurrences are documented within 5 miles of Alternative 1 study area based on CNDDB records but is within the known range of the species. **Alternative 2: Low.** Suitable habitat and conditions for this species are present within the Alternative 2 study area. This species has been documented within 5 miles of the Alternative 2 study area based on CNDDB records; however, all records are over 30 years old.
Contra Costa wallflower (*Erysimum capitatum* var. *angustatum*)	FE; SE; 1B.1	This species occurs in inland dunes at elevations between 10 and 65 feet.	March to July	Perennial herb	**Alternative 1: Low.** Habitat and conditions for this species are not present within the Alternative 1 study area. This species has been documented within 5 miles of the Alternative 1 study area based on CNDDB records; however, all records are over 30 years old. **Alternative 2: Moderate.** Suitable habitat and conditions for this species are not present within the Alternative 2 study area. This species has been recently documented between 1 and 5 miles of the Alternative 2 study area based on CNDDB records.

Common Name (*Scientific Name*)	Listing Status[a]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
Delta (Welsh) mudwort (*Limosella australis*)	2B.1	This species occurs in a variety of habitats such as brackish marsh, freshwater marsh, marsh or swamp. It may also be observed within riparian scrub at elevations between 0 to 10 feet.	May to August	Perennial stoloniferous herb	**Alternative 1: Moderate.** Suitable marsh habitat is present within the Alternative 1 study area and this species has been recently documented between 1 and 5 miles of the Alternative 1 study area based on CNDDB records. **Alternative 2: Moderate.** Suitable marsh habitat and conditions for this species are present within the Alternative 2 study area. This species has been documented between 0.25 and 1 mile of the Alternative 2 study area based on CNDDB records; however, records within 1 mile are over 30 years old. There are several recent occurrences between 1 and 5 miles.
Delta tule pea (*Lathyrus jepsoniil* var. *jepsonii*)	1B.2	This species occurs in marshes or swamps at elevations between 0 to 15 feet.	May to July	Perennial herb	**Alternative 1: Moderate.** Suitable marsh habitat is present within the Alternative 1 study area and this species has been recently documented within 5 miles of the Alternative 1 study area based on CNDDB records. **Alternative 2: Low.** Suitable marsh habitat is present within the Alternative 2 study area. This species has been documented between 0.25 and 1 mile of the Alternative 2 study area based on CNDDB records; however, records within 1 mile are over 30 years old. There are numerous recent occurrences between 1 and 5 miles.
diamond-petaled California poppy (*Eschscholzia rhombipetala*)	1B.1	This species occurs in valley or foothill grassland at elevations between 0 to 3,200 feet	March to April	Annual herb	**Alternative 1: Low.** Suitable grassland habitat and conditions for this species are present within the Alternative 2 study area, but no occurrences are documented within 5 miles of Alternative 1 study area based on CNDDB records.

Common Name (*Scientific Name*)	Listing Status[a]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
					Alternative 2: Moderate. Suitable grassland habitat and conditions for this species are present within the Alternative 2 study area. This species has been recently documented within 5 miles of the Alternative 2 study area based on CNDDB records.
dwarf downingia (*Downingia pusilla*)	2B.2	This species occurs in valley or foothill grassland and vernal pool at elevations between 5 to 1,460 feet.	March to May	Annual herb	**Alternative 1: Moderate.** Suitable habitat and conditions for this species are present within the Alternative 1 study area. This species has been recently documented within 5 miles of the Alternative 1 study area based on CNDDB records. **Alternative 2: Moderate.** Suitable habitat and conditions for this species are present within the Alternative 2 study area. This species has been recently documented within 5 miles of the Alternative 2 study area based on CNDDB records.
fragrant fritillary (*Fritillaria liliacea*)	1B.2	This species occurs in a variety of habitats, such as cismontane woodland and coastal prairie or scrub. It may also be observed in valley & foothill grassland at elevations between 10 to 1,345 feet often found in ultramafic soils.	February April	Perennial bulbiferous herb	**Alternative 1: Low.** Suitable grassland habitat and conditions for this species are present within the Alternative 1 study area. This species has been documented between 1 and 5 miles of the Alternative 1 study area based on CNDDB records; however, all records are over 30 years old. **Alternative 2: Low.** Suitable grassland habitat and conditions for this species are present within the Alternative 2 study area. This species has been documented between 1 and 5 miles of the Alternative 2 study area based on CNDDB records; however, all records are over 30 years old.
heartscale (*Atriplex cordulata var. cordulata*)	1B.2	This species occurs in chenopod scrub, meadow or seep, and	April to October	Annual herb	**Alternative 1: Moderate.** Suitable grassland habitat and conditions for this species are present within the Alternative 1 study area. This species has been

Common Name (*Scientific Name*)	Listing Status[a]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
		valley or foothill grassland at elevations between 0 to 1,835 feet.			recently documented between 1 and 5 miles of the Alternative 1 study area based on CNDDB records. **Alternative 2: Moderate.** Suitable grassland habitat and conditions for this species are present within the Alternative 2 study area. This species has been recently documented between 1 and 5 miles of the Alternative 2 study area based on CNDDB records.
Hoover's cryptantha (*Cryptantha hooveri*)	1A	This species occurs in interior dunes and valley and foothill grassland habitats at elevations between 30 and 490 feet.	April to May	Annual herb	**Alternative 1: Low.** Marginally suitable habitat and conditions for this species are present within the Alternative 1 study area. No occurrences documented within 5 miles of Alternative 1 study area based on CNDDB records. **Alternative 2: Low.** Marginally suitable habitat and conditions for this species are present within the Alternative 2 study area. This species has been documented within 5 miles of the Alternative 2 study area based on CNDDB records; however, all records are over 30 years old.
Keck's checkerbloom (*Sidalcea keckii*)	FE, 1B.1	This species occurs in cismontane woodlands and valley or foothill grasslands at elevations between 245 to 2,135 feet, often found in ultramafic soils.	April to June	Annual herb	**Alternative 1: Low.** Suitable grassland habitat and conditions for this species are present within the Alternative 1 study area. This species has been documented within 5 miles of the Alternative 1 study area based on CNDDB records; however, all records are over 30 years old. **Alternative 2: Low.** Suitable grassland habitat and conditions for this species are present within the Alternative 2 study area. This species has been documented between 0.25 and 1 mile of the Alternative 2 study area based on CNDDB records; however, all records are over 30 years old.

Common Name (*Scientific Name*)	Listing Status[a]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
large-flowered fiddleneck* (*Amsinckia grandiflora*)	FE, 1B.1	This species occurs on grassy slopes at elevations below 984 feet.	April to May	Annual herb	**Alternative 1: Low.** Suitable habitat and conditions are present within the Alternative 1 study area. This species has not been recently documented within 5 miles of the Alternative 1 study area based on CNDDB records; however, this species' known range overlaps with the Alternative 1 study area. **Alternative 2: Low.** Suitable habitat and conditions are present within the Alternative 2 study area. This species has not been recently documented within 5 miles of the Alternative 2 study area based on CNDDB records; however, this species' known range overlaps with the Alternative 2 study area.
Mason's lilaeopsis (*Lilaeopsis masonii*)	1B.1	This species occurs in freshwater marsh, marsh or swamp, and riparian scrub at elevations between 0 to 35 feet.	April to November	Perennial rhizomatous herb	**Alternative 1: Moderate.** Suitable marsh habitat is present within the Alternative 1 study area. This species has been recently documented between 1 and 5 miles of the Alternative 1 study area based on CNDDB records. **Alternative 2: High.** Suitable marsh habitat and conditions for this species are present within the Alternative 2 study area. This species has been recently documented between 0.25 and 1 mile of the Alternative 2 study area based on CNDDB records.
pappose tarplant *(Centromadia parryi ssp. parryi)*	1B.2	This species occurs in a variety of habitats such as chaparral, coastal prairie, meadow and seep. It may also be observed within marsh, swamp, and valley or	May to November	Annual herb	**Alternative 1: Moderate.** Suitable habitat and conditions for this species are present within the Alternative 1 study area. This species has been recently documented between 1 and 5 miles of the Alternative 1 study area based on CNDDB records. **Alternative 2: High.** Suitable habitat and conditions for this species are present within the Alternative 2 study

Common Name (*Scientific Name*)	Listing Status[a]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
		foothill grasslands at elevations between 0 to 1,380 feet.			area. This species has been recently documented between 0.25 and 1 mile of the Alternative 2 study area based on CNDDB records.
San Joaquin spearscale (*Extriplex joaquinana*)	1B.2	This species occurs in alkali playa, chenopod scrub, meadows and seeps. It may also be observed in valley or foothill grasslands at elevations between 5 to 2,740 feet.	April to October	Annual herb	**Alternative 1: Low.** Marginally suitable habitat and conditions for this species are present within the Alternative 1 study area. This species has been documented between 1 and 5 miles of the Alternative 1 study area based on CNDDB records; however, all records are over 30 years old. **Alternative 2: Low.** Marginally suitable habitat and conditions for this species are present within the Alternative 2 study area. This species has been documented between 1 and 5 miles of the Alternative 2 study area based on CNDDB records; however, all records are over 30 years old.
soft salty bird's-beak (*Chloropyron molle* ssp. *molle*)	FE; 1B.2	This species occurs in marshes and swamps at elevations between 0 and 10 feet.	June to November	Annual herb (hemiparasitic)	**Alternative 1: Low.** Suitable marsh habitat and conditions for this species are present within the Alternative 1 study area. No CNDDB occurrences within 5 miles of the Alternative 1 study area but is within the known range of the species. **Alternative 2: Low.** Suitable marsh habitat and conditions for this species are present within the Alternative 2 study area. No CNDDB occurrences within 5 miles of the Alternative 1 study area but is within the known range of the species.
Suisun Marsh aster (*Symphyotrichum lentum*)	1B.2	This species occurs in marshes and swamps at elevations between 0 to 10 feet.	(April) May to November	Perennial rhizomatous herb	**Alternative 1: Moderate.** Suitable marsh habitat and conditions for this species are present within the Alternative 1 study area. This species has been recently documented between 1 and 5 miles of the Alternative 1 study area based on CNDDB records

Common Name (*Scientific Name*)	Listing Status[a]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
					Alternative 2: High. Suitable marsh habitat and conditions for this species are present within the Alternative 2 study area. This species has been recently documented between 0.25 and 1 mile of the Alternative 2 study area based on CNDDB records.
Suisun Thistle (*Cirsium hydrophilum var. hydrophilum*)	FE, 1B.1	This species occurs in wetlands and salt marsh habitats at low elevations near sea level.	June-September	Perennial herb	**Alternative 1: Low.** Suitable marsh habitat and conditions are present within the Alternative 1 study area. This species has not been recently documented within 5 miles of the Alternative 1 study area based on CNDDB records; however, this species' known range overlaps with the Alternative 1 study area. **Alternative 2: Low.** Suitable marsh habitat and conditions are present within the Alternative 2 study area. This species has not been recently documented within 5 miles of the Alternative 2 study area based on CNDDB records; however, this species' known range overlaps with the Alternative 2 study area.

* Not evaluated for the Proposed Project because database record searches found no records within the vicinity of the Proposed Project.

[a] Explanation of listing status codes:

Federal

- FE: Federally listed as endangered

State

- SE: State-listed as endangered

California Native Plant Society (CNPS) California Rare Plant Ranks (CRPRs)

- 1A: Presumed extinct in California and rare/extinct elsewhere
- 1B: Rare or endangered in California and elsewhere
- 2B: Rare, threatened, or endangered in California, but more common elsewhere
- 3: More information is needed, a review list
- 4: Limited distribution, a watch list

CRPR Threat Codes

- 0.1: Seriously threatened in California (over 80 percent of occurrences threatened, high degree and immediacy of threat)
- 0.2: Moderately threatened in California (20 to 80 percent of occurrences threatened, moderate degree and immediacy of threat)
- 0.3: Not very threatened in California (less than 20% of occurrences threatened/low degree and immediacy of threat or no current threats known)

Source: (CDFW 2025a; CDFW 2025b; CNPS 2023a; CNPS 2023b; CNPS 2025; CNPS 2023b; Jepson Flora Project 2025; USFWS 2025a)

APPENDIX F.7 SPECIAL-STATUS SPECIES POTENTIAL TO OCCUR WIHTIN THE ALTERNATIVE 1 AND 2 STUDY AREAS

Special-Status Terrestrial Wildlife

A total of 42 special-status terrestrial wildlife species were determined to have some potential to occur (low, moderate, or high) within the *Alternative 1 or Alternative 2 study study area* (Table 2). One species, giant garter snake (*Thamnophis gigas*) has no potential to occur within the Proposed Project *biological study area*, but was determined to have moderate potential to occur within both the *Alternative 1 study area* and the *Alternative 2 study area*. One species, double-crested cormorant (*Nannopterum auritum*), was not evaluated for the Proposed Project because database record searches yielded no records within the Proposed Project vicinity, but was determined to have a moderate potential to occur for nesting and high potential to occur for foraging within both the *Alternative 1 study area* and the *Alternative 2 study area*.

Table 2 Special-Status Terrestrial Wildlife Species with Potential to Occur

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
Amphibians			
California red-legged frog *(Rana draytonii)*	FT; SSC	This highly aquatic species typically inhabits quiet pools of streams, marshes and ponds, preferring habitat with extensive shoreline vegetation. Its diet is highly variable and may include various invertebrates, amphibians, and small mammals. In Northern California, breeding usually takes place between March and July.	**Alternative 1: Low.** Wetland habitat is present within the Alternative 1 study area with areas of open water in the southern reach of the Alternative 1 study area. NWI wetland features are present throughout the Alternative 1 study area and may provide suitable foraging and dispersal habitat but are unlikely to support breeding. No occurrences are documented within 5 miles of the Alternative 1 study area based on CNDDB records. **Alternative 2: Low.** Wetland habitat is present within the Alternative 2 study area with areas of open water in the southern reach of the Alternative 2 study area. NWI wetland features are present throughout the Alternative 2 study area and may provide suitable foraging and dispersal habitat but are unlikely to support breeding. No occurrences are documented within 5 miles of the Alternative 2 study area based on CNDDB records.
California tiger salamander - central California DPS (*Ambystoma californiense pop. 1*)	FT; ST; WL	This species occupies grassland, savanna, or open woodland habitats and spends much of the year in underground refuges, especially	**Alternative 1: Low.** Annual grassland habitat suitable for the species is present throughout the Alternative 1 study area and may support active

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
		ground squirrel (*Ammospermopholis beechyi*) burrows. Vernal pools or other seasonal water sources are required for breeding and egg laying. Adults may travel hundreds of meters across upland habitat to reach breeding ponds following seasonal rains during November to February. Its diet is highly variable and may include invertebrates, amphibians, or small mammals.	ground squirrels to provide suitable burrow habitat. Vernal pools suitable for breeding are unlikely to be present but ephemeral pools may develop during the rainy season and stock ponds may be present in adjacent areas. A previous protocol-level habitat assessment for this species occurred within the Alternative 1 study area in 2018 and concluded that the species is unlikely to occur as the area has limited upland refugia/suitable burrow habitat and is subject to regular disruptions/barriers to dispersal. Additionally, the species was not detected during protocol level aquatic surveys and eDNA sampling within the Alternative 1 study area. This species has been recently documented between 1 and 5 miles of the Alternative 1 study area based on CNDDB records with closest occurrences being north of the Alternative 1 study area. **Alternative 2: Low.** Annual grassland habitat suitable for the species is present throughout the Alternative 2 study area and may support active ground squirrels to provide suitable burrow habitat. Vernal pools suitable for breeding are unlikely to be present but ephemeral pools may

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
			develop during the rainy season and stock ponds may be present in adjacent areas. A previous protocol-level habitat assessment for this species occurred within the Alternative 2 study area in 2018 and concluded that the species is unlikely to occur as the area has limited upland refugia/suitable burrow habitat and is subject to regular disruptions/barriers to dispersal. Additionally, the species was not detected during protocol level aquatic surveys and eDNA sampling within the Alternative 2 study area. This species has been recently documented between 1 and 5 miles of the Alternative 2 study area based on CNDDB records.
western spadefoot (*Spea hammondii*)	SSC; FPT	This species occurs predominantly in grasslands but may also occur in valley-foothill hardwood woodlands. The western spadefoot consumes worms, insects, and other invertebrates and requires shallow, temporary pools of water from heavy winter rains for reproduction.	**Alternative 1: Low.** Suitable grassland habitat is present within the Alternative 1 study area. This species has not been recently documented within 5 miles of the Alternative 1 study area; however, this species' known range overlaps with the Alternative 1 study area. **Alternative 2: Low.** Suitable grassland habitat is present within the Alternative 2 study area. This species has not been recently documented within 5 miles of the Alternative 2 study area; however,

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
			this species' known range overlaps with the Alternative 2 study area.
Birds			
American peregrine falcon (*Falco peregrinus anatum*)	Delisted (S)	This species can be found occupying several biomes throughout California year-round. Breeding takes place from April to June. A majority of nests are constructed on ledges on relatively tall cliffs in remote areas with minimal human disturbance and are often reused from year to year. Foraging occurs in a variety of habitat types, and its diet consists almost exclusively of other birds.	**Alternative 1: None (Nesting). Low (Foraging/Migration).** Suitable nesting habitat does not occur in the Alternative 1 study area. Foraging and migrating individuals may occur in or near the Alternative 1 study area as species is highly mobile but here are no documented occurrences within 5 miles of the Alternative 1 study area based on CNDDB records. **Alternative 2: None (Nesting). Low (Foraging/Migration** Suitable nesting habitat does not occur in the Alternative 2 study area. Foraging and migrating individuals may occur in or near the Alternative 2 study area as species is highly mobile but here are no documented occurrences within 5 miles of the Alternative 2 study area based on CNDDB records.
black tern (*Chlidonias niger surinamenisis*)	BCC	Species occupies a variety of aquatic habitats (rivers, lakes, marches, open ocean, etc.) typically near the ocean. Breeds mid-May through mid-August and typically nests in vegetation of large freshwater wetlands, sometimes in rice fields or on river	**Alternative 1: Low (Nesting). Moderate (Foraging).** Marginally suitable aquatic/wetland foraging habitat is present along the Delta in the southern reach of the Alternative 1 study area. Large wetlands/islands

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
		islands. Feeds primarily on small fish and insects.	for nesting are not present with low potential to support nesting. **Alternative 2: Low (Nesting). Moderate (Foraging).** Marginally suitable aquatic/wetland foraging habitat is present along the Delta in the southern reach of the Alternative 2 study area. Large wetlands/islands for nesting are not present with low potential to support nesting.
Bullock's oriole (*Icterus bullockii*)	BCC	Species occupies open woodland habitats as well as pine, pine-oak, and fir forests. Breeding occurs in riparian and open woodlands in mid-March through late July and nests are often built in trees such as sycamores, cottonwoods, willows, oaks, etc.). Nests are woven into a gourd shape within tree branches. Species primarily feeds on insects as well as fruit and nectar.	**Alternative 1: Low (Nesting). Low (Foraging).** Marginally suitable foraging habitat is present within the Alternative 1 study area, but forested areas the species typically occupies are generally lacking. There are limited trees within the Alternative 1 study area to support nesting. **Alternative 2: Low (Nesting). Low (Foraging).** Marginally suitable foraging habitat is present within the Alternative 2 study area, but forested areas the species typically occupies are generally lacking. There are limited trees within the Alternative 2 study area to support nesting.
burrowing owl (*Athene cunicularia* ssp. *hypugaea*)	SC; SSC	This species can be found in a variety of open habitat types, including grassland, savanna, desert scrub, agricultural, and urban areas. Breeding occurs from March through October, and nesting takes place	**Alternative 1: Low (Nesting). Moderate (Foraging).** Open grassland habitat suitable for foraging is found throughout the Alternative 1 study area north of the Delta. Suitable nesting habitat may be present

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
		within abandoned burrows dug by burrowing mammals. This species preys on large insects and small mammals.	throughout the survey where open grasslands support active ground squirrels to provide suitable burrow habitat. This species has been recently documented between 1 and 5 miles of the Alternative 1 study area based on CNDDB records. **Alternative 2: Low (Nesting) Moderate (Foraging).** Open grassland habitat suitable for foraging is found throughout the Alternative 2 study area north of the Delta. Suitable nesting habitat may be present throughout the survey where open grasslands support active ground squirrels to provide suitable burrow habitat. This species has been recently documented between 1 and 5 miles of the Alternative 2 study area based on CNDDB records.
California black rail (*Laterallus jamaicensis coturniculus*)	ST; FP	This species is found in tidal emergent wetlands dominated by pickleweed (*Salicornia* spp.) or in brackish marshes supporting bulrushes in association with pickleweed. Breeding occurs from March to June, and nests are concealed in dense vegetation (often pickleweed) near the upper limits of tidal flooding. (California Department of Fish and Wildlife (CDFW) 2025a)	**Alternative 1: Low (Nesting). Low (Foraging).** Marginal foraging habitat is present in the Alternative 1 study area adjacent to the Delta. However, marsh habitats within the Alternative 1 study area lack the large stands of pickleweed and tidal flux preferred by the species for foraging and breeding. This species has been recently documented between 1 and 5 miles of the Alternative 1 study area based on CNDDB records.

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
			Alternative 2: Low (Nesting). Low (Foraging). Marginal foraging habitat is present in the Alternative 2 study area adjacent to the Delta. However, marsh habitats within the Alternative 2 study area lack the large stands of pickleweed and tidal flux preferred by the species for foraging and breeding. This species has been recently documented between 1 and 5 miles of the Alternative 2 study area based on CNDDB records.
California gull (*Larus californicus*)	BCC	This species is found in mudflats, rocky shorelines, beaches, estuaries, and river deltas. Breeding occurs March through July on sparsely vegetated islands, levees in inland lakes and rivers, as well as salt ponds. Nest is typically a small scrape on the ground lined with materials such as vegetation, bones, and feathers. California gulls are omnivorous and will feed on a wide variety of items.	**Alternative 1: Low (Nesting). Moderate (Foraging).** Species utilizes a wide variety of coastal and inland habitats for foraging which are present within the Alternative 1 study area along the southern reach of the Alternative 1 study area. Species may also forage in agricultural areas, grasslands, and other developed areas where food is present. Nesting habitat is generally absent. **Alternative 2: Low (Nesting). Moderate (Foraging).** Species utilizes a wide variety of coastal and inland habitats for foraging which are present within the Alternative 2 study area along the southern reach of the Alternative 2 study area. Species may also forage in agricultural areas, grasslands, and other developed

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
			areas where food is present. Nesting habitat is generally absent.
California least tern (*Sternula antillarum browni*)	FE; SE; FP	This species is found throughout California and requires undisturbed stretches of beach and coastline. Adults forage in bays and estuaries for a variety of fish species. The California least tern nests in colonies on relatively open beaches where vegetation is limited by natural scouring from tidal action. However, to avoid humans, tern colonies have been known to move to inland mud flats and dredge fill sites. The breeding season typically begins in early to mid-May, and nests are constructed directly on the ground.	**Alternative 1: None (Nesting) Low (Foraging).** Suitable mudflat, beach, or coastline is not present within the Alternative 1 study area to support nesting. Suitable foraging habitat exists in adjacent to the Delta south of the Alternative 1 study area. This species has been recently documented between 1 and 5 miles of the Alternative 1 study area based on CNDDB records. **Alternative 2: None (Nesting) Low (Foraging).** Suitable mudflat, beach, or coastline is not present within the Alternative 2 study area to support nesting. Suitable foraging habitat exists in adjacent to the Delta south of the Alternative 2 study area. This species has been recently documented between 1 and 5 miles of the Alternative 2 study area based on CNDDB records.
California Ridgeway's rail (*Rallus obsoletus)*	FE; SE; FP	This species occurs almost exclusively in tidal and brackish marshes with unrestricted daily tidal flow, adequate invertebrate prey food supply, well-developed tidal channel networks, and suitable nesting and escape cover to provide habitat during extreme high tides.	**Alternative 1: Low (Nesting). Low (Foraging).** Marginal marsh foraging habitat is present adjacent to the Delta in the southern reach of the Alternative 1 study area. However, this area lacks the large stands of pickleweed and cordgrass and tidal flux preferred by the species and is

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
			unlikely to support nesting. This species has not been recently documented within 5 miles of the Alternative 1 study area based on CNDDB records; however, this species' known range overlaps with the Alternative 1 study area. **Alternative 2: Low (Nesting) Low (Foraging).** Marginal marsh foraging habitat is present adjacent to the Delta in the southern reach of the Alternative 2 study area. However, this area lacks the large stands of pickleweed and cordgrass and tidal flux preferred by the species and is unlikely to support nesting. This species has not been recently documented within 5 miles of the Alternative 2 study area based on CNDDB records; however, this species' known range overlaps with the Alternative 2 study area.
Clark's grebe (*Aechmophorus clarkii*)	BCC	Typically found on ocean shores, bays, rivers, and estuaries. Breeds June through August and typically nests on large freshwater lakes and marshes with emergent vegetation. Nesting in tidal areas is unusual. Feeds mostly on fish as well as crustaceans, and aquatic insects/larvae.	**Alternative 1: Low (Nesting). Low (Foraging).** Nesting is unlikely due to lack of tidal areas with emergent vegetation. Marginal foraging habitat occurs in areas with open water and wetland vegetation in the southern reach of the Alternative 1 study area adjacent to the Delta. **Alternative 2: Low (Nesting). Moderate (Foraging).** Nesting is unlikely due to lack of tidal areas

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
			with emergent vegetation. Marginal foraging habitat occurs in areas with open water and wetland vegetation in the southern reach of the Alternative 2 study area adjacent to the Delta.
double-crested cormorant** (*Nannopterum auritum*)	WL	This species primarily feeds on fish and is likely found foraging within marine environments along the Sacramento River. The species most often nest in colonies/rookeries and nest in trees, shrubs, artificial structures and cliffs.	**Alternative 1: Moderate (Nesting). High (Foraging)** This species primarily feeds on fish and is likely found foraging within marine environments along the Sacramento River. The species most often nest in colonies/rookeries and nest in trees, shrubs, artificial structures and cliffs. The trees and artificial structures near Stratton Lane and other similar features would provide suitable nesting habitat. **Alternative 2: Moderate (Nesting). High (Foraging)** This species primarily feeds on fish and is likely found foraging within marine environments along the Sacramento River. The species most often nest in colonies/rookeries and nest in trees, shrubs, artificial structures and cliffs. The trees and artificial structures near Stratton Lane and other similar features would provide suitable nesting habitat.

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
golden eagle (*Aquila chrysaetos*)	FP; WL; BGEPA	Golden eagles inhabit a variety of habitats including forests, canyons, shrub lands, grasslands, and oak woodlands. Golden eagles generally feed on a variety of small mammals but may also feed on birds, reptiles, and carrion. This species breeds from late January through August and nests are typically constructed on platforms on steep cliffs or in large trees.	**Alternative 1: Low (Nesting). High (Foraging).** Suitable grassland foraging habitat is present within the Alternative 1 study area, but nesting habitat is generally scarce, lacking trees and cliffs. However, existing transmission line structures in the area may be used by golden eagles for nesting. This species has been recently documented within 1 mile of the Alternative 1 study area based on CNDDB records. **Alternative 2: Low (Nesting) High (Foraging).** Suitable grassland foraging habitat is present within the Alternative 2 study area, but nesting habitat is generally scarce, lacking trees and cliffs. However, existing transmission line structures in the area may be used by golden eagles for nesting. This species has been recently documented within 1 mile of the Alternative 2 study area based on CNDDB records.
northern harrier (*Circus hudsonius*)	SSC; BCC	This species is found in a variety of open grassland, wetland, and agricultural habitats. Open wetland habitats used for breeding include marshy meadows, wet and lightly grazed pastures, freshwater and brackish marshes. Breeding habitat also includes dry upland habitats, such as grassland, cropland, drained	**Alternative 1: High (Nesting). High (Foraging).** Suitable foraging and nesting habitat are present in the Alternative 1 study area in the form of open grassland, marsh, and agricultural habitat. This species has been recently documented within 1

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
		marshland, and shrub-steppe in cold deserts. Wintering habitat includes open areas dominated by herbaceous vegetation, such as grassland, pastures, cropland, coastal sand dunes, brackish and freshwater marshes, and estuaries.	mile of the Alternative 1 study area based on CNDDB records. **Alternative 2: High (Nesting) High (Foraging).** Suitable foraging and nesting habitat are present in the Alternative 2 study area in the form of open grassland, marsh, and agricultural habitat. This species has been recently documented within 1 mile of the Alternative 2 study area based on CNDDB records.
saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*)	SSC; BCC	This species occurs in freshwater and saltwater marshes. It requires thick, continuous cover down to the water surface for foraging, and tall grasses, tule patches, and willows for nesting.	**Alternative 1: Low (Nesting). Moderate (Foraging).** Suitable marsh habitat for this species is present within the southern portion of the Alternative 1 study area located on the northern shore of the Delta. This species has been recently documented between 1 and 5 miles of the Alternative 1 study area based on CNDDB records. **Alternative 2: Low (Nesting) Moderate (Foraging).** Suitable marsh habitat for this species is present within the southern portion of the Alternative 2 study area located on the northern shore of the Delta. This species has been recently documented between 1 and 5 miles of the Alternative 2 study area based on CNDDB records.

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
short-eared owl (*Asio flammeus*)	SSC; BCC	This species occurs in agricultural fields, grazed and ungrazed grasslands, and freshwater and saltwater marshes. This species requires open country that supports concentrations of microtine rodents and herbaceous cover sufficient to conceal its nest from predators. Its nests are built on the ground. This species' diet consists of small mammals and is particularly affected by the 3- to 4-year cycle of the California vole (*Microtus californicus*). Its breeding season occurs from April through July.	**Alternative 1: Moderate (Nesting). Moderate (Foraging).** Suitable grassland and agricultural foraging/nesting habitat is present throughout the Alternative 1 study area. This species has been recently documented between 1 and 5 miles of the Alternative 1 study area based on CNDDB records. **Alternative 2: Moderate (Nesting) Moderate (Foraging).** Suitable grassland and agricultural foraging/nesting habitat is present throughout the Alternative 2 study area. This species has been recently documented between 1 and 5 miles of the Alternative 2 study area based on CNDDB records.
song sparrow ("Modesto" population) (*Melospiza melodia* pop. 1)	SSC	This species inhabits freshwater marshes, riparian thickets, sparsely vegetated irrigation canals, and valley oak restoration sites. It seeks cover and nests in willow and nettle thickets, growths of tules and cattails, and riparian oak forests with a sufficient understory of blackberry.	**Alternative 1: Low (Nesting). Low (Foraging).** Suitable breeding and foraging habitat for this species can be found within the southern portion of the Alternative 1 study area near open water and wetland vegetation. This species has been recently documented between 1 and 5 miles of the Alternative 1 study area based on CNDDB records; however, all records are over 30 years old. **Alternative 2: Low (Nesting) Low (Foraging).** Suitable breeding and foraging habitat for this species can

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
			be found within the southern portion of the Alternative 2 study area near open water and wetland vegetation. This species has been recently documented between 1 and 5 miles of the Alternative 2 study area based on CNDDB records; however, all records are over 30 years old.
Suisun song sparrow (*Melospiza melodia maxillaris*)	SSC	This species occurs throughout California, primarily in saltwater and brackish marshes. The species requires dense vegetation as protection from predators and high tide, for perching, and for nesting habitat. Breeding season is from early March through July.	**Moderate 1: Moderate (Nesting). Moderate (Foraging).** Suitable breeding and foraging habitat for this species can be found within the southern portion of the Alternative 1 study area near open water and wetland vegetation. Species has been recently documented between 1 and 5 miles of the Alternative 1 study area based on CNDDB records. **Alternative 2: Moderate (Nesting) Moderate (Foraging).** Suitable breeding and foraging habitat for this species can be found within the southern portion of the Alternative 2 study area near open water and wetland vegetation. This species has been recently documented between 1 and 5 miles of the Alternative 2 study area based on CNDDB records.
Swainson's hawk (*Buteo swainsoni*)	ST	This species occurs in open grasslands, prairies, and farmlands that have nearby trees for nesting. It nests in bushes and in several tree	**Alternative 1: High (Nesting). Present (Foraging/Migration).** Suitable foraging and breeding habitat is present, although nesting trees are

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
		species, including oaks (*Quercus* spp.), willow, and eucalyptus, and usually nests in trees in riparian areas near open fields. This species primarily hunts small rodents, rabbits, birds, and reptiles during the breeding season. It largely lives off insects, such as grasshoppers and beetles, during the non-breeding season. It reproduces from March through April, incubates for 34 to 35 days, and fledges 6 weeks later.	limited. Species has been recently documented between 1 and 5 miles of the Alternative 1 study area based on CNDDB records. **Alternative 2: High (Nesting) High (Foraging).** Suitable foraging and breeding habitat is present, although nesting trees are limited. This species has been recently documented between 1 and 5 miles of the Alternative 2 study area based on CNDDB records.
tricolored blackbird (*Agelaius tricolor*)	ST; SSC; BCC	This highly colonial species requires open water, protected nesting substrate, and foraging areas adjacent to the colony with insect prey. Breeding occurs near fresh water, often in emergent wetlands with tall, dense cattails or tules, but also in thickets of willow; blackberry; wild rose; or tall, dense forbs. Seeds and cultivated grains, such as rice and oats, compose most of its fall and winter diet. Tricolored blackbird forages on the ground in croplands, grassy fields, flooded land, and along edges of ponds. The breeding season usually occurs from mid-April to late July.	**Alternative 1: Low (Nesting). Moderate (Foraging).** Fresh waterbodies suitable for nesting are generally not present but small patches of open water and wetland vegetation is present in the southern reach of the Alternative 1 study area and foraging habitat is present. This species has been documented between 1 and 5 miles of the Alternative 1 study area based on CNDDB records; however, all records are over 30 years old. **Alternative 2: Low (Nesting) Moderate (Foraging).** Fresh waterbodies suitable for nesting are generally not present but small patches of open water and wetland vegetation is present in the southern reach of the Alternative 2 study area and foraging habitat is present. This

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
			species has been documented between 1 and 5 miles of the Alternative 2 study area based on CNDDB records; however, all records are over 30 years old.
western grebe (*Aechmophorus occidentalis*)	BCC	Species breeds from June through August and nests on large freshwater lakes and marshes with reeds and rushes. Nesting in tidal areas is unusual. After breeding, most migrate to saltwater or brackish habitats, including ocean shores, sheltered bays, rivers, and estuaries. Feeds mostly on fish as well as crustaceans, and aquatic insects/larvae.	**Alternative 1: Low (Nesting). Low (Foraging).** Nesting is unlikely due to lack of freshwater lakes/marshes in the Alternative 1 study area but may rarely occur in tidal areas with emergent vegetation. Foraging habitat is present within the Delta but species is unlikely to occur in inland terrestrial areas. Open water and wetland vegetation is present in the southern reach of the Alternative 1 study area. **Low (Nesting). Low (Foraging).** Nesting is unlikely due to lack of freshwater lakes/marshes in the Alternative 2 study area but may rarely occur in tidal areas with emergent vegetation. Foraging habitat is present within the Delta but species is unlikely to occur in inland terrestrial areas. Open water and wetland vegetation is present in the southern reach of the Alternative 2 study area.
western gull (*Larus occidentalis*)	BCC	This species is often found along coastlines and forage out at sea and along tidal rocky/sandy shores but	**Alternative 1: Low (Nesting). High (Foraging).** Species utilizes a wide variety of habitats for foraging which

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
		also form flocks in garbage dumps, docks, parking lots, ball fields, and beaches. Breeds from mid-April through August and nests only in places free from disturbance and isolated from predators such as islands, headlands, and abandoned seaside structures like piers and old buildings. Nest is typically a small scrape on the ground nest to a windbreak. California gulls are omnivorous and opportunistic and will feed on a wide variety of items, primarily fish and marine invertebrates.	is present within the Alternative 1 study area. Nesting habitat is generally absent. **Alternative 2: Low (Nesting). High (Foraging).** Species utilizes a wide variety of habitats for foraging which is present within the Alternative 2 study area. Nesting habitat is generally absent.
western snowy plover (*Charadrius nivosus nivosus*)	FT; SSC	This species requires barren to sparsely vegetated sand beaches, dry salt flats in lagoons, dune habitat, levees and flats at salt-evaporation ponds, lakes, reservoirs, or ponds. Nests are a natural or scraped depression on dry ground usually lined with materials such as pebbles, shell fragments, fish bones, mud chips, or vegetation. Breeding season is March-September.	**Alternative 1: Low (Nesting). Low (Foraging).** Marginally suitable nesting and foraging habitat is present along coastal wetland areas of the Alternative 1 study area. This species has been recently documented between 1 and 5 miles of the Alternative 1 study area near the Montezuma wetlands based on CNDDB records. **Alternative 2: Low (Nesting) Moderate (Foraging).** Marginally suitable nesting and foraging habitat is present along coastal wetland areas of the Alternative 2 study area. This species has been recently documented within 1 mile of the Alternative 2 study area near the

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
			Montezuma wetlands based on CNDDB records.
white-tailed kite (*Elanus leucurus*)	FP	This species nests in riparian or oak woodland adjacent to undisturbed, open fields and grasslands, meadows, farmlands, and emergent wetlands, where it hunts rodents. Breeding generally occurs from February through October. White-tailed kite lays three to five eggs, which it incubates for 30 to 32 days, after which fledging occurs at 5 to 6 weeks of age.	**Alternative 1: Low (Nesting). Moderate (Foraging).** Suitable foraging habitat for the species is present in the Alternative 1 study area; however, oak woodland suitable for nesting is not present. This species has been documented between 1 and 5 miles of the Alternative 1 study area based on CNDDB records; however, all records are over 30 years old. **Alternative 2: Low (Nesting) Moderate (Foraging).** Suitable foraging habitat for the species is present in the Alternative 2 study area; however, oak woodland suitable for nesting is not present. This species has been documented between 1 and 5 miles of the Alternative 2 study area based on CNDDB records; however, all records are over 30 years old.
wrentit (*Chamaea fasciata*)	BCC	In coastal California, this species is a year-round resident in coastal scrub and chaparral habitat. Breeds Mar 15 to Aug 10 and nest is typically built in plants such as California sage, coyote brush, blackberry, poison oak, and coffeeberry. Species feeds	**Alternative 1: Low (Nesting). Moderate (Foraging).** Nesting habitat is generally not present due to lack of scrub and chapparal habitat. However, vegetation such as coyote brush may be present and has low potential to support nesting. Foraging

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
		primarily on arthropods as well as fruit and seeds.	habitat is present within the Alternative 1 study area. **Alternative 2: Low (Nesting). Moderate (Foraging).** Nesting habitat is generally not present due to lack of scrub and chapparal habitat. However, vegetation such as coyote brush may be present and has low potential to support nesting. Foraging habitat is present within the Alternative 2 study area.
yellow-billed magpie (*Pica nuttalli)*	BCC	This species is a permanent resident in open oak woodlands and grassy oak savannas of central California. May forage and nest in a wide variety of habitats such as agricultural areas with tall trees for nesting, riparian areas, orchards, and lower foothills. Typically nests high in tall trees. Feed on a variety of items including insects and other invertebrates, plant matter, avian nestlings/eggs, small mammals/reptiles.	**Alternative 1: Low (Nesting). Moderate (Foraging).** Suitable nesting trees are generally limited within the Alternative 1 study area. Foraging habitat is present and species is wide ranging in California and able to occupy a variety of habitats. **Alternative 2: Low (Nesting). Moderate (Foraging).** Suitable nesting trees are generally limited within the Alternative 2 study area. Foraging habitat is present and species is wide ranging in California and able to occupy a variety of habitats.
yellow rail (*Coturnicops noveboracensis*)	SSC	This species breeds in densely vegetated, shallow freshwater marshes and wet meadows. Breeding occurs from May through September. Wintering birds frequent	**Alternative 1: Low (Nesting). Moderate (Foraging/Wintering).** Marginal breeding habitat and suitable wintering habitat are present within the Alternative 1 study area.

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
		mature salt marshes well above the water line.	This species has been recently documented between 1 and 5 miles of the Alternative 1 study area based on CNDDB records. **Alternative 2: Low (Nesting) Moderate (Foraging/Wintering).** This species has been recently documented between 1 and 5 miles of the Alternative 2 study area based on CNDDB records.
Invertebrates			
conservancy fairy shrimp (*Branchinecta conservatio*)	FE	This species occurs within vernal pool habitats in California's Central Valley. It mostly lives in relatively large, turbid freshwater vernal pools called playa pools. This species can be found at elevations ranging from 16 to 5,577 feet in grassland, rural, and wetland habitats. This species opportunistically filter-feeds on various planktonic food sources including algae and protozoa.	**Alternative 1: Low.** Suitable vernal pool habitat is unlikely to be present in the Alternative 1 study area. It is possible that suitable vernal pool habitat for this species may develop during the rainy season. This species has been recently documented between 1 and 5 miles of the Alternative 1 study area. **Alternative 2: Low.** Suitable vernal pool habitat is unlikely to be present in the Alternative 2 study area. It is possible that suitable vernal pool habitat for this species may develop during the rainy season. This species has been recently documented between 1 and 5 miles of the Alternative 2 study area.
Crotch's bumble bee (*Bombus crotchii*)	SC	Species historic range is widespread throughout California, generally	**Alternative 1: Moderate.** No occurrences documented within 5

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
		inhabiting open grassland and scrub habitats foraging for pollen and nectar. Nesting occurs underground and the colony active period is April-August.	miles of Alternative 1 study area based on CNDDB records, but species has been recently listed as a state candidate and CNDDB data may be lacking. Floristic resources are likely present throughout the Alternative 1 study area and area is within range of species **Alternative 2: Moderate.** CNDDB records only show 1 occurrence from 1926, but species has been recently listed as a state candidate and CNDDB data may be lacking. Floristic resources are likely present throughout the Alternative 2 study area and is within range of species. This species has been documented between 1 and 5 miles of the Alternative 2 study area; however, the single record is over 30 years old.
Lange's metalmark butterfly (*Apodemia mormo langei*)	FE	This species is associated with the Antioch Dunes, a riverbank dune system along the San Joaquin River. Currently, this species can only be found in the Antioch Dunes National Wildlife Refuge, the last remnants of the Antioch Dunes. All life stages are closely associated with naked-stemmed buckwheat (*Eriogonum nudum* var. *psychicola*), which is the primary nectar source for adults, is used to lay eggs, and is a larval food plant. The leaves of the larval host	**Alternative 1: Low.** This species has been recently documented within 0.25 miles of Alternative 1 study area based on CNDDB records. However, suitable dune habitat for this species is not present within the Alternative 1 study area. This species may occur incidentally within the Alternative 1 study area given the proximity of the documented occurrence, but the lack of suitable foraging and breeding habitat within the Alternative 1 study area makes this unlikely.

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
		plant provide both food and shelter throughout the larval instar phases.	**Alternative 2: Low.** This species has been recently documented within 0.25 miles of Alternative 2 study area based on CNDDB records. However, suitable dune habitat for this species is not present within the Alternative 2 study area. This species may occur incidentally within the Alternative 2 study area given the proximity of the documented occurrence, but the lack of suitable foraging and breeding habitat within the Alternative 2 study area makes this unlikely.
monarch butterfly (*Danaus plexippus*)	PT	Monarchs are known to migrate long distances but may also occupy suitable habitat year-round. They are known to overwinter along the California coast roosting in tree stands. Adult monarchs occupy a variety of habitats such as grasslands, wetlands, coastal, urban, and residential areas. They feed on the nectar of flowers during breeding and migration, but they lay eggs on milkweed plants which are required for reproduction.	**Alternative 1: Moderate.** The Alternative 1 study area contains suitable foraging habitat with floristic resources. Potential for reproduction exists in areas where milkweed is present. No recorded CNDDB occurrences within 5 miles but the Alternative 1 study area is within known range of the species. **Alternative 2: Moderate.** The Alternative 2 study area contains suitable foraging habitat with floristic resources. Potential for reproduction in areas where milkweed is present. No recorded CNDDB occurrences within 5 miles but the Alternative 2 study area is within known range of the species.

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
vernal pool fairy shrimp (*Branchinecta lynchi*)	FT	This species occurs within vernal pool habitats throughout California. Female vernal pool fairy shrimp carry fertilized eggs in a sac on the underside of their body. The eggs are either dropped to the pool bottom or remain in the brood sac until the mother dies and sinks to the bottom of the pool. This species opportunistically filter-feeds on various planktonic food sources, including algae and protozoa.	**Alternative 1: Low.** Suitable vernal pool habitat is unlikely to be present in the Alternative 1 study area. It is possible that suitable vernal pool habitat for this species may develop during the rainy season. This species has been recently documented between 1 and 5 miles of the Alternative 1 study area. **Alternative 2: Low.** Suitable vernal pool habitat is unlikely to be present in the Alternative 2 study area. It is possible that suitable vernal pool habitat for this species may develop during the rainy season. This species has been recently documented between 1 and 5 miles of the Alternative 2 study area.
vernal pool tadpole shrimp (*Lepidurus packardi*)	FE	This species occurs within vernal pool habitats with a patchy distribution within California's Central Valley. Female vernal pool tadpole shrimp produce up to six clutches of eggs containing 32 to 61 eggs per clutch during each wet season. They carry fertilized eggs in a sac on the underside of their body. The eggs are either dropped to the pool bottom or remain in the brood sac until the mother dies and sinks to the bottom of the pool. This species opportunistically filter-feeds on other fairy shrimp (*Branchinecta* spp.),	**Alternative 1: Low.** Suitable vernal pool habitat is unlikely to be present in the Alternative 1 study area. It is possible that suitable vernal pool habitat for this species may develop during the rainy season. This species has been recently documented between 1 and 5 miles of the Alternative 1 study area. **Alternative 2: Low.** Suitable vernal pool habitat is unlikely to be present in the Alternative 2 study area. It is possible that suitable vernal pool habitat for this species may develop

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
		invertebrates, and waste from other vernal pool species.	during the rainy season. This species has been recently documented between 1 and 5 miles of the Alternative 2 study area.
western bumble bee (*Bombus occidentalis*)	SC	This species can be found throughout the western United States and Canada and are not limited to any particular host plant.	**Alternative 1: Moderate.** Suitable habitat is present within the Alternative 1 study area and is within the species' known range. However, there are no occurrences documented within 5 miles of Alternative 1 study area based on CNDDB records. **Alternative 2: Moderate.** Suitable habitat is present within the Alternative 2 study area. This species has been documented between 1 and 5 miles of the Alternative 2 study area; however, the single record is over 30 years old.
Mammals			
salt marsh harvest mouse (*Reithrodontomys raviventris*)	FE, SE, FP	This species inhabits salt marshes in California and is adapted to live in marsh vegetation, including pickleweed and cordgrass, which provide cover, food sources, and breeding habitats. Breeding typically occurs between March and October. Diet consists of marsh vegetation, including seeds, stems, and leaves.	**Alternative 1: Low.** This species has been recently documented between 1 and 5 miles of the Alternative 1 study area. Upland foraging habitat is present adjacent to the Delta in the southern reach of the Alternative 1 study area. However, marsh habitat is not present within the Alternative 1 study area and this area lacks the large stands of pickleweed and cordgrass preferred by the species;

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
			therefore, the Alternative 1 study area is unlikely to support breeding. **Alternative 2: Low.** This species has been recently documented within 0.25 miles of the Alternative 2 study area. Upland foraging habitat is present adjacent to the Delta in the southern reach of the Alternative 2 study area. However, marsh habitat is not present within the Alternative 2 study area and this area lacks the large stands of pickleweed and cordgrass preferred by the species; therefore, the Alternative 2 study area is unlikely to support breeding.
San Joaquin kit fox (*Vulpes macrotis mutica*)	FE; ST	This species inhabits a variety of open habitats, including grasslands, chenopod scrublands, and semi-arid regions. Breeding occurs from January to March, with a gestation period of 49 to 55 days. The female constructs a den in the ground, often utilizing existing burrows dug by other animals. Its diet primarily consists of small mammals, such as rodents, rabbits, and ground squirrels.	**Alternative 1: Low.** Grassland habitat suitable for foraging and denning is present within the Alternative 1 study area. No occurrences for this species are documented within 5 miles of Alternative 1 study area based on CNDDB records but is within the species' known range. **Alternative 2: Low.** Grassland habitat suitable for foraging and denning is present within the Alternative 2 study area. No occurrences for this species are documented within 5 miles of Alternative 2 study area based on CNDDB records but is within the species' known range.

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
western red bat (*Lasirurs blossevillii*)	SSC, WBWG-H	This species occurs in a variety of habits, including forests, woodlands, and riparian areas. It roosts and forages among trees and vegetation and exhibits a preference for mixed coniferous and deciduous forests. Breeding occurs in the spring and early summer. This species typically seeks out tree foliage, such as leaves or branches, to create roosting sites. The diet consists mainly of insects, such as moths, beetles, and flies.	**Alternative 1: Low (Roosting). Low (Foraging).** Marginally suitable roosting habitat is present in the Alternative 1 study area within the limited stands of trees, but forest habitat is generally lacking. Suitable foraging habitat is present but no occurrences are documented for this species within 5 miles of Alternative 1 study area based on CNDDB records. **Alternative 2: Low (Roosting) Moderate (Foraging).** Marginally suitable roosting habitat is present in the Alternative 2 study area within the limited stands of trees, but forest habitat is generally lacking. Suitable foraging habitat is present and this species has been recently documented between 1 to 5 miles of the Alternative 2 study area.
Reptiles			
giant garter snake* (*Thamnophis gigas*)	FT; ST	This semi-aquatic species inhabits marshes, wetlands, and slow-moving bodies of water. It is often closely associated with water sources, which serve as its hunting grounds. Breeding typically occurs in the spring and early summer. After mating, females give birth to live young. The diet primarily consists of	**Alternative 1: None.** This species has been recently documented between 1 and 5 miles of the Alternative 1 study area, but suitable freshwater wetland habitat is not present within the Alternative 1 study area. **Alternative 2: Low.** Potentially suitable freshwater emergent wetland habitat is present north of the Alternative 2 study area, but not

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
		small fish, amphibians, and aquatic invertebrates.	directly within the work areas. This species has been recently documented between 1 and 5 miles of the Alternative 2 study area.
Northern California legless lizard (*Anniella pulchra*)	SSC	This species is found in grasslands, chaparral, and open woodlands and requires loose, friable soils for burrowing. Breeding typically occurs in the spring or early summer. Females lay small clutches of eggs in underground burrows or hidden areas. The diet primarily consists of small invertebrates, such as insects, spiders, and other arthropods.	**Alternative 1: Low.** Grassland habitat for this species is present within the Alternative 1 study area but chaparral and woodland habitat is lacking. No occurrences documented within 5 miles of the Alternative 1 study area based on CNDDB records. **Alternative 2: Moderate.** Grassland habitat for this species is present within the Alternative 2 study area but chaparral and woodland habitat is lacking. This species has been recently documented between 1 and 5 miles of the Alternative 2 study area.
northwestern pond turtle (*Actinemys marmorata*)	FPT; SSC	This freshwater turtle species primarily inhabits ponds, lakes, and slow-moving streams with suitable basking sites. It spends a significant amount of time basking on logs or rocks. Breeding typically occurs in the spring and early summer. Females dig nests in sandy or gravelly areas near water, where they lay their eggs. The hatchlings emerge several months later and make their way to the water. The diet	**Alternative 1: Moderate.** Wetland habitat is present within the Alternative 1 study area with areas of open water in the southern reach of the Alternative 1 study area north of the Delta. NWI wetland features are present throughout the Alternative 1 study area and may provide suitable foraging and dispersal habitat. This species has been recently documented between 1 and 5 miles of the Alternative 1 study area.

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
		is omnivorous and consists of various aquatic plants, insects, small fish, and amphibians.	**Alternative 2: Moderate.** Wetland habitat is present within the Alternative 2 study area with areas of open water in the southern reach of the Alternative 2 study area north of the Delta. NWI wetland features are present throughout the Alternative 2 study area and may provide suitable foraging and dispersal habitat. This species has been recently documented between 1 and 5 miles of the Alternative 2 study area.

* Evaluated for the Proposed Project and determined to have no potential to occur within the Proposed Project.

** Not evaluated for the Proposed Project because database record searches found no records within the vicinity of the Proposed Project.

[a] Explanation of listing status codes:

Federal

- FE: Federally listed as endangered
- FT: Federally listed as threatened
- PT: Proposed to be federally listed as threatened
- BCC: United States (U.S.) Fish and Wildlife Service (USFWS) Bird of Conservation Concern
- BGEPA: Bald and Golden Eagle Protection Act

State

- Delisted (S): Delisted from the State
- SE: State-listed as endangered
- ST: State-listed as threatened
- SC: State candidate for listing as threatened or endangered
- SSC: Species of Special Concern
- FP: Fully protected species
- WL: Watch List species

- WBWG-H: Western Bat Working Group high designation

Source: (AECOM 2018a; 2018b; Area West Environmental, Inc. 2017; CDFW 2025b; 2025c; 2025a; Cornell Lab of Ornithology (CLO) 2025j; 2024; 2025i; 2025h; 2025g; 2025f; 2025e; 2025d; 2025c; 2025b; 2025a; Hatfield et al. 2015; National Audubon Society 2025; NatureServe 2025; USFWS 2025b; 2025d; 2023; 2025c; Xerces Society for Invertebrate Conservation 2025)

APPENDIX F.8

Biological Resources Technical Report Addendum

INSIGNIA ENVIRONMENTAL

LS POWER GRID CALIFORNIA, LLC

COLLINSVILLE 500/230 KILOVOLT SUBSTATION PROJECT

TERRESTRIAL BIOLOGICAL RESOURCES TECHNICAL REPORT ADDENDUM #2

JULY 2025

PREPARED FOR:

LS Power

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1 – INTRODUCTION

LS Power Grid California, LLC (LSPGC) retained Insignia Environmental (Insignia) to conduct a habitat assessment and preliminary waters assessment within two parcels owned by Pacific Gas and Electric Company (PG&E), totaling approximately 69 acres.[1] The California Public Utilities Commission has requested that these parcels be evaluated to assist with the completion of the alternatives analysis for the Environmental Impact Report that is being prepared for the Collinsville 500/230 Kilovolt (kV) Substation Project (Proposed Project). The Proposed Project would involve the construction of a new 500/230 kV substation (Collinsville Substation), the construction of two new 500 kV single-circuit transmission line segments that will loop PG&E's existing Vaca Dixon-Tesla 500 kV Transmission Line into the proposed LSPGC Collinsville Substation, and the construction of one new 230 kV double-circuit transmission line that would connect the proposed LSPGC Collinsville Substation to PG&E's existing Pittsburg Substation.

A Biological Resources Technical Report (Original Report) (Insignia 2024) was prepared for the Proposed Project in July 2024 to identify any existing or potentially sensitive biological resources (e.g., vegetation communities, hydrologic features, and special-status plant and animal species and their associated habitats) that may be present within or adjacent to the vicinity of the Proposed Project. Following the completion of the Original Report, a Biological Resources Technical Report Addendum (Addendum #1) (Insignia 2025) was prepared for the Proposed Project in May 2025 to accommodate supplemental habitat assessment and preliminary waters surveys for an approximately 526-acre expansion of the Proposed Project survey area. This addendum (Addendum #2) supplements the Original Report and Addendum #1 and details the findings of a habitat assessment and preliminary waters assessment conducted within the approximately 69-acre area of the parcels that has been added to the Proposed Project survey area (expanded survey area).

The Proposed Project's general location is depicted in Figure 1: Project Overview Map. Figure 2: Project Components Map depicts the survey area as defined in the Original Report and Addendum #1, the expanded survey area associated with Addendum #2, and the Proposed Project components.

2 – SURVEY AREA LOCATION

As shown in Figure 2: Project Components Map, the expanded survey area is immediately adjacent to the Proposed Project survey area near the unincorporated community of Collinsville in southwestern Solano County, as evaluated in the Original Report. It lies south of the proposed LSPGC Collinsville Substation and west of the proposed LSPGC 230 kV Overhead Segment. The area is bordered to the southeast by Marshall Cutt and to the southwest by a channel that separates it from Montezuma Island.

[1] The 69 acres assessed did not overlap with the area surveyed for the Original Report or Addendum #1.

3 – REGULATORY FRAMEWORK

The regulatory framework applicable to the expanded survey area is consistent with the framework established in the Original Report. The following federal, state, and local regulations apply to the expanded survey area:

- Federal
  - Federal Endangered Species Act (FESA)
  - Migratory Bird Treaty Act (MBTA)
  - Bald and Golden Eagle Protection Act (BGEPA)
  - Clean Water Act (CWA) Sections 404, 402, and 401
  - Plant Protection Act of 2000
- California
  - California Fish and Game Code Sections 3511, 4700, 5050, and 5515
  - California Fish and Game Code Sections 3503, 3503.5, and 3513
  - Porter-Cologne Water Quality Control Act
  - Native Plant Protection Act
  - California Code of Regulations (CCR)
- Local
  - Solano County General Plan
  - Solano County Water Agency - Solano Multispecies Habitat Conservation Plan
  - PG&E Bay Area Operations and Maintenance Habitat Conservation Plan

4 – PRELIMINARY AGENCY CONSULTATION

No pre-survey contact with applicable wildlife agencies was conducted regarding Addendum #2. No agency approvals were required for biologists conducting surveys. Agency protocols and best practices applied to the survey effort are detailed in Section 5.2 Biological Resource Survey Method of the Original Report.

5 – METHODS

Consistent with the methods and definitions outlined in the Original Report, Insignia performed a records search, a habitat assessment, and a preliminary jurisdictional delineation within the expanded survey area.

Surveys within the expanded survey area were conducted on July 3, 2025. Insignia biologists searched for areas of potential habitat by walking meandering transects that covered 100 percent of the expanded survey area that was accessible.

Figure 1: Project Overview Map **Collinsville 500/230 Kilovolt Substation Project**

- Proposed LSPGC Collinsville Substation
- Existing PG&E Pittsburg Substation
- Proposed PG&E 500 kV Transposition Structure
- Proposed Project Transmission Lines
- Proposed PG&E 12 kV Distribution Line
- Proposed LSPGC Telecommunications Line
- Existing PG&E Vaca Dixon-Tesla Transmission Line
- Navigational Channel

1:250,000

0 2 4 Miles

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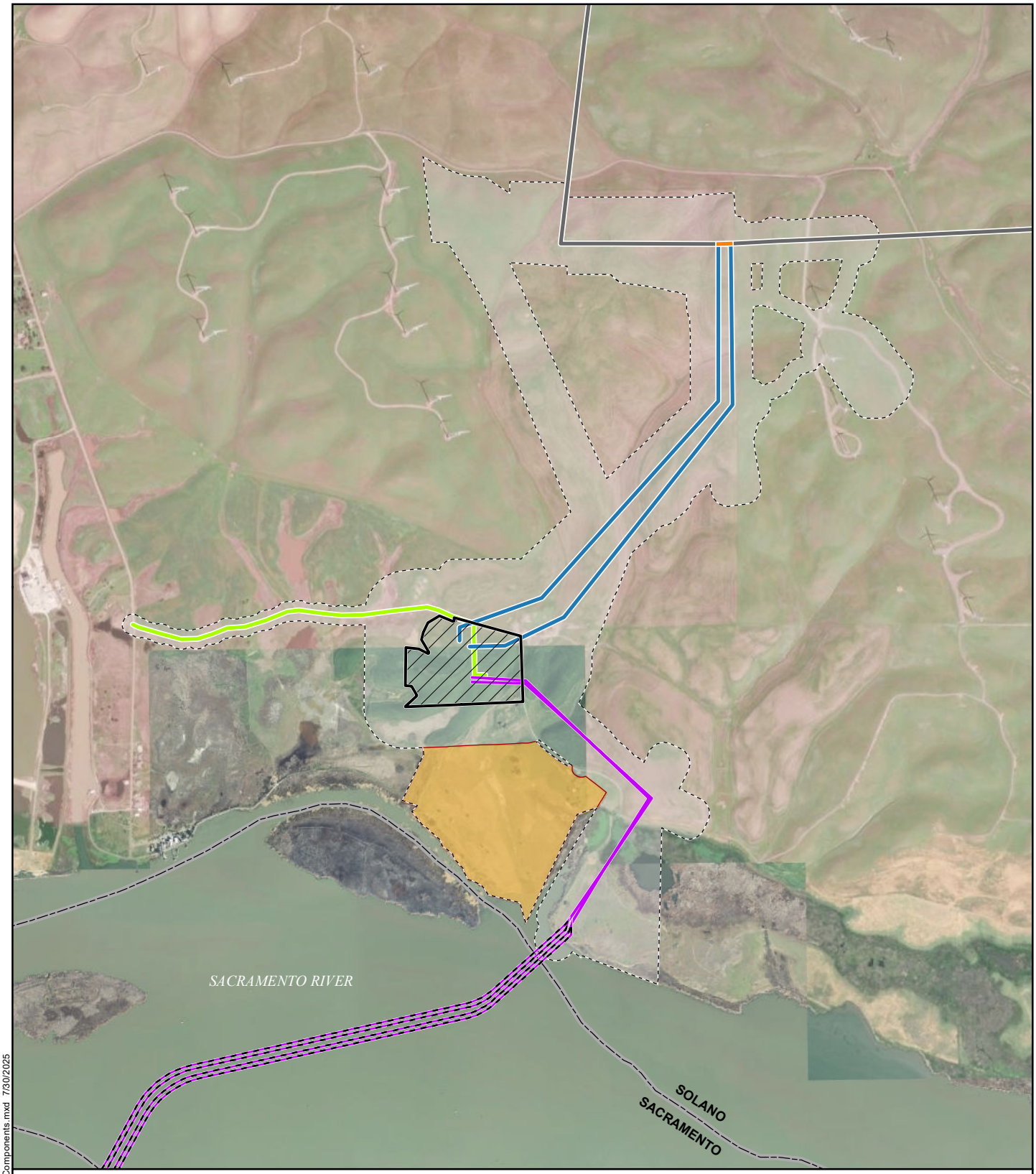

Figure 2: Project Components Map 1 of 6 **Collinsville 500/230 Kilovolt Substation Project**

- Existing PG&E 500 kV Overhead Transmission Line
- Proposed LSPGC 230 kV Overhead Segment
- Proposed LSPGC 230 kV Submarine Segment
- Proposed PG&E 12 kV Distribution Line
- Proposed PG&E 500 kV Interconnection
- Existing PG&E 500 kV Overhead Transmission Line to be Removed
- County Boundary
- Survey Area
- Proposed Collinsville Substation
- Expanded Survey Area

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Figure 2: Project Components Map 2 of 6 **Collinsville 500/230 Kilovolt Substation Project**

- Proposed LSPGC 230 kV Submarine Segment
- Proposed LSPGC 230 kV Underground Segment
- Proposed LSPGC Telecommunications Line
- Survey Area
- Existing PG&E Pittsburg Substation
- Proposed Riser
- Proposed Utility Vault

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Figure 2: Project Components Map 3 of 6 **Collinsville 500/230 Kilovolt Substation Project**

- Proposed PG&E 500 kV Transposition Structure
- Existing PG&E 500 kV Overhead Transmission Line
- Survey Area

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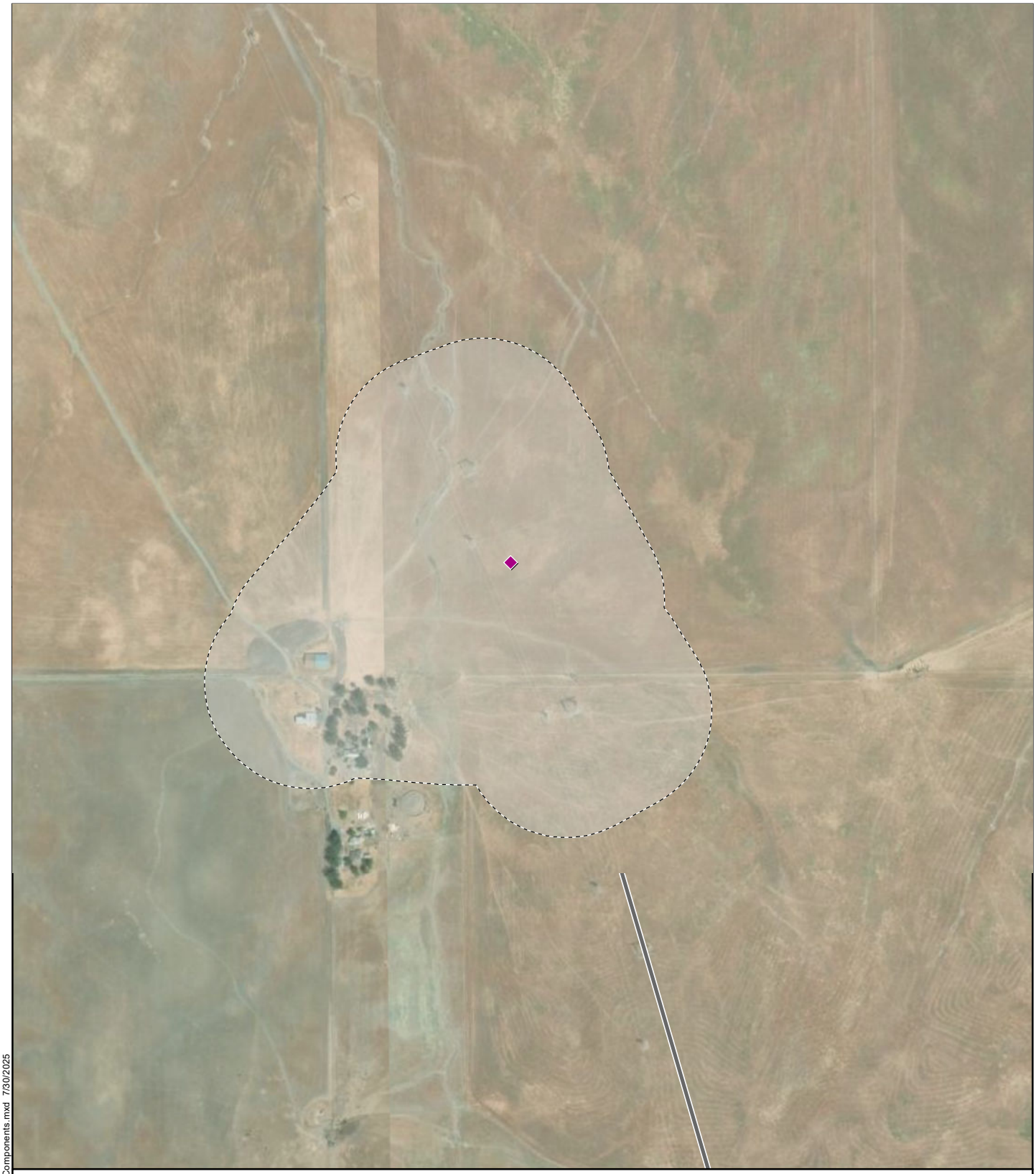

Figure 2: Project Components Map 4 of 6 **Collinsville 500/230 Kilovolt Substation Project**

- Proposed PG&E 500 kV Transposition Structure
- Existing PG&E 500 kV Overhead Transmission Line
- Survey Area

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Figure 2: Project Components Map 5 of 6 **Collinsville 500/230 Kilovolt Substation Project**

- Proposed PG&E LSP Removal
- Proposed PG&E Three-Pole Dead-End TSP
- Existing PG&E 500 kV Overhead Transmission Line
- Survey Area

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Figure 2: Project Components Map 6 of 6 **Collinsville 500/230 Kilovolt Substation Project**

- Proposed PG&E 500 kV Transposition Structure
- Existing PG&E 500 kV Overhead Transmission Line
- Survey Area

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0 500 1,000 Feet

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Surveys were conducted during daylight hours with clear to partly cloudy skies and did not occur in inclement weather conditions or fog cover. Temperatures ranged from 55 to 86 degrees Fahrenheit with wind speeds between 5 and 20 miles per hour.

5.0 MODIFICATIONS FROM ORIGINAL REPORT

A fully floristic special-status plant survey was conducted within the survey area associated with the Original Report. Because the habitat assessment was conducted outside of the bloom period for several special-status plants species with the potential to occur, a fully floristic special-status plant survey was not conducted within the expanded survey area for Addendum #2. As a result, the criteria for a special-status species' potential to occur in this Addendum were modified from the Original Report to account for the lack of survey results and are as follows:

- Present: The species was incidentally observed during the habitat assessment.
- High Potential: Suitable habitat for the species is present within the expanded survey area, and recent (i.e., within 30 years) occurrences have been reported within 1 mile of the expanded survey area; or marginal habitat is present, and recent occurrences have been recorded within 0.25 mile of the expanded survey area.
- Moderate Potential: Suitable habitat for the species is present, and the expanded survey area is located within the species' known range, but no recent (i.e., within 30 years) occurrences have been recorded between 1 and 5 miles from the expanded survey area; or marginal habitat is present, the expanded survey area is located within the species' known range, and multiple recent occurrences have been recorded between 1 and 5 miles from the expanded survey area.
- Low Potential: Poor or marginal habitat for the species exists, and no more than one recent occurrence has been recorded between 1 and 5 miles from the expanded survey area; barriers to migration/dispersal may be present; or suitable habitat for the species is present within the expanded survey area, but either no recent occurrences have been recorded between 1 and 5 miles from the expanded survey area or the expanded survey area is located outside of the species' known range.
- No Potential: No habitat exists for the species; no occurrences have been recorded between 1 and 5 miles from the expanded survey area, or the expanded survey area is outside of the species' known geographic or elevation range; and/or the species has been confirmed to be extirpated from the area.

6 – RESULTS

6.0 GEOGRAPHY, CLIMATE, AND HYDROLOGY

The expanded survey area receives an average of 23 inches of rainfall per year, with the majority of precipitation falling between November and March. Average annual temperatures range from 48 to 73 degrees Fahrenheit (National Oceanic Atmospheric Administration [NOAA] 2025). The elevation ranges from 0 to 41 feet above sea level (Google Earth Pro 2025).

6.1 RECORDS SEARCH

Results of the initial desktop analysis indicated that the areas surrounding the expanded survey area are primarily grassland habitat and agricultural areas, surrounded by some developed areas for farming or residential purposes.

From this records search, Insignia compiled a list of 21 special-status plant species and 31 special-status wildlife species that have the potential to occur within the expanded survey area (California Department of Fish and Wildlife [CDFW] 2025a), as well as two potentially jurisdictional water features from a United States (U.S.) Geological Survey (USGS 2023) National Wetlands Inventory database review (U.S. Fish and Wildlife Service [USFWS] 2025).

6.2 VEGETATION COMMUNITIES

Ten vegetation community alliances and land cover types were identified in the expanded survey area, as presented in Table 1: Vegetation Community Alliances and Land Cover Types and depicted in Figure 3: Biological Resources Map. The vegetation community and land cover locations are also documented in Figure 3: Biological Resources Map, and photographs are provided in Attachment A: Habitat Assessment Photographs. The natural communities observed in the expanded survey area are ranked S2, S3, S4, S5, and semi-natural alliance (SNA) (semi-natural stands dominated by non-native species). Six of the 15 natural communities observed are considered sensitive. The following subsections describe each vegetation community identified within the expanded survey area.

6.2.0 *Brassica nigra - Centaurea* (*solstitialis, melitensis*) Herbaceous Semi-Natural Alliance

This community is typically associated with disturbed areas where black mustard (*Brassica nigra*) and short-pod mustard (*Hirshfeldia incana*) achieve 80-percent relative cover in the herbaceous layer. Similar ruderal forbs, including tocolote (*Centaurea melitensis*) and yellow star thistle (*Centaurea solstitialis*), may achieve dominance or co-dominance. This community was observed throughout the hillsides in the northeastern portion of the expanded survey area.

6.2.1 *Carex barbarae* Herbaceous Alliance (S2)

This community is found in vernally wet sites, seasonally saturated meadows, and low-gradient drainages, where Santa Barbara sedge (*Carex barbarae*) dominates the herbaceous layer. Membership in the alliance requires a minimum of 50 percent absolute cover of *Carex barbarae*. The species often forms broad, rhizomatous patches and may co-dominate with other wetland sedges or rushes. Associated species may include rushes (*Juncus* spp), and blackberry (*Rubus* spp). This community was observed within the expanded survey area near the wetland margin of Marshall Cut.

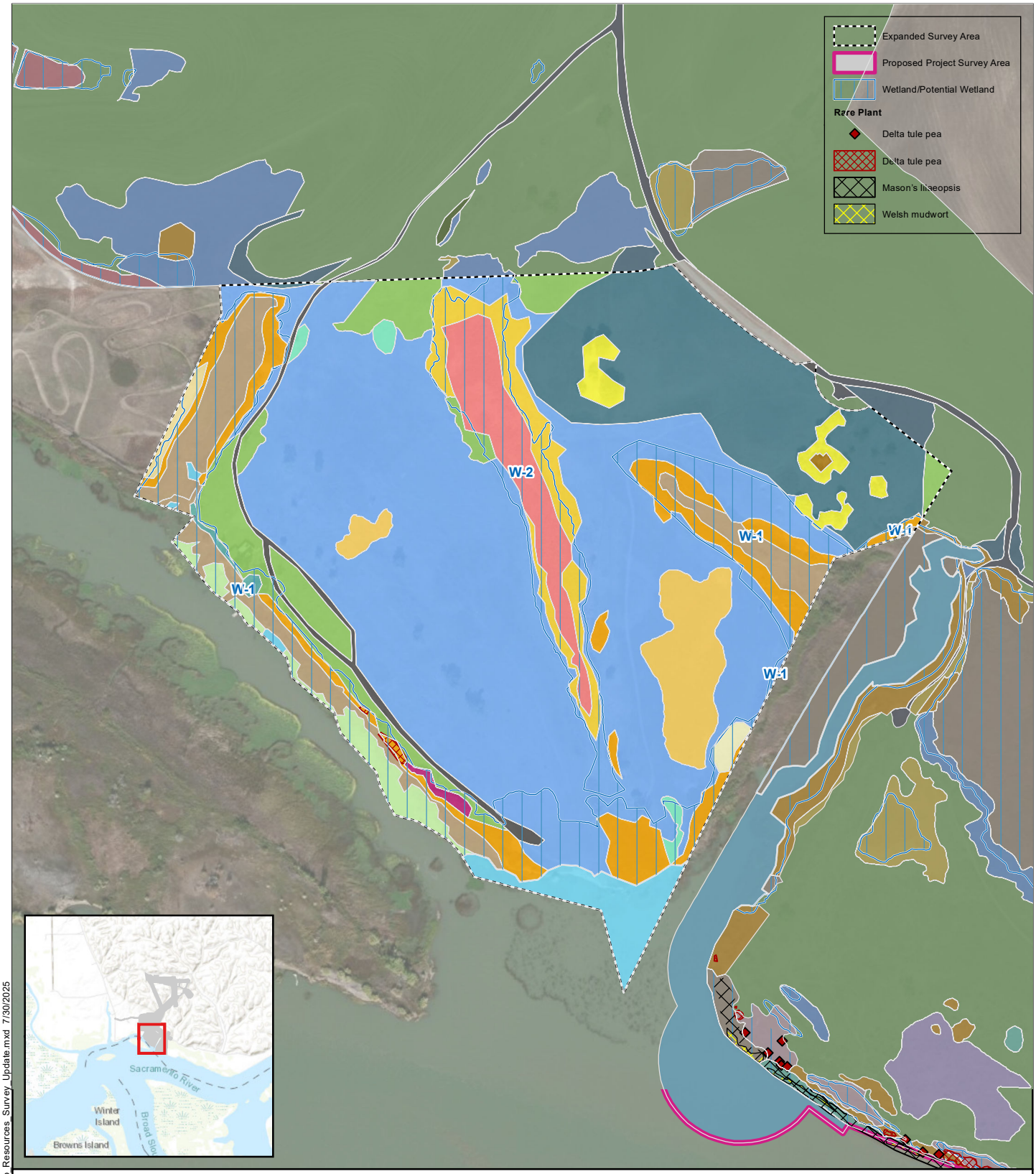

Figure 3: Biological Resources Map

Collinsville 500/230 Kilovolt Substation Project

Vegetation Community

- *Populus fremontii - Fraxinus velutina - Salix gooddingii* Forest & Woodland Alliance
- *Lotus scoparius - Lupinus albifrons - Eriodictyon* spp. Shrubland Alliance
- *Ludwigia* (*hexapetala*, *peploides*) - *Eichhornia crassipes* Herbaceous Semi-Natural Alliance
- *Conium maculatum - Foeniculum vulgare* Herbaceous Semi-Natural Alliance
- *Schinus* (*molle*, *terebinthifolius*) - *Myoporum laetum* Forest & Woodland Semi-Natural Alliance
- *Carex barbarae* Herbaceous Alliance
- *Phragmites australis - Arundo donax* Herbaceous Semi-Natural Alliance
- *Brassica nigra - Centaurea* (*solstitialis*, *melitensis*) Herbaceous Semi-Natural Alliance
- *Distichlis spicata* Herbaceous Alliance
- *Frankenia salina* Herbaceous Alliance
- *Juncus arcticus* (var. *balticus*, *mexicanus*) Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Polygonum lapathifolium - Xanthium strumarium* Herbaceous Alliance
- *Sarcocornia pacifica* Herbaceous Alliance
- *Rosa californica* Shrubland Alliance
- *Salix exigua* Shrubland Alliance
- *Schoenoplectus* (*acutus*, *californicus*) Herbaceous Alliance
- *Schoenoplectus acutus/Rosa californica* Association
- Disturbed
- Open Water
- Developed

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0 250 500 Feet

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Table 1: Vegetation Community Alliances and Land Cover Types

Vegetation Community Alliance or Land Cover Type	Approximate Size in Area Surveyed (acres)
Brassica nigra - *Centaurea* (*solstitialis*, *melitensis*) Herbaceous Semi-Natural Alliance	9.6
Carex barbarae Herbaceous Alliance *	0.2
Conium maculatum - *Foeniculum vulgare* Herbaceous Semi-Natural Alliance	0.3
Developed	0.1
Distichlis Spicata Herbaceous Alliance	33.0
Disturbed	1.0
Frankenia Salina Herbaceous Alliance*	2.3
Juncus Arcticus (var. balticus, mexicanus) Herbaceous Alliance	0.4
Lolium perenne Herbaceous Semi-Natural Alliance	4.2
Lotus scoparius - *Lupinus albifrons* - *Eriodictyon* spp. Shrubland Alliance	2.7
Ludwigia (*hexapetala*, *peploides*) - *Eichhornia crassipes* Herbaceous Semi-Natural Alliance	1.1
Open Water	1.8
Phragmites australis - *Arundo donax* Herbaceous Semi-Natural Alliance	0.2
Populus fremontii - *Fraxinus velutina* - *Salix gooddingii* Forest & Woodland Alliance*	0.2
Rosa Californica Shrubland Alliance*	4.3
Sarcocornia pacifica Herbaceous Alliance*	2.6
Schinus (*molle*, *terebinthifolius*) - *Myoporum laetum* Forest & Woodland Semi-Natural Alliance	1.0
Schoenoplectus (*acutus*, *californicus*) Herbaceous Alliance*	4.0
Total**	**69.0**

*CDFW-designated sensitive natural community (State Rarity Rank S1-S3).
**Due to rounding, the total may not sum.

6.2.2 *Conium maculatum - Foeniculum vulgare* Herbaceous Semi-Natural Alliance

This community is characterized by the codominance of poison hemlock (*Conium maculatum*) and fennel (*Foeniculum vulgare*). Stands typically occur in disturbed moist lowlands, riparian edges, bottomlands, swales, drainage ditches, or fallow fields—often where periodic soil moisture is retained but full inundation is absent. Vegetation is usually dense and often forms nearly monotypic to strongly codominated stands, particularly in areas where natural vegetation has been displaced. This community was observed within the expanded survey area along the western bank of the unnamed cut at the northwestern edge of the expanded survey area.

6.2.3 *Distichlis spicata* Herbaceous Alliance (S4)

This community is commonly found in alkaline or saline ecosystems adjacent to estuarine marshes or other wetland habitats that may be tidally influenced. Salt grass (*Distichlis spicata*) typically comprises more than 30 percent relative cover in the herbaceous layer, although it can be co-dominant with other halophytes such as spear-leaved orache (*Atriplex prostrata*) and alkali heath (*Frankenia salina*). The herbaceous layer is generally continuous, with an undeveloped or sparse shrub layer. This community was observed throughout the expanded survey area. Isolated Peruvian pepper trees (*Schinus molle*) and Goodding's willows (*Salix gooddingii*) were sparsely scattered within this community.

6.2.4 *Frankenia salina* Herbaceous Alliance (S3)

This community is commonly found adjacent to coastal salt marshes or brackish marshes. Alkali heath (*Frankenia salina*) typically comprises more than 30 percent relative cover in the herbaceous layer, and stands are often located in the high marsh zone where soils are intermittently or seasonally flooded. Pickleweed (*Salicornia pacifica*) is frequently present in this community at lower relative cover, typically between 5 and 10 percent. This community was generally observed along wetland margins in the transition zone between saltgrass habitats and pickleweed stands.

6.2.5 *Juncus arcticus* (var. *balticus*, *mexicanus*) Herbaceous Alliance (S4)

This community varies widely in species composition depending on geographic location, but it typically includes greater than 30 percent relative cover in the shrub layer of arctic rush (*Juncus arcticus*) or Baltic rush (*Juncus balticus*). It generally occurs in wet meadows with poorly draining soils situated between estuarine marshes and sloughs. In the expanded survey area, this community was observed in scattered patches within upland habitats adjacent to wetlands.

6.2.6 *Lolium perenne* Herbaceous Semi-Natural Alliance

This community contains Italian rye grass (*Festuca perennis*) that is dominant or co-dominant with other non-natives in the herbaceous layer, including rip-gut brome (*Bromus diandrus*), sea barley (*Hordeum marinum*), and wild oat (*Avena fatua*). Typically, the herbaceous layer is continuous and often forms monocultures, which contributes to a poorly developed shrub layer. This community is widespread across the upland habitats of the expanded survey area.

6.2.7 *Lotus scoparius - Lupinus albifrons - Eriodictyon* spp. Shrubland Alliance (S5)

This community occurs on dry, often rocky slopes and disturbed sites within chaparral, coastal scrub, and grassland ecotones, where subshrubs such as deerweed (*Lotus scoparius*), silver lupine (*Lupinus albifrons*), and yerba santa (*Eriodictyon* spp.) dominate the shrub layer. Membership in the alliance is defined by a combined absolute cover of at least 30 percent from one or more of the diagnostic taxa. These species are typically early successional, often colonizing after fire or mechanical disturbance. Common co-dominants may include *Salvia leucophylla*, *Baccharis pilularis*, and *Artemisia californica*, particularly in coastal or foothill settings. This community was observed in patches within upland habitats of the expanded survey area.

6.2.8 *Ludwigia (hexapetala, peploides) - Eichhornia crassipes* Herbaceous Semi-Natural Alliance

This community is characterized by the dominance or codominance of floating or creeping primrose-willow (*Ludwigia hexapetala*, *L. peploides*) and water hyacinth (*Eichhornia crassipes*). Stands typically form dense, floating or emergent mats in still or slow-moving freshwater habitats, including canals, agricultural ditches, drainage channels, pond margins, and tidally influenced freshwater sloughs. This community was observed within the expanded survey area in wetland habitats along the southwestern shore bordering Montezuma Island.

6.2.9 *Phragmites australis - Arundo donax* Herbaceous Semi-Natural Alliance

This community is defined by the dominance or codominance of common reed (*Phragmites australis*) and/or giant reed (*Arundo donax*). These species typically form dense, monospecific to codominant stands along rivers, canals, irrigation ditches, marsh margins, and other disturbed riparian or wetland edges, often where hydrologic alteration, erosion, or agricultural runoff has occurred. This community was observed within the expanded survey area in wetland habitats along the southwestern shore bordering Montezuma Island.

6.2.10 *Populus fremontii - Fraxinus velutina - Salix gooddingii* Forest & Woodland Alliance (S3.2)

This community is characterized by the dominance or codominance of Fremont cottonwood (*Populus fremontii*), velvet ash (*Fraxinus velutina*), and/or Goodding's willow (*Salix gooddingii*), typically forming broadleaf riparian stands along perennial to intermittent streams, rivers, floodplains, and valley bottoms at low elevations. This community was observed within the expanded survey area along the margins of wetland habitats along the southwestern shore bordering Montezuma Island.

6.2.11 *Rosa californica* Shrubland Alliance (S3)

This community is commonly found in creek bottoms, stream terraces, and bordering sloughs and channels. California wild rose (*Rosa californica*) typically contains greater than 50 percent relative cover in the shrub canopy and may be co-dominant with Himalayan blackberry (*Rubus armeniacus*). The shrub layer is thick and continuous while the herbaceous layer is open. Emergent trees, including willows (*Salix* spp.), may be present in low quantities. This community is found within isolated patches of the expanded survey area along the margins of

wetland habitats. Himalayan blackberry was commonly observed, and in some cases co-dominant, among thick patches of California wild rose.

6.2.12 *Sarcocornia pacifica* (*Salicornia depressa*) Herbaceous Alliance (S3)

The *Sarcocornia pacifica* (*Salicornia depressa*) Herbaceous Alliance is found almost exclusively in coastal salt marsh and alkaline flat habitats and typically contains greater than 50 percent cover of pickleweed (*Sarcocornia pacifica*) in the herbaceous layer. Other salt-tolerant marsh plants such as alkali heath (*Frankenia salina*) and salt grass (*Distichlis spicata*) are frequently associated with this community. Within the expanded survey area, this community was observed within dry salt flats adjacent to saltgrass communities.

6.2.13 *Schinus (molle, terebinthifolius) - Myoporum laetum* Forest & Woodland Semi-Natural Alliance

This community consists of planted or naturalized stands dominated by Peruvian pepper tree (*Schinus molle*), Brazilian pepper tree (*Schinus terebinthifolius*), and/or ngaio tree (*Myoporum laetum*). These species are non-native evergreen trees introduced for landscaping, windbreaks, or erosion control, and have become naturalized in disturbed riparian corridors, roadsides, urban margins, coastal scrub edges, and fallow lands, particularly in Southern and Central California. This community was observed throughout the expanded survey area in patches of upland habitat.

6.2.14 *Schoenoplectus* (*acutus, californicus*) Herbaceous Alliance (S3S4)

This community is found in a variety of wetland habitats, including brackish marshes, freshwater ponds, sloughs, swamps, and roadside ditches. The herbaceous layer is intermittent to continuous, forming thick stands that often result in a poorly developed shrub layer. Hardstem bulrush (*Schoenoplectus acutus*) or giant bulrush (*Schoenoplectus californicus*) typically contain greater than 50 percent relative cover in the herbaceous layer. This community was observed within the expanded survey area and comprised the majority of the vegetation within perennially inundated wetland habitats.

6.3 SPECIAL-STATUS PLANT SPECIES

Background research conducted for the expanded survey area generated a list of 21 special-status plant species that have the potential to occur in the expanded survey area. This list was generated by comparing the species' ranges and habitat requirements with the location of the expanded survey area and habitat types within it. These species are presented in Table 2: Special-Status Plant Species with the Potential to Occur, which provides the listing status, life history, and bloom period for each species. California Natural Diversity Database (CNDDB) occurrences of special-status plants are presented in Attachment B: CNDDB Occurrences of Special-Status Plant Species.

As documented in Table 2: Special-Status Plant Species with the Potential to Occur, delta tule pea (*Lathyrus jepsonii* var. *jepsonii*) was incidentally observed during the habitat assessment survey, three species have a high potential to occur, and 10 species have a moderate potential to occur.

Table 2: Special-Status Plant Species with the Potential to Occur

Common Name	Scientific Name	Listing Status[2]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Expanded Survey Area
Alkali milkvetch	*Astragalus tener* var. *tener*	1B.2	This species occurs in alkali playas, valley and foothill grasslands, vernal pools, and wetlands at elevations between 5 and 195 feet above sea level.	March to June	Annual herb	Suitable habitat for this species is present within the expanded survey area. This species has been recently documented between 1 and 5 miles of the expanded survey area. **Moderate Potential**
Antioch Dunes buckwheat	*Eriogonum nudum* var. *psychicola*	1B.1	This species occurs in Interior dunes at elevations between 0 to 65 feet above sea level.	July to October	Perennial herb	Suitable habitat for this species is not present within the expanded survey area. This species has been recently documented between 1 and 5 miles of the expanded survey area. **No Potential**
Antioch Dunes evening-primrose	*Oenothera deltoides* ssp. *howellii*	FE, SE, 1B.1	This species occurs in interior dunes at elevations between 0 to 100 feet above sea level.	March to September	Perennial herb	Suitable habitat for this species is not present within the expanded survey area. This species has been recently documented between 1 and 5 miles of the expanded survey area. **No Potential**

[2] Explanation of federal and state listing codes:

Federal listing code:
-FE: Federally listed as endangered

State listing code:
-SE: State-listed as endangered

California Native Plant Society (CNPS) California Rare Plant Ranks (CRPRs):
-1A: Presumed Extinct in California and rare/extinct elsewhere
-1B: Rare or endangered in California and elsewhere
-2B: Rare, threatened, or endangered in California, but more common elsewhere

CRPR Threat Code:
-0.1: Seriously threatened in California (over 80 percent of occurrences threatened, high degree and immediacy of threat)
-0.2: Moderately threatened in California (20 to 80 percent of occurrences threatened, moderate degree and immediacy of threat)

Common Name	Scientific Name	Listing Status[2]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Expanded Survey Area
Bearded popcornflower	*Plagiobothrys hystriculus*	1B.1	This species occurs in valley and foothill grasslands, vernal pools, and wetland at elevations between 0 to 900 feet above sea level.	April to May	Annual herb	Suitable habitat for this species is present within the expanded survey area. This species has been recently documented between 1 and 5 miles of the expanded survey area. **Moderate Potential**
Big tarplant	*Blepharizonia plumosa*	1B.1	This species occurs in valley and foothill grasslands at elevations ranging from 100 to 1,655 feet above sea level.	July to October	Annual herb	Marginal habitat and conditions for this species is present within the expanded survey area. While vegetation communities are suitable, the expanded survey area lies outside the species' known elevation range. This species has been documented between 1 and 5 miles of the expanded survey area; however, all records are over 30 years old. **Moderate Potential**
Bolander's water-hemlock	*Cicuta maculata* var. *bolanderi*	2B.1	This species occurs in marsh and swamp, salt marsh, and wetland habitats at elevations between 0 to 655 feet above sea level.	July to September	Perennial herb	Suitable habitat and conditions for this species are present within the expanded survey area. This species has been documented within 0.25 mile of the expanded survey area; however, all records are over 30 years old. **Moderate Potential**
Brittlescale	*Atriplex depressa*	1B.2	This species occurs in alkali playa, chenopod scrub, meadow and seep, valley and foothill grassland, vernal pool, and wetland habitats at elevations ranging from 5 to 1,050 feet above sea level.	April to October	Annual herb	Suitable habitat for this species is present within the expanded survey area. This species has been documented between 1 and 5 miles of the expanded survey area; however, all records are over 30 years old. **Moderate Potential**

Common Name	Scientific Name	Listing Status[2]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Expanded Survey Area
Carquinez goldenbush	*Isocoma arguta*	1B.1	This species occurs in valley and foothill grasslands at elevations between 5 to 65 feet above sea level.	August to December	Perennial shrub	Suitable habitat for this species is present within the expanded survey area. This species has been documented between 1 and 5 miles of the expanded survey area. **Moderate Potential**
Contra Costa goldfields	*Lasthenia conjugens*	FE, 1B.1	This species occurs in alkali playa, cismontane woodland, valley and foothill grassland, vernal pool, and wetland habitats at elevations ranging from 0 to 1,540 feet above sea level.	March to June	Annual herb	Suitable habitat for this species is present within the expanded survey area. This species has been recently documented between 1 and 5 miles of the expanded survey area; however, all records are over 30 years old and CDFW data indicate that these occurrences are extirpated. **Moderate Potential**
Contra Costa wallflower	*Erysimum capitatum* var. *angustatum*	FE, SE, 1B.1	This species occurs in interior dunes at elevations between 10 to 65 feet above sea level.	March to July	Perennial herb	Suitable habitat for this species is not present within the expanded survey area. This species has been recently documented between 1 and 5 miles of the expanded survey area. **No Potential**
Delta mudwort	*Limosella australis*	2B.1	This species occurs in brackish marsh, freshwater marsh, marsh and swamp, riparian scrub, and wetland habitats at elevations between 0 and 10 feet above sea level.	May to August	Perennial stoloniferous herb	Suitable habitat is present within the expanded survey area. Multiple observations of this species were made during floristic field surveys conducted in 2023 within the Proposed Project survey area, which is immediately adjacent to the expanded survey area (Insignia 2023). **High Potential**

Common Name	Scientific Name	Listing Status[2]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Expanded Survey Area
Delta tule pea	*Lathyrus jepsonii* var. *jepsonii*	1B.2	This species occurs in freshwater marsh, marsh and swamp, and wetland habitats at elevations between 0 and 15 feet above sea level.	May to July	Perennial herb	Suitable habitat is present within the expanded survey area. Multiple observations of this species were made during field surveys of the expanded survey area. **Present**
Diamond-petaled California poppy	*Eschscholzia rhombipetala*	1B.1	This species occurs in valley and foothill grasslands at elevations between 0 to 3,200 feet above sea level.	March to April	Annual herb	Suitable habitat for this species is present within the expanded survey area. This species has been recently documented between 1 and 5 miles of the expanded survey area, however CDFW data indicate that these occurrences are possibly extirpated. **Low Potential**
Dwarf downingia	*Downingia pusilla*	2B.2	This species occurs in valley and foothill grassland, vernal pool, and wetland habitats at elevations between 5 and 1,460 feet above sea level.	March to May	Annual herb	Suitable habitat for this species is present within the expanded survey area. This species has been recently documented between 1 and 5 miles of the expanded survey area. **Moderate Potential**
Fragrant fritillary	*Fritillaria liliacea*	1B.2	This species occurs in cismontane woodland, coastal prairie, coastal scrub, ultramafic, and valley and foothill grassland habitats at elevations between 10 and 1,345 feet above sea level.	February to April	Perennial bulbiferous herb	Suitable habitat for this species is present within the expanded survey area. This species has been documented between 1 and 5 miles of the expanded survey area; however, all records are over 30 years old. **Moderate Potential**

Common Name	Scientific Name	Listing Status[2]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Expanded Survey Area
Hoover's cryptantha	*Cryptantha hooveri*	1A	This species occurs in interior dune and valley and foothill grassland habitats at elevations between 30 to 490 feet above sea level.	April to May	Annual herb	Suitable habitat for this species is present within the expanded survey area. This species has been documented between 1 and 5 miles from the expanded survey area; however, all records are over 30 years old and CDFW data indicate that these occurrences are possibly extirpated. **Low Potential**
Keck's checkerbloom	*Sidalcea keckii*	FE, 1B.1	This species occurs in cismontane woodland, ultramafic, and valley and foothill grassland habitats at elevations between 245 and 2,135 feet above sea level.	April to June	Annual herb	Marginal habitat for this species is present within the expanded survey area. While vegetation communities are suitable, the expanded survey area lies outside the species' known elevation range. This species has been documented between 1 and 5 miles from the expanded survey area; however, all records are over 30 years old. **Low Potential**
Mason's lilaeopsis	*Lilaeopsis masonii*	1B.1	This species occurs in freshwater marsh, marsh and swamp, riparian scrub, and wetland habitats at elevations between 0 to 35 feet above sea level.	April to November	Perennial rhizomatous herb	Suitable habitat is present within the expanded survey area. Multiple observations of this species were made during floristic field surveys conducted in 2023 within the Proposed Project survey area, which is immediately adjacent to the expanded survey area (Insignia 2023). **High Potential**
Mt. Diablo buckwheat	*Eriogonum truncatum*	1B.1	This species occurs in chaparral, coastal scrub, and valley and foothill grassland habitats at	April to September	Annual herb	Marginal habitat for this species is present within the expanded survey area. While vegetation communities are suitable, the expanded survey area lies outside the species' known elevation range. This

Common Name	Scientific Name	Listing Status[2]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Expanded Survey Area
			elevations between 650 and 1,312 feet above sea level.			species has been documented between 1 and 5 miles from the expanded survey area; however, all records are over 30 years old and CDFW data indicate that these occurrences are possibly extirpated. **Low Potential**
San Joaquin spearscale	*Extriplex joaquinana*	1B.2	This species occurs in alkali playa, chenopod scrub, meadow and seep, and valley and foothill grassland habitats at elevations between 5 and 2,740 feet above sea level.	April to October	Annual herb	Suitable habitat for this species is present within the expanded survey area. This species has been recently documented between 1 and 5 miles from the expanded survey area; however, all records are over 30 years old. **Moderate Potential**
Suisun Marsh aster	*Symphyotrichum lentum*	1B.2	This species occurs in brackish marsh, freshwater marsh, marsh and swamp, and wetland habitats at elevations between 0 and 10 feet above sea level.	April to November	Perennial rhizomatous herb	Suitable habitat for this species is present within the expanded survey area. This species has been recently documented within 0.25 mile of the expanded survey area. **High Potential**

6.4 SPECIAL-STATUS WILDLIFE SPECIES

Based on the literature and database review, 31 special-status wildlife species were identified that have the potential to occur within the expanded survey area. The species name, listing status, life history, known locations, and a brief assessment of the potential to occur within the expanded survey area are provided for each species in Table 3: Special-Status Wildlife Species with the Potential to Occur. CNDDB occurrences of special-status wildlife are presented in Attachment C: CNDDB Occurrences of Special-Status Wildlife Species.

As documented in Table 3: Special-Status Wildlife Species with the Potential to Occur, nine species have a high potential to occur, and nine species have a moderate potential to occur

6.5 GENERAL WILDLIFE SPECIES

Fifteen wildlife species were incidentally identified during the surveys, which includes one mammal, one reptile, one invertebrate, and 12 birds. Noted wildlife species were identified by direct observation, vocalizations, or the observation of scat and tracks. The wildlife identified are not necessarily comprehensive accounts of all species that utilize the expanded survey area, because species that are nocturnal, secretive, or seasonally absent may not have been observed. Observed occurrences of wildlife species are shown in Table 4: Wildlife Species Observed Within the Expanded Survey Area.

6.6 CRITICAL HABITAT

No critical habitat is found within the expanded survey area. However, the estuarine, open water habitat of the surrounding Sacramento River is designated as critical habitat for delta smelt (*Hypomesus transpacificus*) and proposed as critical habitat for longfin smelt (*Spirinchus thaleichthys*).

6.7 NATIVE WILDLIFE CORRIDORS AND NURSERY SITES

Wildlife migration corridors are areas that connect suitable wildlife habitats in a region that would otherwise be fragmented by rugged terrain, changes in vegetation, or human disturbance. Natural features (e.g., canyon drainages, ridgelines, or areas with vegetation cover) provide corridors for wildlife travel. Wildlife corridors are important because they provide access to mates, food, and water; allow the dispersal of individuals away from high-population or high-density areas; and facilitate genetic diversity. California Environmental Quality Act Guidelines require that project proponents disclose and mitigate for significant impacts on wildlife corridors. Impacts to wildlife corridors, such as human disturbance and development, can cause harm to migrating species, cause species to exceed population thresholds in fragmented patches, or prevent healthy gene flow between populations. The California Essential Habitat Connectivity Project (CEHC) maintains a statewide Essential Habitat Connectivity Map, which broadly depicts large, relatively natural habitat blocks that support native biodiversity (Natural Landscape Blocks) and areas essential for ecological connectivity between them (Essential Connectivity Areas) (Spencer et al. 2010). The Survey Area region lies outside of any of these Natural Landscape Blocks and Essential Connectivity Areas (CDFW 2025b,c).

Table 3: Special-Status Wildlife Species with the Potential to Occur

Common Name	Scientific Name	Listing Status[3]	Habitat and Life History	Potential to Occur in the Expanded Survey Area
Amphibians				
California tiger salamander – central California Distinct Population Segment (DPS)	*Ambystoma californiense* pop. 1	FT, ST, WL	This species occupies grassland, savanna, or open woodland habitats and spends much of the year in underground refuges, especially ground squirrel (*Ammospermopholis beechyi*) burrows. Vernal pools or other seasonal water sources are required for breeding and egg laying. Adults may travel hundreds of meters across upland habitat to reach breeding ponds following seasonal rains during November to February. Its diet is highly variable and may include invertebrates, amphibians, or small mammals.	Annual grassland habitat is present within the expanded survey area; however, no suitable refuge burrows were observed during field surveys. Further, no suitable vernal pools were observed within the expanded survey area. These findings are consistent with previous habitat assessments for this species within the expanded survey area. These protocol-level assessments concluded that the expanded survey area lacks suitable aquatic habitat (Jennings 2010), contains multiple barriers to movement/dispersal (Area West Environmental [AWE] 2017), has land use practices that inhibit dispersal (AECOM 2018b), and has a scarcity of suitable burrows refugia. This species has been documented between 1 and 5 miles from the expanded survey area; however, all records are more than 30 years old and CDFW data indicate that these occurrences are extirpated. This species was not observed during the field survey. **Low Potential**

[3] Explanation of federal and state listing codes:

Federal listing codes:
-FE: Federally listed as endangered
-FT: Federally listed as threatened
-FPT: Proposed to be federally listed as threatened
-BCC: USFWS Bird of Conservation Concern
-BGEPA: Bald and Golden Eagle Protection Act

State listing codes:
-SE: State-listed as endangered
-ST: State-listed as threatened
-SCE: State candidate for listing as endangered
-SSC: Species of Special Concern
-FP: Fully protected species
-WL: Watch List species
-WBWG-H: Western Bat Working Group high designation

Common Name	Scientific Name	Listing Status[3]	Habitat and Life History	Potential to Occur in the Expanded Survey Area
Birds				
American peregrine falcon	*Falco peregrinus anatum*	FP	This species can be found occupying several biomes throughout California year-round. Breeding takes place from April to June. A majority of nests are constructed on ledges on relatively tall cliffs in remote areas with minimal human disturbance and are often reused from year to year. Foraging occurs in a variety of habitat types, and its diet consists almost exclusively of other birds.	Suitable nesting habitat does not occur in or near the expanded survey area. Foraging and migrating individuals may occur in or near the expanded survey area; however, because this species is highly mobile, any potential Proposed Project-related encounters are not likely to impact this species. This species was not observed during the field survey. **No Potential (Nesting)** **Low Potential (Foraging/Migration)**
Burrowing owl	*Athene cunicularia hypugaea*	SCE, SSC, BCC	This species can be found in a variety of open habitat types, including grassland, savanna, desert scrub, agricultural, and urban areas. Breeding occurs from March through October, and nesting takes place within abandoned burrows dug by burrowing mammals. This species preys on large insects and small mammals.	Grassland habitat suitable for foraging is found in the expanded survey area; however, burrows suitable for species occupation and breeding were not observed during the field surveys. Migrating individuals have been reported to occur within the expanded survey area during winter months (AECOM 2018a), and all CNDDB occurrences within 5 miles of the expanded survey area were recorded during the non-breeding season. Nesting habitat is limited and marginal given the lack of fossorial mammal burrows and ongoing disking of agricultural areas north of expanded survey area, but ground squirrels may recolonize and provide suitable burrow habitat if the fields are left fallow or grazed (AECOM 2018a). This species was not observed during the field surveys. **Low Potential (Nesting)** **High Potential (Foraging/Migration)**

Common Name	Scientific Name	Listing Status[3]	Habitat and Life History	Potential to Occur in the Expanded Survey Area
California black rail	*Laterallus jamaicensis coturniculus*	ST, FP	This species is found in tidal emergent wetlands dominated by pickleweed (*Salicornia* spp.) or in brackish marshes supporting bulrushes in association with pickleweed. Breeding occurs from March to June, and nests are concealed in dense vegetation (often pickleweed) near the upper limits of tidal flooding.	Suitable foraging habitat is present in the expanded survey area adjacent to the Sacramento River. However, wetland habitats within the expanded survey provide marginal nesting habitat as these areas lack large stands of pickleweed and tidal flux preferred by the species for breeding sites. This species has been recently documented within 1 mile of the expanded survey area, but it was not observed during the field survey. **Moderate Potential (Nesting)** **High Potential (Foraging)**
California least tern	*Sternula antillarum browni*	FE, SE, FP	This species is found throughout California and requires undisturbed stretches of beach and coastline. Adults forage in bays and estuaries for a variety of fish species. The California least tern nests in colonies on relatively open beaches where vegetation is limited by natural scouring from tidal action. However, to avoid humans, tern colonies have been known to move to inland mud flats and dredge fill sites. The breeding season typically begins in early to mid-May, and nests are constructed directly on the ground.	Suitable foraging habitat for this species is found adjacent to the expanded survey area within the Sacramento River and Suisun Bay. However, no suitable breeding habitat is found within the expanded survey area. This species has been recently documented between 1 and 5 miles from the expanded survey area; however, all records are over 30 years old. This species was not observed during the field survey. **No Potential (Nesting)** **Moderate Potential (Foraging/Migration)**
Golden eagle	*Aquila chrysaetos*	FP; WL; BGEPA	This species is an uncommon resident and migrant in California, favoring rolling foothills, mountains, and open terrains for hunting lagomorphs and rodents. It nests on cliffs and large trees, requiring rugged habitats with cover. This bird exhibits year-round diurnal activity and may migrate seasonally.	Suitable open terrain habitat for foraging is present within the survey area; however, suitable nesting habitat is not present within the survey area. This species has not been recently documented within 5 miles of the survey area; however, this species' range does overlap with the survey area. **Low Potential (Nesting)** **Moderate Potential (Foraging/Migration)**

Common Name	Scientific Name	Listing Status[3]	Habitat and Life History	Potential to Occur in the Expanded Survey Area
Northern harrier	*Circus cyaneus*	SSC, BCC	This species is found in a variety of open grassland, wetland, and agricultural habitats. Open wetland habitats used for breeding include marshy meadows, wet and lightly grazed pastures, and freshwater and brackish marshes. Breeding habitat also includes dry upland habitats, such as grassland, cropland, drained marshland, and shrub-steppe in cold deserts. Wintering habitat includes open areas dominated by herbaceous vegetation, such as grassland, pastures, cropland, coastal sand dunes, brackish and freshwater marshes, and estuaries.	Suitable foraging and nesting habitat are present in the expanded survey area. This species has been recently documented between 1 and 5 miles from the expanded survey area and was observed nesting in the Proposed Project survey area immediately adjacent to the expanded survey area during surveys in 2023. **High Potential (Nesting)** **Present (Foraging)**
Saltmarsh common yellowthroat	*Geothlypis trichas sinuosa*	SSC, BCC	This species occurs in freshwater and saltwater marshes. It requires thick, continuous cover down to the water surface for foraging, and tall grasses, tule patches, and willows for nesting.	Suitable nesting and foraging habitat for this species are present within the portion of the expanded survey area located on the northern shore of the Sacramento River. This species has been recently documented within 1 mile of the expanded survey area, but it was not observed during the field survey. **High Potential (Nesting)** **High Potential (Foraging/Migration)**

Common Name	Scientific Name	Listing Status[3]	Habitat and Life History	Potential to Occur in the Expanded Survey Area
Short-eared owl	*Asio flammeus*	SSC, BCC	This species occurs in agricultural fields, grazed and ungrazed grasslands, and freshwater and saltwater marshes. This species requires open country that supports concentrations of microtine rodents and herbaceous cover sufficient to conceal its nest from predators. Its nests are built on the ground. This species' diet consists of small mammals and is particularly affected by the 3- to 4-year cycle of the California vole (*Microtus californicus*). Its breeding season occurs from April through July.	Suitable foraging and nesting habitat are present in the expanded survey area. This species has been recently documented between 1 and 5 miles from the expanded survey area; however, all records are over 30 years old. This species was not observed during the field survey period. **Low Potential (Nesting)** **Low Potential (Foraging/Migration)**
Song sparrow ("Modesto" population)	*Melospiza melodia* pop. 1	SSC	This species inhabits freshwater marshes, riparian thickets, sparsely vegetated irrigation canals, and valley oak restoration sites. It seeks cover and nests in willow and nettle thickets, growths of tules and cattails, and riparian oak forests with a sufficient understory of blackberry.	Suitable nesting and foraging habitat for this species are within the portion of the expanded survey area located on the northern shore of the Sacramento River. This species has been documented between 1 and 5 miles from the expanded survey area; however, all records are over 30 years old. This species was not observed during the field survey. **Low Potential (Nesting)** **Low Potential (Foraging)**
Suisun song sparrow	*Melospiza melodia maxillaris*	SSC	This species occurs throughout California, primarily in saltwater and brackish marshes. The species requires dense vegetation as protection from predators and high tide, for perching, and for nesting habitat. Breeding season is from early March through July.	Suitable nesting and foraging habitat for this species are present within the portion of the expanded survey area located on the northern shore of the Sacramento River. This species has been recently documented within 1 mile of the expanded survey area south of Suisun Bay, in the vicinity of PG&E's existing Pittsburg Substation and within 5 miles of the expanded survey area along the northern shore of the Sacramento River, but it was not observed during the field survey. **High Potential (Nesting)** **High Potential (Foraging)**

Common Name	Scientific Name	Listing Status[3]	Habitat and Life History	Potential to Occur in the Expanded Survey Area
Swainson's hawk	*Buteo swainsoni*	ST	This species occurs in open grasslands, prairies, and farmlands that have nearby trees for nesting. It nests in bushes and in several tree species, including oaks (*Quercus* spp.), willow, and eucalyptus, and usually nests in trees in riparian areas near open fields. This species primarily hunts small rodents, rabbits, birds, and reptiles during the breeding season. It largely lives off insects, such as grasshoppers and beetles, during the non-breeding season. It reproduces from March through April, incubates for 34 to 35 days, and fledges 6 weeks later.	Suitable foraging and nesting habitat are present, and multiple occurrences of the species have been documented between 1 and 5 miles from the expanded survey area. Further, an adult male hawk was observed flying overhead during field surveys in the Proposed Project survey area immediately adjacent to the expanded survey area in 2023 (Insignia 2023). **High Potential (Nesting)** **High Potential (Foraging/Migration)**
Tricolored blackbird	*Agelaius tricolor*	ST, SSC, BCC	This highly colonial species requires open water, protected nesting substrate, and foraging areas adjacent to the colony with insect prey. Breeding occurs near fresh water, often in emergent wetlands with tall, dense cattails or tules, but also in thickets of willow; blackberry; wild rose; or tall, dense forbs. Seeds and cultivated grains, such as rice and oats, compose most of its fall and winter diet. Tricolored blackbird forages on the ground in croplands, grassy fields, flooded land, and along edges of ponds. The breeding season usually occurs from mid-April to late July.	Suitable nesting habitat adjacent to freshwater bodies is absent. Suitable foraging habitat is present in the northern portion of the expanded survey area. This species has been documented between 1 and 5 miles from the expanded survey area; however, all records are over 30 years old and CDFW data indicate that these occurrences are possibly extirpated. This species was not observed during the field survey. **No Potential (Nesting)** **Moderate Potential (Foraging/Migration)**

Common Name	Scientific Name	Listing Status[3]	Habitat and Life History	Potential to Occur in the Expanded Survey Area
Western snowy plover	*Charadrius nivosus nivosus*	FT, SSC	This species thrives on sandy marine and estuarine shores, nesting from April to August in shallow depressions on sandy or gravelly substrates. Key habitats include coastal beaches, salt ponds, and alkali lakes, where this species feeds on insects and relies on camouflage for cover.	Marginal sandy shore habitat is present within the expanded survey area; this habitat is largely inundated by tidal influence and bordered by dense stands of bulrush and California wild rose, which limit its suitability for nesting. However, these sandy shores provide suitable foraging habitat. This species has been recently documented between 0.25 and 1 mile from the expanded survey area. **Low Potential (Nesting)** **High Potential (Foraging/Migration)**
White-tailed kite	*Elanus leucurus*	FP	This species nests in riparian or oak woodland adjacent to undisturbed, open fields and grasslands, meadows, farmlands, and emergent wetlands, where it hunts rodents. Breeding generally occurs from February through October. White-tailed kite lays three to five eggs, which it incubates for 30 to 32 days, after which fledging occurs at 5 to 6 weeks of age.	Suitable foraging habitat for the species is present in the expanded survey area; however, oak woodland suitable for nesting is not present. This species has been documented between 1 and 5 miles from the expanded survey area; however, all records are over 30 years old. This species was not observed during the field survey. **No Potential (Nesting)** **Moderate Potential (Foraging/Migration)**
Yellow rail	*Coturnicops noveboracensis*	SSC	This species breeds in densely vegetated, shallow freshwater marshes and wet meadows. Breeding occurs from May through September. Wintering birds frequent mature salt marshes well above the water line.	Freshwater marsh habitat suitable for nesting is absent within the expanded survey area; however, suitable salt marsh foraging habitat is present. This species has been recently documented between 1 and 5 miles from the expanded survey area, but it was not observed during the field survey. **No Potential (Nesting)** **Moderate Potential (Foraging)**
Fish				
Delta smelt	*Hypomesus transpacificus*	FT, SE	Delta smelt are an euryhaline species (i.e., a species adapted to living in fresh and brackish water) that occupies estuarine areas with salinities below 2	Critical habitat and documented occurrences of this species are present within the waters adjacent to the expanded survey area.

Common Name	Scientific Name	Listing Status[3]	Habitat and Life History	Potential to Occur in the Expanded Survey Area
			parts per thousand. This species is found only from the San Pablo Bay upstream through the Sacramento-San Joaquin River Delta in Contra Costa, Sacramento, San Joaquin, Solano, and Yolo counties. Delta smelt spawn in shallow, fresh, or slightly brackish water upstream from the brackish water habitat associated with the mixing zone.	However, no suitable aquatic/estuarine habitat for this species is present within the expanded survey area. **No Potential**
Green sturgeon - southern DPS	*Acipenser medirostris* pop. 1	FT	This species is found in a variety of estuarine and freshwater habitats within the San Francisco Bay, San Pablo Bay, and Sacramento-San Joaquin River Delta. Spawning occurs in the Sacramento, Feather, and Yuba rivers in cool (11 to 15 degrees Celsius) sections of mainstem rivers in deep pools (i.e., 8 to 9 meters) with substrate containing small- to medium-sized sand, gravel, cobble, or boulders.	Suitable habitat and documented occurrences of this species are present within the waters adjacent to the expanded survey area. However, suitable aquatic/estuarine habitat for this species is not present within the expanded survey area. **No Potential**

Common Name	Scientific Name	Listing Status[3]	Habitat and Life History	Potential to Occur in the Expanded Survey Area
Longfin smelt	*Spirinchus thaleichthys*	ST	The known range of this species extends from the San Francisco Bay Estuary and Sacramento-San Joaquin Delta (Bay-Delta) in California northward to the Cook Inlet in Alaska. In the Bay-Delta, longfin smelt spawn primarily in freshwater in the lower reaches of the Sacramento and San Joaquin rivers. Juvenile and adult longfin smelt have been found throughout the year in salinities ranging from pure freshwater to pure seawater. Once past the juvenile stage, they are typically collected in waters with salinities ranging from 14 to 28 parts per thousand. The life cycle of most longfin smelt generally requires estuarine conditions. Longfin smelt occur in the Bay-Delta typically from January to April.	Suitable habitat and documented occurrences of this species are present within the waters adjacent to the expanded survey area. However, suitable aquatic/estuarine habitat for this species is not present within the expanded survey area. **No Potential**

Common Name	Scientific Name	Listing Status[3]	Habitat and Life History	Potential to Occur in the Expanded Survey Area
Steelhead - Central Valley DPS	*Oncorhynchus mykiss irideus* pop. 11	FT	This DPS of steelhead represents a population that spawns in freshwater habitats located in California's Central Valley. This species is anadromous, meaning they are born in freshwater, migrate to the ocean to grow and mature, and return to their natal streams to spawn. Suitable freshwater breeding habitats include rivers, streams, and tributaries with clean, cold water and gravel substrate. After hatching, the young steelhead spend several years in fresh water before migrating to the ocean, where they feed on a variety of prey, including small fish, invertebrates, and plankton.	Suitable habitat and documented occurrences of this species are present within the waters adjacent to the expanded survey area. However, suitable aquatic/estuarine habitat for this species is not present within the expanded survey area. **No Potential**
Invertebrates				
Conservancy fairy shrimp	*Branchinecta conservatio*	FE	This species occurs within vernal pool habitats in California's Central Valley. It mostly lives in relatively large, turbid freshwater vernal pools called playa pools. This species can be found at elevations ranging from 16 to 5,577 feet above sea level in grassland, rural, and wetland habitats. This species opportunistically filter-feeds on various planktonic food sources including algae and protozoa.	No suitable vernal pool habitat is present within the expanded survey area. This species has been recently documented between 1 and 5 miles from the expanded survey area, but it was not observed during the field survey. **No Potential**

Common Name	Scientific Name	Listing Status[3]	Habitat and Life History	Potential to Occur in the Expanded Survey Area
Crotch's bumble bee	*Bombus crotchii*	SCE	This species inhabits grasslands and shrublands and requires hotter, drier environments than other bee species. Due to a short tongue, this species prefers milkweeds (*Asclepias* spp.), dusty maidens (*Chaenactis douglasii*), lupines (*Lupinus* spp.), medics (*Medicago* spp.), phacelias, sages (*Salvia* spp.), clarkias (*Clarkia* spp.), poppies (*Papaver* spp.), and wild buckwheats (*Erigonum* spp.). Nests are frequently located in abandoned rodent nests, tufts of grass, old bird nests, rock piles, or cavities in dead trees.	Suitable grassland habitat is present within the expanded survey area. This species has been documented between 1 and 5 miles from the expanded survey area; however, the sole occurrence is over 100 years old, and the species was not observed during the field survey. **Moderate Potential (Nesting)** **Moderate Potential (Foraging)**
Lange's metalmark butterfly	*Apodemia mormo langei*	FE	This species is associated with the Antioch Dunes, a riverbank dune system along the San Joaquin River. Currently, this species can only be found in the Antioch Dunes National Wildlife Refuge, the last remnants of the Antioch Dunes. All life stages are closely associated with naked-stemmed buckwheat (*Eriogonum nudum* var. *psychicola*), which is the primary nectar source for adults, is used to lay eggs, and is a larval food plant. The leaves of the larval host plant provide both food and shelter throughout the larval instar phases.	Suitable habitat for this species is not present within the expanded survey area. This species has been recently documented between 1 and 5 miles from the expanded survey area; however, these observations are located along the southern bank of the Sacramento River and are confined to the Antioch Dunes, the only known suitable habitat for the species. **No Potential**

Common Name	Scientific Name	Listing Status[3]	Habitat and Life History	Potential to Occur in the Expanded Survey Area
Vernal pool fairy shrimp	*Branchinecta lynchi*	FT	This species occurs within vernal pool habitats throughout California. Female vernal pool fairy shrimp carry fertilized eggs in a sac on the underside of their body. The eggs are either dropped to the pool bottom or remain in the brood sac until the mother dies and sinks to the bottom of the pool. This species opportunistically filter-feeds on various planktonic food sources, including algae and protozoa.	No suitable vernal pool habitat is present within the expanded survey area. This species has been recently documented between 1 and 5 miles from the expanded survey area, but it was not observed during the field survey. **No Potential**
Vernal pool tadpole shrimp	*Lepidurus packardi*	FE	This species occurs within vernal pool habitats with a patchy distribution within California's Central Valley. Female vernal pool tadpole shrimp produce up to six clutches of eggs containing 32 to 61 eggs per clutch during each wet season. They carry fertilized eggs in a sac on the underside of their body. The eggs are either dropped to the pool bottom or remain in the brood sac until the mother dies and sinks to the bottom of the pool. This species opportunistically filter-feeds on other fairy shrimp (*Branchinecta* spp.), invertebrates, and waste from other vernal pool species.	No suitable vernal pool habitat was observed during the field survey. This species has been recently documented between 1 and 5 miles from the expanded survey area, but it was not observed during the field survey. **No Potential**

Common Name	Scientific Name	Listing Status[3]	Habitat and Life History	Potential to Occur in the Expanded Survey Area
Western bumble bee	*Bombus occidentalis*	SCE	This species can be found throughout the western U.S. and Canada and are not limited to any particular host plant.	Suitable grassland habitat is present within the expanded survey area. This species has been documented between 1 and 5 miles from the expanded survey area; however, the sole occurrence is over 45 years old, and the expanded survey area is outside of the current known range of the species. **Moderate Potential (Nesting)** **Moderate Potential (Foraging)**
Mammals				
Salt marsh harvest mouse	*Reithrodontomys raviventris*	FE, SE, FP	This species inhabits salt marshes in California and is adapted to live in marsh vegetation, including pickleweed and cordgrass, which provide cover, food sources, and breeding habitats. Breeding typically occurs between March and October. Its diet consists of marsh vegetation, including seeds, stems, and leaves.	Suitable salt marsh habitat for this species is present within the expanded survey area in salt marshes north of the Sacramento River. This species has been recently documented within 0.25 mile of the expanded survey area, but it was not observed during field surveys. **High Potential**
Western red bat	*Lasiurus blossevillii*	SSC, WBWG-H	This species occurs across a variety of habitats, including forests, woodlands, and riparian areas. It roosts and forages among trees and vegetation and exhibits a preference for mixed coniferous and deciduous forests. Breeding occurs in the spring and early summer. This species typically seeks out tree foliage, such as leaves or branches, to create roosting sites. Its diet consists mainly of insects, such as moths, beetles, and flies.	Suitable roosting habitat is present in the expanded survey area within the limited stands of trees, and suitable foraging habitat is present. This species has been recently documented between 1 and 5 miles from the expanded survey area, but it was not observed during field surveys. **Moderate Potential (Roosting)** **Moderate Potential (Foraging)**

Common Name	Scientific Name	Listing Status[3]	Habitat and Life History	Potential to Occur in the Expanded Survey Area
Reptiles				
California glossy snake	*Arizona elegans occidentalis*	SSC	This species is typically found in desert scrub, grasslands, and rocky areas. It is primarily nocturnal, being active during the night and seeking shelter in burrows, crevices, or under rocks during the day. Breeding occurs in the spring and early summer. Females lay eggs in sandy soil or loose substrate, where they are left to incubate. Its diet consists mainly of small mammals, including rodents, lizards, and occasionally birds or eggs.	The expanded survey area is outside of the geographic range for this species. The species has been documented between 1 and 5 miles from the expanded survey area, but all occurrences are more than 30 years old. **No Potential**
Giant gartersnake	*Thamnophis gigas*	FT, ST	This semi-aquatic species inhabits marshes, wetlands, and slow-moving bodies of water. It is often closely associated with water sources, which serve as its hunting grounds. Breeding typically occurs in the spring and early summer. After mating, females give birth to live young. The diet primarily consists of small fish, amphibians, and aquatic invertebrates.	Suitable wetland habitat is not present within the expanded survey area. Although the species has been documented between 1 and 5 miles from the expanded survey area, these observations were made in habitats upstream of the expanded survey area with far less saltwater intrusion. Further, extensive grazing and land modification over much of the Proposed Project area has greatly diminished potential upland refugia. The species was not observed during field surveys. **No Potential**

Common Name	Scientific Name	Listing Status[3]	Habitat and Life History	Potential to Occur in the Expanded Survey Area
Northern California legless lizard	*Anniella pulchra*	SSC	This species is found in grasslands, chaparral, and open woodlands and requires loose, friable soils for burrowing. Breeding typically occurs in the spring or early summer. Females lay small clutches of eggs in underground burrows or hidden areas. The diet primarily consists of small invertebrates, such as insects, spiders, and other arthropods.	Marginal grassland habitat for this species is present within the expanded survey area. This species has been recently documented between 1 and 5 miles from the expanded survey area, but it was not observed during field surveys. **Low Potential**
Northwestern pond turtle	*Emys marmorata marmorata*	FPT, SSC	This freshwater turtle species primarily inhabits ponds, lakes, and slow-moving streams with suitable basking sites. It spends a significant amount of time basking on logs or rocks. Breeding typically occurs in the spring and early summer. Females dig nests in sandy or gravelly areas near water, where they lay their eggs. The hatchlings emerge several months later and make their way to the water. The diet is omnivorous and consists of various aquatic plants, insects, small fish, and amphibians.	Suitable wetland habitat is present within the expanded survey area; however, sandy shore habitat present within the expanded survey area is largely inundated by tidal influence and bordered by dense stands of bulrush and California wild rose, which limits its suitability for nesting. This species has been recently documented between 0.25 and 1 mile of the expanded survey area, but it was not observed during field surveys. **Low Potential (Upland)** **High Potential (Breeding/Aquatic)I**

Table 4: Wildlife Species Observed Within the Expanded Survey Area

Common Name	Scientific Name
American crow	*Corvus brachyrhynchos*
Black phoebe	*Sayornis nigricans*
Black-tailed jackrabbit	*Lepus californicus*
European starling	*Sturnus vulgaris*
Pacific gopher snake	*Pituophis catenifer*
Horned lark	*Eremophila alpestris*
House finch	*Haemorhous mexicanus*
Mourning dove	*Zenaida macroura*
Northern harrier	*Circus hudsonius*
Northern mockingbird	*Mimus polyglottos*
Red-tailed hawk	*Buteo jamaicensis*
Song sparrow	*Melospiza melodia*
Western honey bee	*Apis mellifera*
Western meadowlark	*Sturnella neglecta*
White-crowned sparrow	*Zonotrichia leucophrys*

The Proposed Project lies within the Pacific Flyway—an important north-south migration corridor that runs along the Pacific coast of the Americas from Alaska to Patagonia, including all of North America lying west of the Rocky Mountains. The Pacific Flyway links breeding grounds to the north with wintering areas to the south and is used by many different species of birds during migration. Many birds (especially waterfowl) use locations in California's Sacramento Valley as a stopover point or wintering area. One of those major locations is Suisun Marsh, which is less than 1 mile from the expanded survey area. At the Proposed Project's latitude, the Pacific Flyway extends inland from the Pacific Ocean for approximately 700 miles. As a result, the Proposed Project's aboveground components would be placed in less than 0.3 percent of the width of the Pacific Flyway. The expanded survey area does not occur in any nursery sites.

6.8 AQUATIC RESOURCES

Insignia biologists identified two potentially jurisdictional wetland features within the expanded survey area. Figure 3: Biological Resources Map depicts the locations of the potentially jurisdictional water features within the expanded survey area. Attachment D: Wetland Feature Photographs presents representative photographs of each wetland feature. Table 5: Potentially Jurisdictional Water Features lists the unique feature identification number, feature type, Cowardin classification, and the approximate extent of potential U.S. Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB), and/or CDFW jurisdictions.

Table 5: Potentially Jurisdictional Water Features

Wetland Identification Number	Vegetation Types	Cowardin Classification	Potential USACE Jurisdictional Area within Expanded Survey Area (acres)	Potential RWQCB Jurisdictional Area within Expanded Survey Area (acres)	Potential CDFW Jurisdictional Area within Expanded Survey (acres)
W-1	*Carex nudata* Herbaceous Alliance *Distichlis spicata* Herbaceous Alliance *Frankenia salina* Herbaceous Alliance *Juncus arcticus* (var. *balticus*, *mexicanus*) Herbaceous Alliance *Ludwigia* (*hexapetala*, *peploides*) – *Eichhornia crassipes* Herbaceous SNA *Phragmites australis – Arundo donax* Herbaceous Semi-Natural Alliance (SNA) *Populus fremontii – Fraxinus velutina – Salix goodingii* Forest & Woodland Alliance *Rosa californica* Shrubland Alliance *Schoenoplectus* (*acutus*, *californicus*) Herbaceous Alliance	E2EM1N	13.92	13.92	13.92
W-2	*Distichlis spicata* Herbaceous Alliance *Frankenia salina* Herbaceous Alliance Lolium perenna Herbaceous SNA *Sarcocornia pacifica* (*Salicornia depressa*) Herbaceous Alliance	PEM1Bd	--	5.23	--

Notes:
E2EM1N denotes estuarine emergent wetland with persistent vegetation that is flooded daily by the tide
PEM1Bd denotes a palustrine emergent wetland with persistent herbaceous vegetation, saturated soils, and hydrologic alteration due to diking or impoundment.

7 – RECOMMENDATIONS

The Proposed Project would implement existing applicant-proposed measures (APMs) to reduce the potential for impacts to all special-status species with moderate or high potential to occur within the Proposed Project survey area, as well as species that are present within the expanded survey area.

- **APM BIO-5: Pre-Construction Plant Surveys.** Prior to initial vegetation clearing and ground-disturbing activities, a qualified biologist would conduct pre-construction surveys during the appropriate blooming period for Welsh mudwort, Delta tule pea, Mason's lilaeopsis, Bolander's water hemlock, and Suisun marsh aster. Surveys would occur within Proposed Project work areas with suitable habitat for these plants. In the event of the discovery of a previously unknown special-status plant, the area would be marked as a sensitive area and would be avoided to the maximum extent practicable. If avoidance of species listed under the FESA or CESA is not possible, the USFWS and/or CDFW would be consulted as appropriate.

- **APM BIO-11: Pre-Construction Wildlife Surveys.** Prior to initial vegetation clearance and ground-disturbing activities within suitable habitat for special-status wildlife, a biologist would conduct pre-construction surveys within Proposed Project work areas for special-status wildlife. Within wetland habitats or other areas suitable for northwestern pond turtle occupation, a qualified biologist would examine potential basking sites for adult turtles, as well as potential nest sites in sandy or sparsely vegetated substrates; turtle nests would be flagged for avoidance. In pickleweed habitats or other areas suitable for salt marsh harvest mouse occupation, a qualified biologist would carefully inspect vegetation prior to vegetation clearance and ground disturbing activities to ensure no salt marsh harvest mouse individuals or nests are present and to encourage mice residing within or adjacent to the Proposed Project work areas to move into adjacent habitats prior to impacts commencing each day. The monitor/inspector would have the authority to stop work activities upon the discovery of sensitive biological resources and allow construction to proceed after the identification and implementation of steps required to avoid or minimize impacts to sensitive resources.

- **APM BIO-13: Nesting Bird Avoidance.** If feasible, construction and vegetation trimming/removal would be avoided during the migratory bird nesting or breeding season (i.e., February 15 to August 31). When it is not feasible to avoid construction during the nesting or breeding season, a survey would be performed in the area where the work is to occur to determine the presence or absence of nesting birds. If an active nest (i.e., containing eggs or young) is identified, a suitable construction buffer (which would differ based on species and location of nest) would be implemented to ensure that the nesting or breeding activities are not substantially adversely affected. If the nesting or breeding activities are being conducted by a federal or state-listed species, LSPGC and/or PG&E would consult with the USFWS and CDFW as necessary. Monitoring of the nest would continue until the birds fledge or construction is no longer occurring on the site.

- **APM BIO-14: Burrowing Owl.** Prior to the initiation of construction activities occurring in suitable grassland habitat, a qualified biologist would conduct up to four protocol-level surveys for burrowing owl, in accordance with the Staff Report on Burrowing Owl Mitigation (CDFW 2012). A take avoidance survey for active burrows would also be conducted no more than 30 days prior and no less than 14 days prior to the start of construction in accordance with the Staff Report on Burrowing Owl Mitigation (CDFW 2012). If burrowing owls are present at the site, a qualified biologist would establish an exclusion zone in accordance with the Staff Report on Burrowing Owl Mitigation (CDFW 2012). If a qualified biologist experienced with burrowing owl determines the relocation of owls is necessary, a passive relocation effort may be conducted in coordination with the CDFW and in accordance with the Staff Report on Burrowing Owl Mitigation (CDFW 2012).

- **APM BIO-15: Wetland Birds.** To the greatest extent feasible, work within wetland habitats suitable for California black rail or Ridgway's rail occupation would be limited to a work window of September 1 through January 15, which is outside of the breeding season for these species. If work in suitable wetland habitats is not feasible during this work window, then prior to the initiation of activities, a qualified biologist would conduct protocol-level surveys for Ridgway's rail (USFWS 2015) and standardized tape call-back/response protocols for California black rail following a similar protocol (Hildie et al. 2005). If either species is found to be absent following these surveys, then work may proceed within wetland habitats outside of the prescribed work window.

A formal wetland delineation will be required once further engineering is complete and prior to work commencing within the survey area. Once complete, a preliminary jurisdictional determination will be presented to the USACE that includes all data sheets including National Wetlands Inventory maps (as shown in Attachment E: National Wetlands Inventory Map that show all proposed facilities.

For all federally listed species with a moderate or high potential to occur, if the Proposed Project has the potential to adversely affect the species or its habitat, consultation under Section 7 of the FESA would be necessary.

If any state-listed species are observed in the expanded survey area and the Proposed Project has the potential to adversely affect them, an incidental take permit (ITP) issued by the CDFW may be required to mitigate for potential take of those species.

Although the bird species identified in Table 4: Wildlife Species Observed Within the Expanded Survey Area do not carry listing statuses under the FESA or California Endangered Species Act, they are protected under the MBTA, California Fish and Game Code, and CCR. One wildlife species observed, the golden eagle, is protected under the BGEPA.

Several regulatory approvals, authorizations, or permits are required for the Proposed Project, as provided in Table 6: Anticipated Biological Resource Permits and Authorizations. These approvals may include conditions that afford additional protection to species and/or their habitat.

Table 6: Anticipated Biological Resource Permits and Authorizations

Agency	Permit/Approval/Consultation	Jurisdiction/Purpose of Permit
Federal Agencies		
USACE	CWA Section 404 Nationwide Permit	Permanent and temporary fill of waters of the U.S.
USFWS	FESA Section 7 Consultation	Construction activities such as vegetation clearing or removal that may affect federally listed species or critical habitat
State Agencies		
CDFW	California Fish and Game Code Section 1600 Streambed Alteration Agreement	Activities that will substantially disturb the bed or bank of a jurisdictional waterbody
CDFW	California Fish and Game Code Section 1602 Incidental Take Permit	Construction activities such as vegetation clearing or removal that may affect state listed species
RWQCB	CWA Section 401 Water Quality Certification	Activities authorized by federal agencies that may affect state water quality

8 – REFERENCES

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ATTACHMENT A: HABITAT ASSESSMENT PHOTOGRAPHS

ATTACHMENT A: HABITAT ASSESSMENT PHOTOGRAPHS

Photograph 1: Northeast-facing view of *Brassica nigra -Centaurea* (*solstitialis*, *melitensis*) Herbaceous Semi-Natural Alliance (SNA). Photograph taken on July 3, 2025.

Photograph 2: Northeast-facing view of *Carex nudata* Herbaceous Alliance. Photograph taken on July 3, 2025.

Photograph 3: South-facing view of *Conium maculatum – Foeniculum vulgare* Herbaceous SNA. Photograph taken on July 3, 2025.

Photograph 4: West-facing view of *Distichlis spicata* Herbaceous Alliance. Photograph taken on July 3, 2025.

Photograph 5: West-facing view of *Juncus articus* (var. *balticus, mexicanus*) Herbaceous Alliance. Photograph taken on July 3, 2025.

Photograph 6: North-facing view of *Lolium perenne* Herbaceous SNA. Photograph taken on July 3rd, 2025.

Photograph 7: East-facing view of *Lotus scoparius – Lupinus albifrons – Eriodictyon* spp. Shrubland Alliance. Photograph taken on July 3, 2025.

Photograph 8: Southwest-facing view of *Ludwigia* (*hexapetala, peploides*) – *Eichhornia crassipes* Herbaceous SNA. Photograph taken on July 3, 2025.

Photograph 9: Southeast-facing view of *Phragmites australis – Arundo donax* Herbaceous SNA. Photograph taken on July 3, 2025.

Photograph 10: Southeast-facing view of *Populus fremontii – Fraxinus velutina – Salix gooddingii* Forest & Woodland Alliance. Photograph taken on July 3, 2025.

Photograph 11: North-facing view of *Rosa californica* Shrubland Alliance. Photograph taken on July 3, 2025.

Photograph 12: West-facing view of *Sarcocornia pacifica (Salicornia depressa)* Herbaceous Alliance. Photograph taken on July 3, 2025.

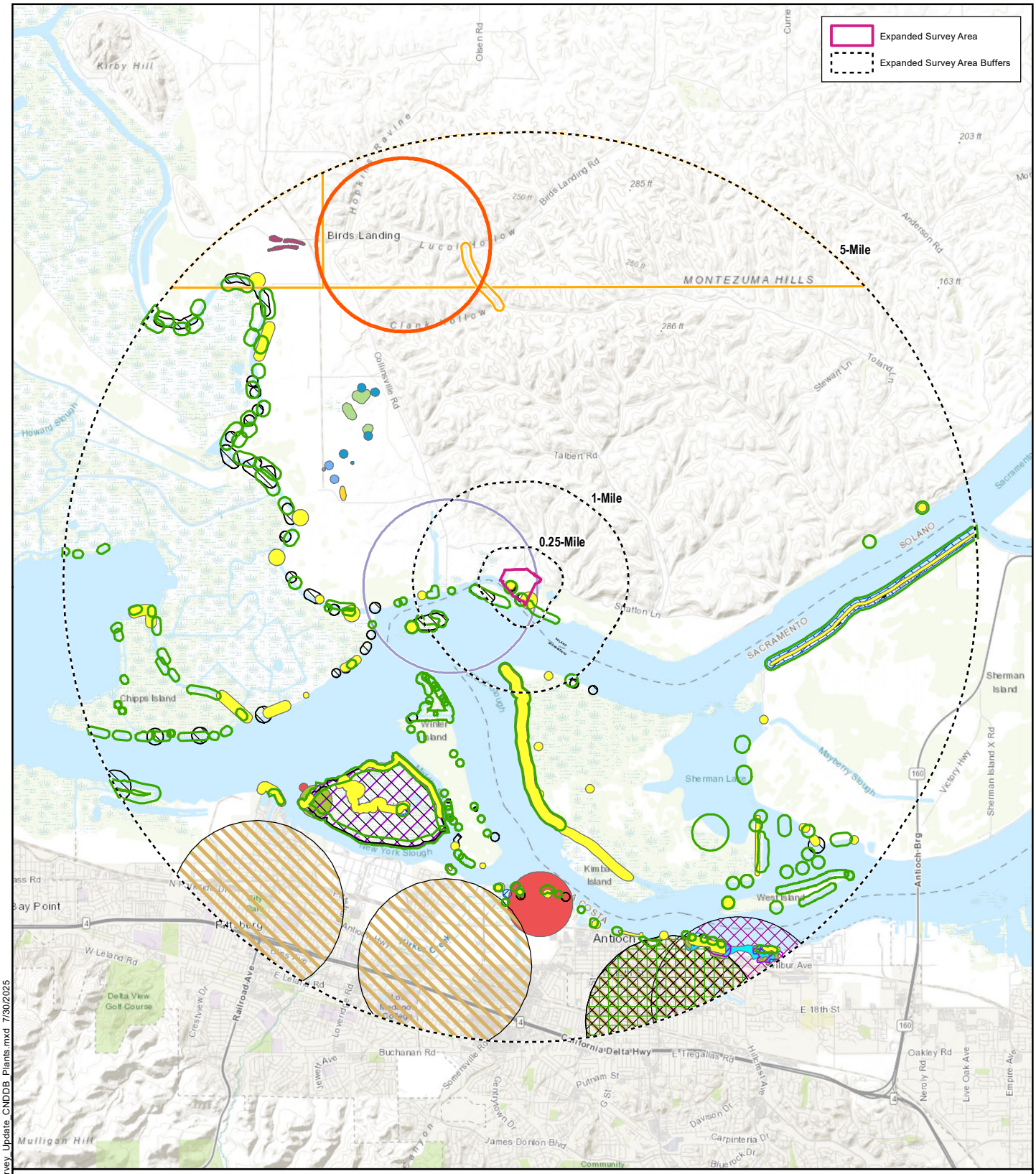
Photograph 13: West-facing view of *Frankenia salina* Herbaceous Alliance Herbaceous Alliance. Photograph taken on July 3, 2025.

Photograph 14: North-facing view of *Schinus* (*molle, terebinthifoliu m) – Myoporum laetum* Forest & Woodland Alliance SNA. Photograph taken on July 3, 2025.

Photograph 15: Southeast-facing view of *Schoenoplectus* (*acutus*, *californicus*) Herbaceous Alliance. Photograph taken on July 3, 2025.

Photograph 16: Southeast-facing view of Delta Tule Pea *(Lathyrus jepsonii)*. Photograph taken on July 3, 2025.

ATTACHMENT B: CNDDB OCCURRENCES OF SPECIAL-STATUS PLANT SPECIES



Attachment C: CNDDB Occurrences of Special-Status Plant Species — **Collinsville 500/230 Kilovolt Substation Project**

- Alkali milk-vetch
- Antioch Dunes buckwheat
- Antioch Dunes evening-primrose
- Bearded popcornflower
- Big tarplant
- Bolander's water-hemlock
- Broadleaf pondweed
- Carquinez goldenbush
- Chaparral ragwort
- Contra Costa goldfields
- Contra Costa wallflower
- Delta mudwort
- Delta tule pea
- Diablo helianthella
- Diamond-petaled California poppy
- Dwarf downingia
- Fragrant fritillary
- Hall's bush-mallow
- Heartscale
- Hoover's cryptantha
- Keck's checkerbloom
- Mason's lilaeopsis
- Mt. Diablo buckwheat
- Pappose tarplant
- San Joaquin spearscale
- Showy golden madia
- Soft salty bird's-beak
- Suisun Marsh aster

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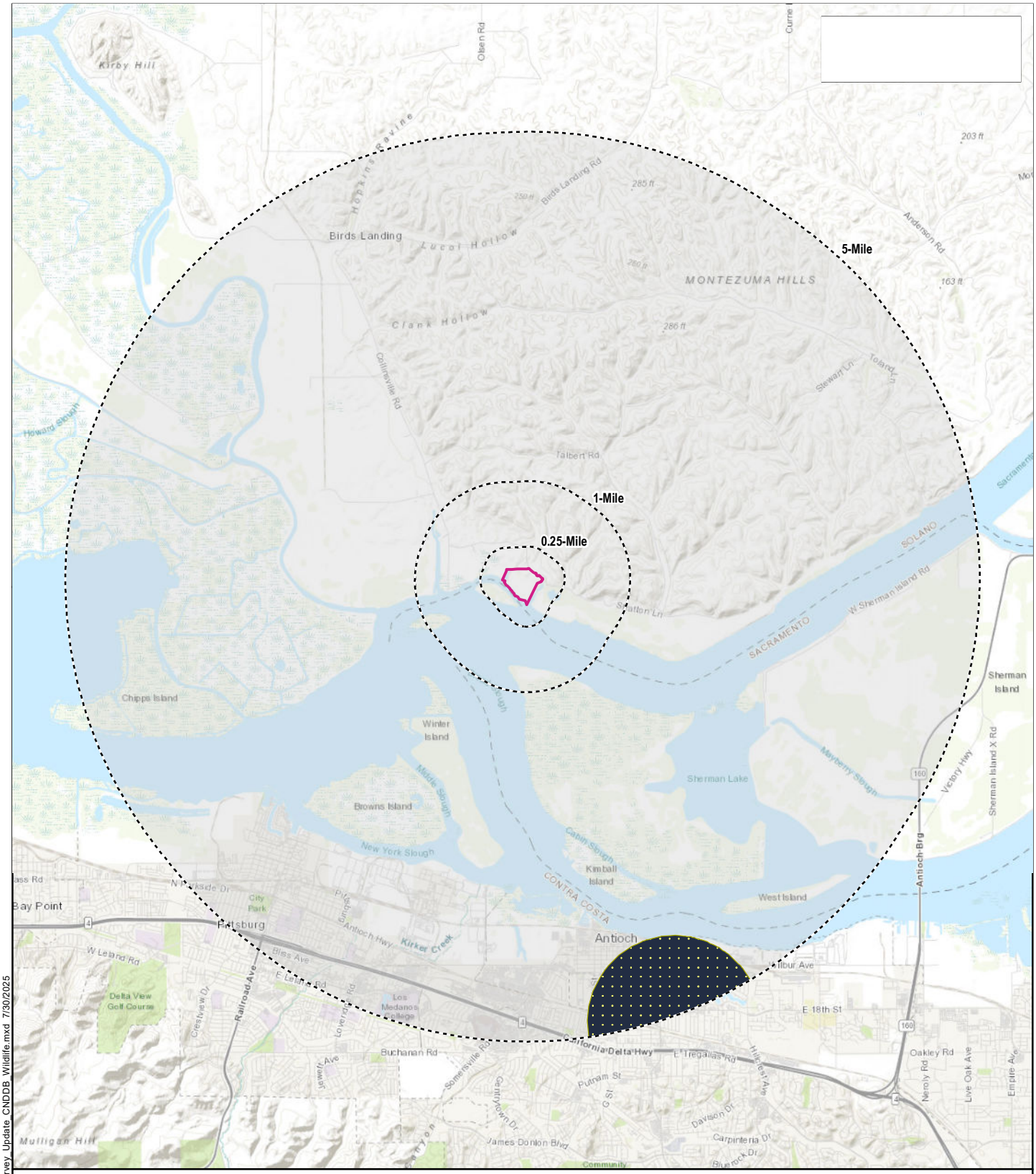
ATTACHMENT C: CNDDB OCCURRENCES OF SPECIAL-STATUS WILDLIFE SPECIES



Attachment D: CNDDB Occurrences of Special-Status Wildlife Species - Amphibians **Collinsville 500/230 Kilovolt Substation Project**

California Tiger Salamander - Central California DPS

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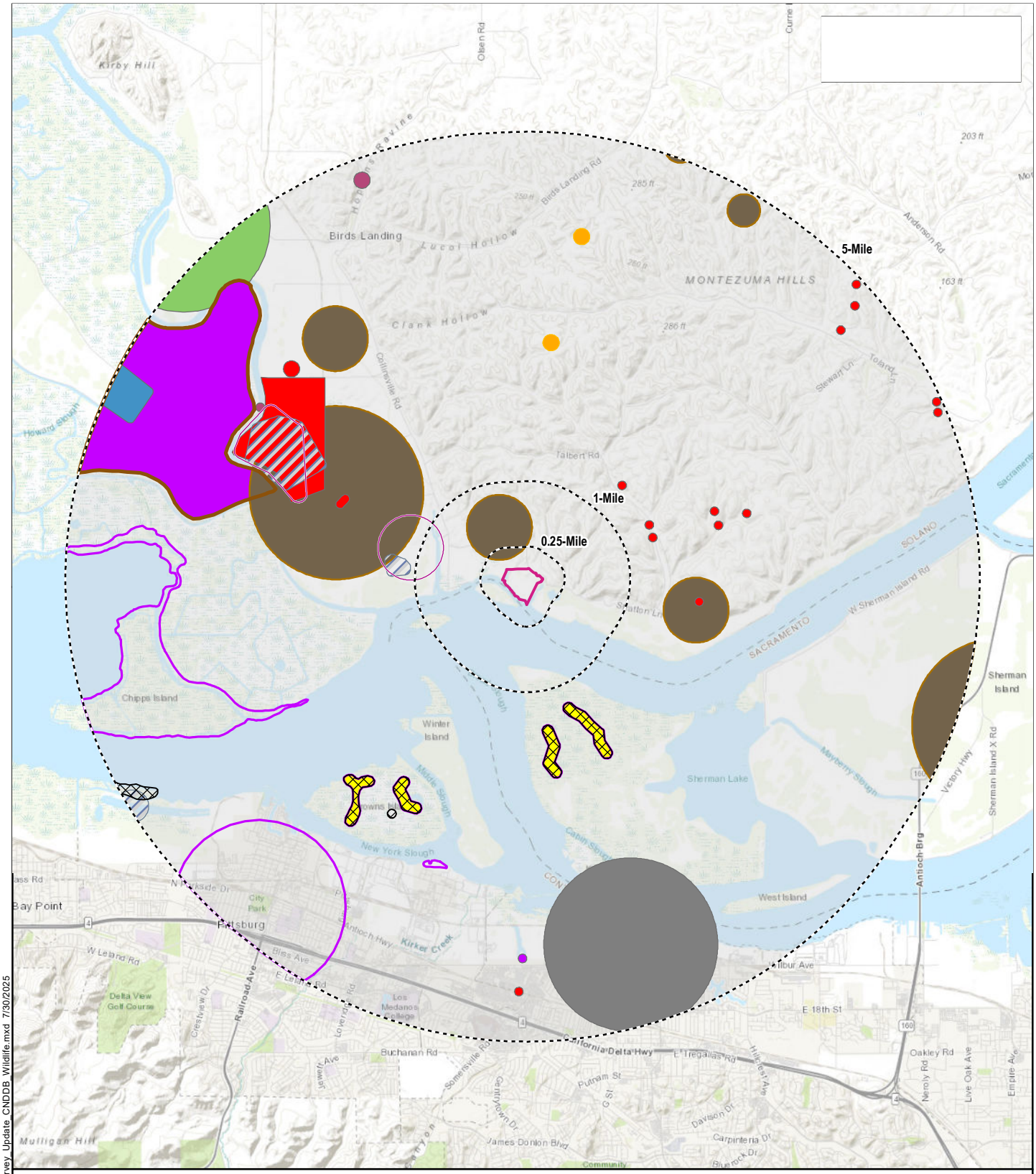

Attachment D: CNDDB Occurrences of Special-Status Wildlife Species - Birds

Collinsville 500/230 Kilovolt Substation Project

- Burrowing Owl
- California Black Rail
- California Least Tern
- Golden Eagle
- Northern Harrier
- Saltmarsh Common Yellowthroat
- Short-Eared Owl
- Song Sparrow ("Modesto" population)
- Swainson's Hawk
- Suisun Song Sparrow
- Tricolored Blackbird
- Western Snowy Plover
- White-Tailed Kite
- Yellow Rail

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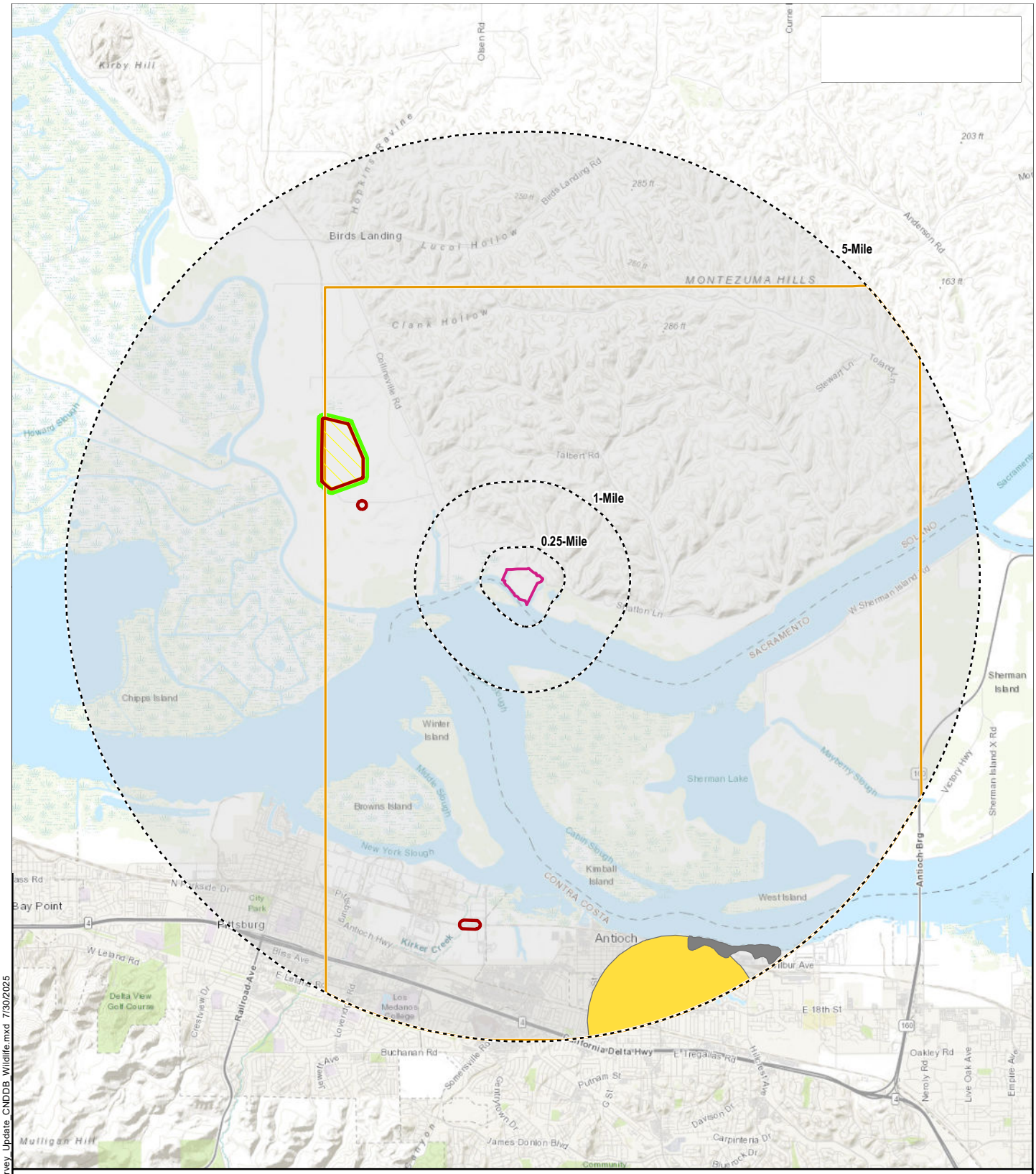

Attachment D: CNDDB Occurrences of Special-Status Wildlife Species - Crustaceans/Insects **Collinsville 500/230 Kilovolt Substation Project**

- Crotch's Bumble Bee
- Conservancy Fairy Shrimp
- Lange's Metalmark Butterfly
- Vernal Pool Fairy Shrimp
- Vernal Pool Tadpole Shrimp
- Western Bumble Bee

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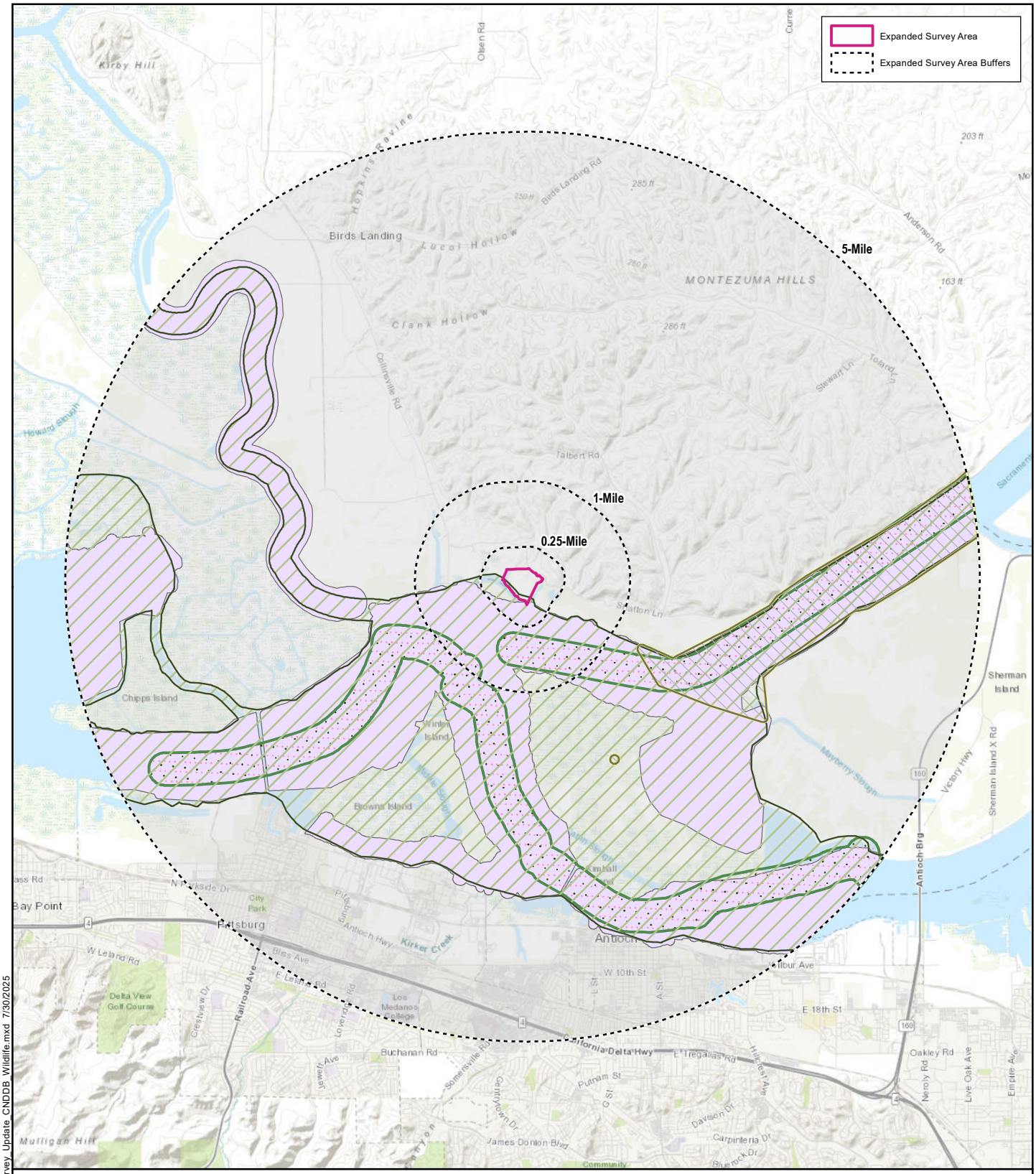

Attachment D: CNDDB Occurrences of Special-Status Wildlife Species - Fish **Collinsville 500/230 Kilovolt Substation Project**

- Delta Smelt
- Green Sturgeon - Southern DPS
- Longfin Smelt - San Francisco Bay-Delta DPS
- Steelhead - Central Valley DPS

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0 1 2 Miles

LS Power INSIGNIA ENVIRONMENTAL

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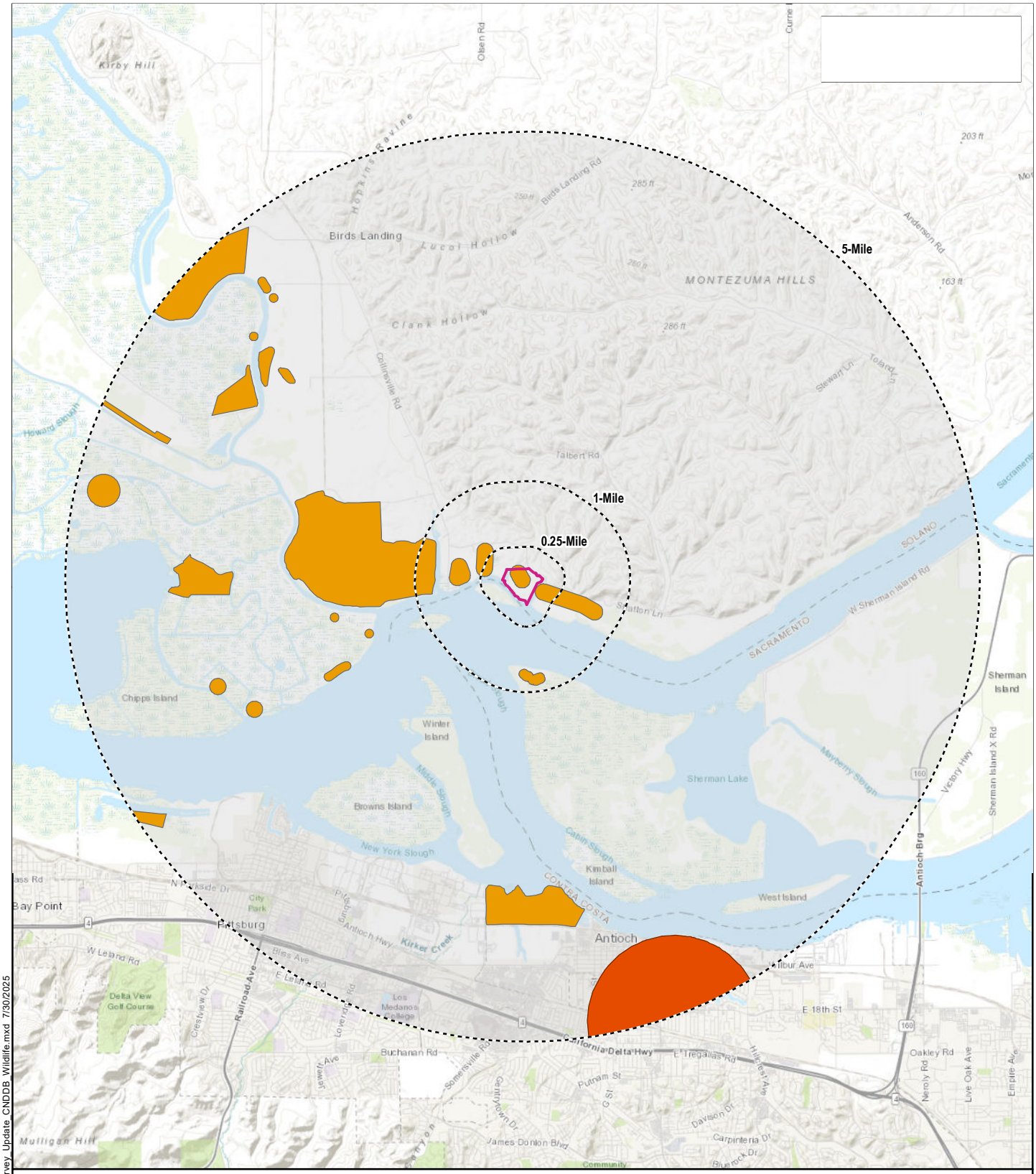

Attachment D: CNDDB Occurrences of Special-Status Wildlife Species - Mammals

Collinsville 500/230 Kilovolt Substation Project

- Salt-Marsh Harvest Mouse
- Western Red Bat

1:100,000

0 1 2 Miles

LS Power

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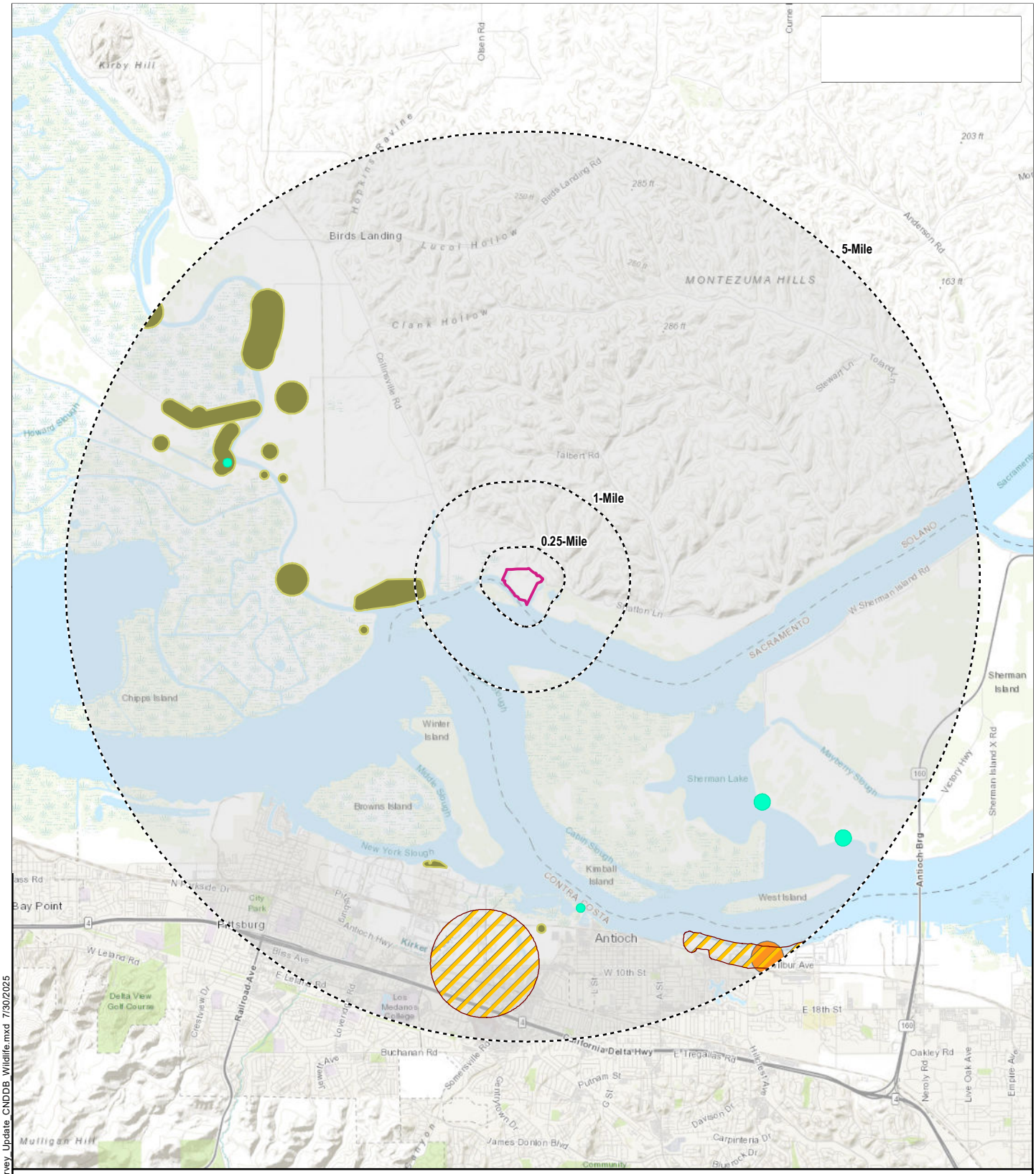

Attachment D: CNDDB Occurrences of Special-Status Wildlife Species - Reptiles

Collinsville 500/230 Kilovolt Substation Project

- California Glossy Snake
- Giant Gartersnake
- Northern California Legless Lizard
- Northwestern Pond Turtle

1:100,000

0 1 2 Miles

LS Power

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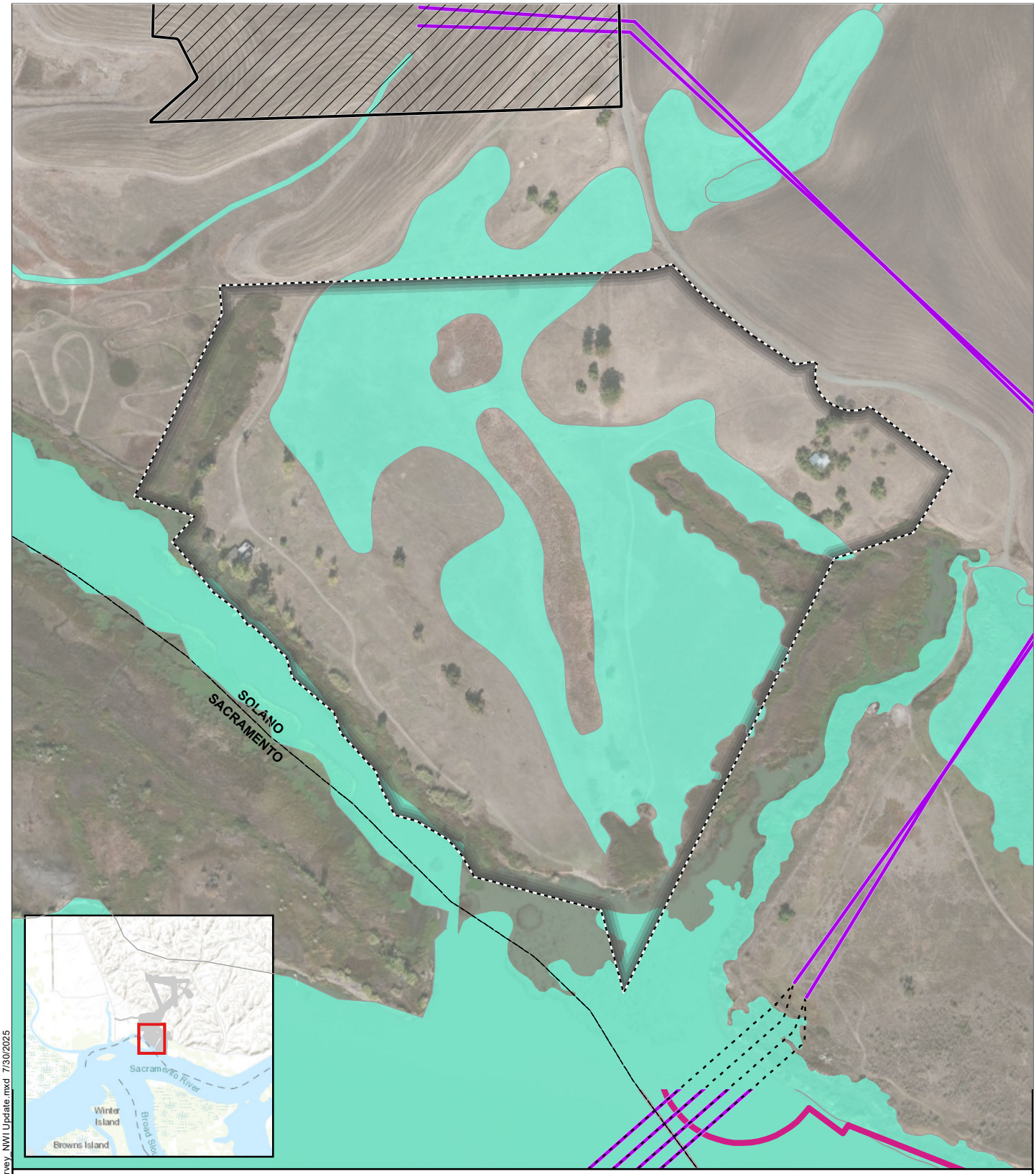
ATTACHMENT D: WETLAND FEATURE PHOTOGRAPHS

ATTACHMENT D: WETLAND FEATURE PHOTOGRAPHS

Photograph 1: South-facing view of W-1. Photograph taken on July 3, 2025.

Photograph 2: North-facing view of W-2. Photograph taken on July 3, 2025.

ATTACHMENT E: NATIONAL WETLANDS INVENTORY MAP



Attachment E: National Wetlands Inventory Map

Collinsville 500/230 Kilovolt Substation Project

- Proposed LSPGC 230 kV Overhead Segment
- Proposed LSPGC 230 kV Submarine Segment
- County Boundary
- Proposed Collinsville Substation
- Expanded Survey Area
- Proposed Project Survey Area
- National Wetlands Inventory Feature

1:5,000

0 250 500 Feet

LS Power INSIGNIA ENVIRONMENTAL

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APPENDIX F.9

Species Potential to Occur Tables for Alternatives 4 and 6a/6b

Appendix F.9 Special-Status Species Potential to Occur within the Alternative 4 and 6a/6b Study Area

Alternatives 4 and 6a/6b were analyzed together for special-status species potential to occur in the work areas because of the high overlap between the components of Alternative 4 and Alternative 6a/6b. Special-status species with potential to occur in the work areas associated with Alternatives 4 and 6a/6b were analyzed differently than for the Proposed Project because no special-status species surveys were conducted for the alternatives. The northern portions of Alternatives 4 and 6a/6b within the Proposed Project's *initial survey area* had focused surveys for special status plants, but the majority of the area in which these alternatives are situated was not surveyed. Therefore, survey data could not be incorporated into the potential to occur determinations for Alternatives 4 and 6a/6b. Because focused species surveys were not conducted for the alternatives, the area encompassing Alternatives 4 and 6a/6b that was evaluated for special-status species potential to occur is referred to in this document as the *Alternatives 4 and 6a/6b study area*. A vegetation mapping survey was conducted for the alternatives within all of the work areas and a survey buffer of variable sizes surrounding the work areas. The data from this survey were used to inform the special-status species potential to occur analysis.

Potential to Occur Determination Criteria

Determinations on potential to occur for special status species were made based on the distances of documented occurrences from the *Alternatives 4 and 6a/6b study area,* the species' known habitats and geographic and elevational ranges, and the habitats available within the biological study area. Potential to occur determinations were made according to the following criteria:

- **Present.** The species was observed incidentally within the *Alternatives 4 and 6a/6b study area* during the vegetation mapping survey or other site visits.
- **High.** Suitable habitat for the species is present within the *Alternatives 4 and 6a/6b study area* and recent (within the last 30 years) occurrences have been reported within 1 mile of the *Alternatives 4 and 6a/6b study area*. Alternatively, marginal habitat is present, and recent occurrences have been recorded within 0.25 mile of the *Alternatives 4 and 6a/6b study area*.
- **Moderate.** Suitable habitat for the species is present, and the *Alternatives 4 and 6a/6b study area* is located within the species' known range, but no recent (within 30 years) occurrences have been recorded between 1 and 5 miles from the *Alternatives 4 and 6a/6b study area*. Alternatively, marginal habitat is present, the *Alternatives 4*

and 6a/6b study area is located within the species' known range, and more than one recent occurrences have been recorded between 1 and 5 miles from the *Alternatives 4 and 6a/6b study area*.

- **Low.** Poor or marginal habitat for the species exists, and at least one recent occurrence has been recorded between 1 and 5 miles from the *Alternatives 4 and 6a/6b study area*. Alternatively, suitable habitat for the species is present within the *Alternatives 4 and 6a/6b study area*, but either no recent occurrences have been recorded between 1 and 5 miles from the *Alternatives 4 and 6a/6b study area,* or the *Alternatives 4 and 6a/6b study area* is located outside of the species' known range. Barriers to migration/dispersal may be present.
- **None.** Either (1) no habitat exists for the species within the *Alternatives 4 and 6a/6b study area*, (2) no occurrences have been recorded between one and five miles from the *Alternatives 4 and 6a/6b study area* and the *Alternatives 4 and 6a/6b study area* is outside of the species' known geographic or elevational range, or (3) the species has been confirmed to be extirpated from the area. Species with no potential to occur in the *Alternatives 4 and 6a/6b study area* have been removed from this analysis.

Special-Status Plants

A total of 22 special-status plant species were determined to have some potential to occur (low, moderate, or high) or were incidentally observed within the *Alternative 4 and 6a/6b study area* (Table 1). One species, large-flowered fiddleneck (*Amsinckia grandiflora*), was not previously analyzed for the Proposed Project because of a lack of records in the vicinity of the Proposed Project, but was determined to have low potential to occur within the *Alternatives 4 and 6a/6b study area*.

Table 1 Special-Status Plant Species with Potential to Occur

Common Name (*Scientific Name*)	Listing Status[a]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Alternative 4 and 6a/6b Study Area
alkali milk-vetch (*Astragalus tener var. tener*)	1B.2	This species occurs in alkali playas, valley and foothill grasslands, and vernal pools at elevations between 5 and 195 feet.	March-to June	Annual herb	**Moderate.** Suitable habitat and conditions for this species are present. This species has been recently documented between 1 and 5 miles of the Alternative 4 and 6a/6b study area based on CNDDB records.
bearded popcornflower (*Plagiobothrys hystriculus*)	1B.1	This species occurs in valley & foothill grassland and vernal pool at elevations between 0 to 900 feet.	April to May	Annual herb	**Moderate.** This species has been recently documented between 1 and 5 miles of the Alternative 4 and 6a/6b study area based on CNDDB records and suitable habitat and conditions for this species are present within the study area.
big tarplant (*Blepharizonia plumosa*)	1B.1	This species occurs within valley and foothill grasslands at elevations between 98 and 1,657 feet.	July to October	Annual herb	**Low.** Suitable habitat and conditions for this species are present within the study area. This species has been documented between 1 and 5 miles of the Alternative 4 and 6a/6b study area based on CNDDB records; however, all records are over 30 years old.
Bolander's water-hemlock (*Cicuta maculata var. bolanderi*)	2B.1	This species occurs in marsh & swamp and salt marsh at elevations between 0 to 655 feet.	July to September	Perennial herb	**Low.** Suitable habitat and conditions for this species are present within the study area. This species has been documented within 0.25 miles and between 1 and 5 miles of the Alternative 4 and 6a/6b study area based on CNDDB records; however, all records are over 30 years old.
brittlescale (*Atriplex depressa*)	1B.2	This species occurs in a variety of habitats including alkali playa, chenopod scrub, meadows and seep. It may also be observed in valley or foothill	April to October	Annual herb	**Low.** Suitable habitat and conditions for this species are present within the study area. This species has been documented between 1 and 5 miles of the Alternative 4 and 6a/6b study area based on CNDDB records; however, all records are over 30 years old.

Common Name (*Scientific Name*)	Listing Status[a]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Alternative 4 and 6a/6b Study Area
		grasslands and vernal pools at elevations between 5 to 1,050 feet.			
broadleaf pondweed (*Stuckenia striata*)	2B.3	This species occurs in marshes, swamps, lakes, ponds, rivers, and drainage canals at elevations between -230 and 7,005 feet.	June to August	Perennial rhizomatous aquatic herb	**Moderate.** This species has been recently documented between 1 and 5 miles of the Alternative 4 and 6a/6b study area based on CNDDB records and suitable habitat is present within the study area.
Carquinez goldenbush (*Isocoma arguta*)	1B.1	This species occurs in valley & foothill grassland at elevations between 5 to 65 feet.	August to December	Perennial shrub	**Moderate.** Suitable habitat and conditions for this species are present within the study area. This species has been recently documented between 1 and 5 miles of the Alternative 4 and 6a/6b study area based on CNDDB records.
Colusa grass (*Neostapfia colusana*)	SE; 1B.2	Colusa grass is found in vernal pool, and seasonal stock pond habitat in the Sacramento and San Joaquin valleys. This species occurs in vernal pools at elevations between 15 and 655 feet.	May - August	Annual grasslike herb	**Low.** Suitable habitat may be present in the form of stock ponds or temporary pools following precipitation. This species has not been recently documented within 5 miles of the Alternative 4 and 6a/6b study area based on CNDDB records; however, this species' known range overlaps with the study area.
Contra Costa goldfields (*Lasthenia conjugens*)	FE; 1B.1	This species occurs in a variety of habitats such as alkali playa, cismontane woodland, and valley or foothill grasslands. It may also be found in vernal pools	March to June	Annual herb	**Low.** Suitable habitat and conditions for this species are present within the study area. This species has been documented between 1 and 5 miles of the Alternative 4 and 6a/6b study area based on CNDDB records; however, all records are over 30 years old.

Common Name (*Scientific Name*)	Listing Status[a]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Alternative 4 and 6a/6b Study Area
		at elevations between 0 to 1,540 feet.			
Delta (Welsh) mudwort (*Limosella australis*)	2B.1	This species occurs in a variety of habitats such as brackish marsh, freshwater marsh, marsh or swamp. It may also be observed within riparian scrub at elevations between 0 to 10 feet.	May to August	Perennial stoloniferous herb	**High.** Suitable marsh habitat is present within the study area and this species has been recently documented between 1 and 5 miles of the Alternative 4 and 6a/6b study area based on CNDDB records. Species has also been historically documented within 0.25 miles of the Alternative 4 and 6a/6b study area; however, the record is over 30 years old. Additionally, botanical surveys within the Proposed Project initial survey area in similar habitats adjacent the Alternative 4 and 6a/6b study area confirmed the presence of this species in large quantities.
delta tule pea (*Lathyrus jepsoniil* var. *jepsonii*)	1B.2	This species occurs in marshes or swamps at elevations between 0 to 15 feet.	May to July	Perennial herb	**Present.** Suitable marsh habitat is present within the study area and multiple incidental observations of this species were made during the vegetation mapping survey within the Alternative 4 and 6a/6b study area. This species has also been recently documented between 0.25 and 1 mile of the Alternative 4 and 6a/6b study area based on CNDDB records.
diamond-petaled California poppy (*Eschscholzia rhombipetala*)	1B.1	This species occurs in valley or foothill grassland at elevations between 0 to 3,200 feet	March to April	Annual herb	**Low.** Suitable grassland habitat and conditions for this species are present within the study area. This species has been documented between 1 and 5 miles of the Alternative 4 and 6a/6b study area based on CNDDB records; however, the record is over 30 years old.
dwarf downingia (*Downingia pusilla*)	2B.2	This species occurs in valley or foothill grassland and vernal	March to May	Annual herb	**Moderate.** Suitable habitat and conditions for this species are present within the study area. This species has been recently documented between 1 and

Common Name (*Scientific Name*)	Listing Status[a]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Alternative 4 and 6a/6b Study Area
		pool at elevations between 5 to 1,460 feet.			5 miles of the Alternative 4 and 6a/6b study area based on CNDDB records.
fragrant fritillary (*Fritillaria liliacea*)	1B.2	This species occurs in a variety of habitats, such as cismontane woodland and coastal prairie or scrub. It may also be observed in valley & foothill grassland at elevations between 10 to 1,345 feet often found in ultramafic soils.	February April	Perennial bulbiferous herb	**Low.** Suitable grassland habitat and conditions for this species are present within the study area. This species has been documented between 1 and 5 miles of the Alternative 4 and 6a/6b study area based on CNDDB records; however, all records are over 30 years old.
Hoover's cryptantha (*Cryptantha hooveri*)	1A	This species occurs in interior dunes and valley and foothill grassland habitats at elevations between 30 and 490 feet.	April to May	Annual herb	**Low.** Suitable habitat and conditions for this species are present within the study area. This species has been documented between 1 and 5 miles of the Alternative 4 and 6a/6b study area based on CNDDB records; however, all records are over 30 years old.
Keck's checkerbloom (*Sidalcea keckii*)	FE; 1B.1	This species occurs in cismontane woodlands and valley or foothill grasslands at elevations between 245 to 2,135 feet, often found in ultramafic soils.	April to June	Annual herb	**Low.** Suitable grassland habitat and conditions for this species are present within the study area. This species has been documented between 1 and 5 miles of the Alternative 4 and 6a/6b study area based on CNDDB records; however, all records are over 30 years old.
large-flowered fiddleneck* (*Amsinckia grandiflora*)	FE; SE; 1B.1	This species occurs on grassy slopes at elevations below 984 feet.	April to May	Annual herb	**Low.** Suitable habitat and conditions are present within the study area. This species has not been recently documented within 5 miles of the Alternative 4 and 6a/6b study area based on CNDDB records;

Common Name (*Scientific Name*)	Listing Status[a]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Alternative 4 and 6a/6b Study Area
					however, this species' known range overlaps with the study area.
Mason's lilaeopsis (*Lilaeopsis masonii*)	1B.1	This species occurs in freshwater marsh, marsh or swamp, and riparian scrub at elevations between 0 to 35 feet.	April to November	Perennial rhizomatous herb	**High.** Suitable marsh habitat is present within the study area. This species has been recently documented within 0.25 miles of the Alternative 4 and 6a/6b study area based on CNDDB records. Additionally, botanical surveys within the Proposed Project initial survey area in similar habitats adjacent the Alternative 4 and 6a/6b study area confirmed the presence of this species in large quantities.
San Joaquin spearscale (*Extriplex joaquinana*)	1B.2	This species occurs in alkali playa, chenopod scrub, meadows and seeps. It may also be observed in valley or foothill grasslands at elevations between 5 to 2,740 feet.	April to October	Annual herb	**Low.** Marginally suitable habitat and conditions for this species are present within the study area. This species has been documented between 1 and 5 miles of the Alternative 4 and 6a/6b study area based on CNDDB records; however, all records are over 30 years old.
soft salty bird's-beak (*Chloropyron molle* ssp. *molle*)	FE; 1B.2	This species occurs in marshes and swamps at elevations between 0 and 10 feet.	June to November	Annual herb (hemiparasitic)	**Low.** Suitable marsh habitat and conditions for this species are present within the study area. This species has not been recently documented within 5 miles of the Alternative 4 and 6a/6b study area based on CNDDB records; however, this species' known range overlaps with the study area.
Suisun Marsh aster (*Symphyotrichum lentum*)	1B.2	This species occurs in marshes and swamps at elevations between 0 to 10 feet.	(April) May to November	Perennial rhizomatous herb	**High.** Suitable marsh habitat and conditions for this species are present within the study area. This species has been recently documented within 0.25 miles of the Alternative 4 and 6a/6b study area based on CNDDB records

Common Name (*Scientific Name*)	Listing Status[a]	Habitat Preferences, Distribution Information, and Additional Notes	Flowering Phenology	Life Form	Potential to Occur in the Alternative 4 and 6a/6b Study Area
Suisun Thistle (*Cirsium hydrophilum var. hydrophilum*)	FE, 1B.1	This species occurs in wetlands and salt marsh habitats at low elevations near sea level.	June-September	Perennial herb	**Low.** Suitable marsh habitat and conditions are present within the study area. This species has not been recently documented within 5 miles of the Alternative 4 and 6a/6b study area based on CNDDB records; however, this species' known range overlaps with the study area.

* Not evaluated for the Proposed Project because database record searches found no records within the vicinity of the Proposed Project.

[a] Explanation of listing status codes:

Federal

- FE: Federally listed as endangered

State

- SE: State-listed as endangered

California Native Plant Society (CNPS) California Rare Plant Ranks (CRPRs)

- 1A: Presumed extinct in California and rare/extinct elsewhere
- 1B: Rare or endangered in California and elsewhere
- 2B: Rare, threatened, or endangered in California, but more common elsewhere
- 3: More information is needed, a review list
- 4: Limited distribution, a watch list

CRPR Threat Codes

- 0.1: Seriously threatened in California (over 80 percent of occurrences threatened, high degree and immediacy of threat)
- 0.2: Moderately threatened in California (20 to 80 percent of occurrences threatened, moderate degree and immediacy of threat)
- 0.3: Not very threatened in California (less than 20% of occurrences threatened/low degree and immediacy of threat or no current threats known)

Source: (CDFW 2025a; CDFW 2025b; CNPS 2023a; CNPS 2023b; CNPS 2025; CNPS 2023b; Jepson Flora Project 2025; USFWS 2025a)

Special-Status Terrestrial Wildlife

A total of 42 special-status terrestrial wildlife species were determined to have some potential to occur (low, moderate, or high) within the *Alternative 4 and 6a/6b study area* (Table 2). One species, giant garter snake (*Thamnophis gigas*) was evaluated for the Proposed Project and determined to have no potential to occur within the Proposed Project *biological study area*, but was determined to have moderate potential to occur within the *Alternative 4 and 6a/6b study area*. One species, double-crested cormorant (*Nannopterum auritum*), was not evaluated for the Proposed Project because database record searches yielded no records within the Proposed Project vicinity, but was determined to have moderate potential to occur for nesting and high potential to occur for foraging within the *Alternative 4 and 6a/6b study area*.

Table 2 Special-Status Terrestrial Wildlife Species with Potential to Occur

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 4 and 6a/6b Study Area
Amphibians			
California red-legged frog *(Rana draytonii)*	FT; SSC	This highly aquatic species typically inhabits quiet pools of streams, marshes and ponds, preferring habitat with extensive shoreline vegetation. Its diet is highly variable and may include various invertebrates, amphibians, and small mammals. In Northern California, breeding usually takes place between March and July.	**Low.** Suitable wetland habitat and upland refugia habitat is present within the study area. This species has not been recently documented within 5 miles of the Alternative 4 and 6a/6b study area; however, this species' known range overlaps with the study area.
California tiger salamander - central California DPS (*Ambystoma californiense pop. 1*)	FT; ST; WL	This species occupies grassland, savanna, or open woodland habitats and spends much of the year in underground refuges, especially ground squirrel (*Ammospermopholis beechyi*) burrows. Vernal pools or other seasonal water sources are required for breeding and egg laying. Adults may travel hundreds of meters across upland habitat to reach breeding ponds following seasonal rains during November to February. Its diet is highly variable and may include invertebrates, amphibians, or small mammals.	**Low**. Annual grassland habitat suitable for the species is present throughout the study area and may support active ground squirrels to provide suitable burrow habitat. Vernal pools suitable for breeding are unlikely to be present but ephemeral pools may develop during the rainy season and stock ponds may be present in adjacent areas. A previous protocol-level habitat assessment for this species occurred within the study area in 2018 and concluded that the species is unlikely to occur as the area has limited upland refugia/suitable burrow habitat and is subject to regular disruptions/barriers to dispersal. Additionally, the species was not detected during protocol level aquatic surveys and eDNA sampling. This species has been documented between 1 and 5 miles of the Alternative 4 and 6a/6b study area based on CNDDB records; however, the single occurrence is greater than 30 years old.
western spadefoot (*Spea hammondii*)	SSC; FPT	This species occurs predominantly in grasslands but may also occur in valley-foothill hardwood woodlands. The western spadefoot consumes worms, insects, and other invertebrates and requires shallow, temporary pools of water from heavy winter rains for reproduction.	**Low.** Suitable grassland habitat is present within the Alternative 4 and 6a/6b study area. This species has not been recently documented within 5 miles of the Alternative 4 and 6a/6b study area; however, this species' known range overlaps with the study area.

APPENDIX F.9 SPECIAL-STATUS SPECIES POTENTIAL TO OCCUR WIHTIN THE ALTERNATIVE 5 AND 6A/6B STUDY AREA

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 4 and 6a/6b Study Area
Birds			
American peregrine falcon (*Falco peregrinus anatum*)	Delisted (S)	This species can be found occupying several biomes throughout California year-round. Breeding takes place from April to June. A majority of nests are constructed on ledges on relatively tall cliffs in remote areas with minimal human disturbance and are often reused from year to year. Foraging occurs in a variety of habitat types, and its diet consists almost exclusively of other birds.	**None (Nesting). High (Foraging/Migration).** Suitable nesting habitat does not occur in the study area. Foraging and migrating individuals may occur in or near the study area as species is highly mobile and this species has been recently documented within 0.25 miles of the Alternative 4 and 6a/6b study area based on CNDDB records.
black tern (*Chlidonias niger surinamenisis*)	BCC	Species occupies a variety of aquatic habitats (rivers, lakes, marches, open ocean, etc.) typically near the ocean. Breeds mid-May through mid-August and typically nests in vegetation of large freshwater wetlands, sometimes in rice fields or on river islands. Feeds primarily on small fish and insects.	**Low (Nesting). Moderate (Foraging).** Marginally suitable aquatic/wetland foraging habitat is present along the Sacramento-San Joaquin River Delta (Delta) within the study area. Large wetlands/islands for nesting are not present with low potential to support nesting.
Bullock's oriole (*Icterus bullockii*)	BCC	Species occupies open woodland habitats as well as pine, pine-oak, and fir forests. Breeding occurs in riparian and open woodlands in mid-March through late July and nests are often built in trees such as sycamores, cottonwoods, willows, oaks, etc.). Nests are woven into a gourd shape within tree branches. Species primarily feeds on insects as well as fruit and nectar.	**Low (Nesting). Low (Foraging).** Marginally suitable foraging habitat is present within the study area but forested/woodland areas the species typically occupies are generally lacking. There are limited trees within the study area to support nesting.
burrowing owl (*Athene cunicularia* ssp. *hypugaea*)	SC; SSC	This species can be found in a variety of open habitat types, including grassland, savanna, desert scrub, agricultural, and urban areas. Breeding occurs from March through October, and nesting takes place within abandoned burrows dug by burrowing mammals. This species preys on large insects and small mammals.	**Moderate (Nesting). Moderate (Foraging/Migration).** Open grassland habitat suitable for foraging is found throughout the study area. Suitable nesting habitat may be present throughout the survey where open grasslands support active ground squirrels to provide suitable burrow habitat. This species has been recently documented between 1 and 5 miles of the Alternative 4 and 6a/6b study area based on CNDDB records which includes foraging and nesting observations.

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 4 and 6a/6b Study Area
California black rail (*Laterallus jamaicensis coturniculus*)	ST; FP	This species is found in tidal emergent wetlands dominated by pickleweed (*Salicornia* spp.) or in brackish marshes supporting bulrushes in association with pickleweed. Breeding occurs from March to June, and nests are concealed in dense vegetation (often pickleweed) near the upper limits of tidal flooding. (California Department of Fish and Wildlife (CDFW) 2025a)	**Moderate (Nesting). Moderate (Foraging).** Marginal foraging habitat is present in the study area adjacent to the Delta. However, marsh habitats within the study area lack the large stands of pickleweed and tidal flux preferred by the species for foraging and breeding. This species has been recently documented between 1 and 5 miles of the Alternative 4 and 6a/6b study area based on CNDDB records.
California gull (*Larus californicus*)	BCC	This species is found in mudflats, rocky shorelines, beaches, estuaries, and river deltas. Breeding occurs March through July on sparsely vegetated islands, levees in inland lakes and rivers, as well as salt ponds. Nest is typically a small scrape on the ground lined with materials such as vegetation, bones, and feathers. California gulls are omnivorous and will feed on a wide variety of items.	**Low (Nesting). Moderate (Foraging).** Species utilizes a wide variety of coastal and inland habitats for foraging which are present within the study area along the southern reach of the study area. Species may also forage in agricultural areas, grasslands, and other developed areas where food is present. Nesting habitat is generally absent.
California least tern (*Sternula antillarum browni*)	FE; SE; FP	This species is found throughout California and requires undisturbed stretches of beach and coastline. Adults forage in bays and estuaries for a variety of fish species. The California least tern nests in colonies on relatively open beaches where vegetation is limited by natural scouring from tidal action. However, to avoid humans, tern colonies have been known to move to inland mud flats and dredge fill sites. The breeding season typically begins in early to mid-May, and nests are constructed directly on the ground.	**None (Nesting) Moderate (Foraging/Migration).** Suitable mudflat, beach, or coastline is not present within the study area to support nesting. Suitable foraging habitat exists adjacent to the study area in the Delta. This species has been recently documented between 1 and 5 miles of the Alternative 4 and 6a/6b study area based on CNDDB records.

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 4 and 6a/6b Study Area
California Ridgeway's rail (*Rallus obsoletus)*	FE; SE; FP	This species occurs almost exclusively in tidal and brackish marshes with unrestricted daily tidal flow, adequate invertebrate prey food supply, well-developed tidal channel networks, and suitable nesting and escape cover to provide habitat during extreme high tides.	**Low (Nesting). Low (Foraging).** Marginal marsh foraging habitat is present within the study area. However, this area lacks the large stands of pickleweed and cordgrass and tidal flux preferred by the species and is unlikely to support nesting. This species has not been recently documented within 5 miles of the Alternative 4 and 6a/6b study area based on CNDDB records; however, this species' known range overlaps with the study area.
Clark's grebe (*Aechmophorus clarkii*)	BCC	Typically found on ocean shores, bays, rivers, and estuaries. Breeds June through August and typically nests on large freshwater lakes and marshes with emergent vegetation. Nesting in tidal areas is unusual. Feeds mostly on fish as well as crustaceans, and aquatic insects/larvae.	**Low (Nesting). Low (Foraging).** Nesting is unlikely due to lack of large tidal areas with emergent vegetation. Marginal foraging habitat occurs in areas with open water and wetland vegetation within the study area adjacent to the Delta.
double-crested cormorant** (*Nannopterum auritum*)	WL	This species primarily feeds on fish and is likely found foraging within marine environments along the Sacramento River. The species most often nest in colonies/rookeries and nest in trees, shrubs, artificial structures and cliffs.	**Moderate (Nesting). High (Foraging)** This species has been documented between 1 and 5 miles of the Alternative 4 and 6a/6b study area based on CNDDB records; however, the single record is over 30 years old. This species primarily feeds on fish and is likely found foraging within marine environments along the Sacramento River. The species most often nest in colonies/rookeries and nest in trees, shrubs, artificial structures and cliffs. Trees, artificial structures, and other similar features within the study area may provide suitable nesting habitat.
golden eagle (*Aquila chrysaetos*)	FP; WL; BGEPA	Golden eagles inhabit a variety of habitats including forests, canyons, shrub lands, grasslands, and oak woodlands. Golden eagles generally feed on a variety of small mammals but may also feed on birds, reptiles, and carrion. This species breeds from late January through August and nests are typically constructed on platforms on steep cliffs or in large trees.	**Low (Nesting). Moderate (Foraging).** Suitable grassland foraging habitat is present within the study area, but nesting habitat is generally scarce, lacking trees and cliffs. However, existing transmission line structures in the area may be used by golden eagles for nesting. This species has been recently documented between 1 and 5 miles of the Alternative 4 and 6a/6b study area based on CNDDB records.

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 4 and 6a/6b Study Area
northern harrier (*Circus hudsonius*)	SSC; BCC	This species is found in a variety of open grassland, wetland, and agricultural habitats. Open wetland habitats used for breeding include marshy meadows, wet and lightly grazed pastures, freshwater and brackish marshes. Breeding habitat also includes dry upland habitats, such as grassland, cropland, drained marshland, and shrub-steppe in cold deserts. Wintering habitat includes open areas dominated by herbaceous vegetation, such as grassland, pastures, cropland, coastal sand dunes, brackish and freshwater marshes, and estuaries.	**High (Nesting). High (Foraging).** Suitable foraging and nesting habitat are present in the study area in the form of open grassland, marsh, and agricultural habitat. This species has been recently documented within 0.25 miles of the Alternative 4 and 6a/6b study area based on CNDDB records. This species was observed during the Insignia field survey of the expanded study area on July 3, 2025.
saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*)	SSC; BCC	This species occurs in freshwater and saltwater marshes. It requires thick, continuous cover down to the water surface for foraging, and tall grasses, tule patches, and willows for nesting.	**Moderate (Nesting). Moderate (Foraging).** Suitable marsh habitat for this species is present within the study area. This species has been recently documented between 1 and 5 miles of the Alternative 4 and 6a/6b study area based on CNDDB records.
short-eared owl (*Asio flammeus*)	SSC; BCC	This species occurs in agricultural fields, grazed and ungrazed grasslands, and freshwater and saltwater marshes. This species requires open country that supports concentrations of microtine rodents and herbaceous cover sufficient to conceal its nest from predators. Its nests are built on the ground. This species' diet consists of small mammals and is particularly affected by the 3- to 4-year cycle of the California vole (*Microtus californicus*). Its breeding season occurs from April through July.	**Moderate (Nesting). Moderate (Foraging).** Suitable grassland and agricultural foraging/nesting habitat is present throughout the study area. This species has been recently documented between 1 and 5 miles of the Alternative 4 and 6a/6b study area based on CNDDB records.
song sparrow ("Modesto" population) (*Melospiza melodia* pop. 1)	SSC	This species inhabits freshwater marshes, riparian thickets, sparsely vegetated irrigation canals, and valley oak restoration sites. It seeks cover and nests in willow and nettle thickets, growths of tules and cattails, and riparian oak forests with a sufficient understory of blackberry.	**Low (Nesting). Low (Foraging).** Suitable breeding and foraging habitat for this species can be found within the study area near open water and wetland vegetation. This species has been documented between 1 and 5 miles of the Alternative 4 and 6a/6b study area based on CNDDB records; however, all records are over 30 years old.

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 4 and 6a/6b Study Area
Suisun song sparrow (*Melospiza melodia maxillaris*)	SSC	This species occurs throughout California, primarily in saltwater and brackish marshes. The species requires dense vegetation as protection from predators and high tide, for perching, and for nesting habitat. Breeding season is from early March through July.	**Moderate (Nesting). Moderate (Foraging).** Suitable breeding and foraging habitat for this species can be found within the study area near open water and wetland vegetation. Species has been recently documented between 1 and 5 miles of the Alternative 4 and 6a/6b study area based on CNDDB records.
Swainson's hawk (*Buteo swainsoni*)	ST	This species occurs in open grasslands, prairies, and farmlands that have nearby trees for nesting. It nests in bushes and in several tree species, including oaks (*Quercus* spp.), willow, and eucalyptus, and usually nests in trees in riparian areas near open fields. This species primarily hunts small rodents, rabbits, birds, and reptiles during the breeding season. It largely lives off insects, such as grasshoppers and beetles, during the non-breeding season. It reproduces from March through April, incubates for 34 to 35 days, and fledges 6 weeks later.	**Moderate (Nesting). Moderate (Foraging/Migration).** Suitable foraging and breeding habitat is present, although nesting trees are limited. Species has been recently documented between 1 and 5 miles of the Alternative 4 and 6a/6b study area based on CNDDB records.
tricolored blackbird (*Agelaius tricolor*)	ST; SSC; BCC	This highly colonial species requires open water, protected nesting substrate, and foraging areas adjacent to the colony with insect prey. Breeding occurs near fresh water, often in emergent wetlands with tall, dense cattails or tules, but also in thickets of willow; blackberry; wild rose; or tall, dense forbs. Seeds and cultivated grains, such as rice and oats, compose most of its fall and winter diet. Tricolored blackbird forages on the ground in croplands, grassy fields, flooded land, and along edges of ponds. The breeding season usually occurs from mid-April to late July.	**Low (Nesting). Low (Foraging).** Wetland habitat and open water suitable for nesting and foraging is present within the study area. This species has been documented between 1 and 5 miles of the Alternative 4 and 6a/6b study area based on CNDDB records; however, the single record is over 30 years old.

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 4 and 6a/6b Study Area
western grebe (*Aechmophorus occidentalis*)	BCC	Species breeds from June through August and nests on large freshwater lakes and marshes with reeds and rushes. Nesting in tidal areas is unusual. After breeding, most migrate to saltwater or brackish habitats, including ocean shores, sheltered bays, rivers, and estuaries. Feeds mostly on fish as well as crustaceans, and aquatic insects/larvae.	**Low (Nesting). Low (Foraging).** Nesting is unlikely due to lack of large freshwater lakes/marshes in the study area but may rarely occur in tidal areas with emergent vegetation. Foraging habitat is present within the Delta and within open water and wetlands in the study area.
western gull (*Larus occidentalis*)	BCC	This species is often found along coastlines and forage out at sea and along tidal rocky/sandy shores but also form flocks in garbage dumps, docks, parking lots, ball fields, and beaches. Breeds from mid-April through August and nests only in places free from disturbance and isolated from predators such as islands, headlands, and abandoned seaside structures like piers and old buildings. Nest is typically a small scrape on the ground nest to a windbreak. California gulls are omnivorous and opportunistic and will feed on a wide variety of items, primarily fish and marine invertebrates.	**Low (Nesting). High (Foraging).** Species utilizes a wide variety of habitats for foraging which is present within the study area. Nesting habitat is generally absent.
western snowy plover (*Charadrius nivosus nivosus*)	FT; SSC	This species requires barren to sparsely vegetated sand beaches, dry salt flats in lagoons, dune habitat, levees and flats at salt-evaporation ponds, lakes, reservoirs, or ponds. Nests are a natural or scraped depression on dry ground usually lined with materials such as pebbles, shell fragments, fish bones, mud chips, or vegetation. Breeding season is March-September.	**Moderate (Nesting). High (Foraging).** Marginally suitable nesting habitat is present along coastal sandy areas of the study area. Suitable foraging habitat is present, and this species has been recently documented between 0.25 and 1 mile of the Alternative 4 and 6a/6b study area based on CNDDB records.
white-tailed kite (*Elanus leucurus*)	FP	This species nests in riparian or oak woodland adjacent to undisturbed, open fields and grasslands, meadows, farmlands, and emergent wetlands, where it hunts rodents. Breeding generally occurs from February through October. White-tailed kite lays three to five eggs, which it incubates for 30 to 32 days, after which fledging occurs at 5 to 6 weeks of age.	**Low (Nesting). Moderate (Foraging).** Suitable foraging habitat for the species is present in the study area; however, oak woodland suitable for nesting is generally not present. This species has been documented between 1 and 5 miles of the Alternative 4 and 6a/6b study area based on CNDDB records; however, all records are over 30 years old.

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 4 and 6a/6b Study Area
wrentit (*Chamaea fasciata*)	BCC	In coastal California, this species is a year-round resident in coastal scrub and chaparral habitat. Breeds Mar 15 to Aug 10 and nest is typically built in plants such as California sage, coyote brush, blackberry, poison oak, and coffeeberry. Species feeds primarily on arthropods as well as fruit and seeds.	**Low (Nesting). Moderate (Foraging).** Nesting habitat is generally not present due to lack of scrub and chapparal habitat. However, vegetation such as coyote brush, poison oak, and blackberry may be present and has low potential to support nesting. Foraging habitat is present within the study area.
yellow-billed magpie (*Pica nuttalli)*	BCC	This species is a permanent resident in open oak woodlands and grassy oak savannas of central California. May forage and nest in a wide variety of habitats such as agricultural areas with tall trees for nesting, riparian areas, orchards, and lower foothills. Typically nests high in tall trees. Feed on a variety of items including insects and other invertebrates, plant matter, avian nestlings/eggs, small mammals/reptiles.	**Low (Nesting). Moderate (Foraging).** Suitable nesting trees are generally limited within the Alternative 4 and 6a/6b study area and woodlands are lacking. Foraging habitat is present in the form of open grassland areas and species is wide ranging in California and able to occupy a variety of habitats.
yellow rail (*Coturnicops noveboracensis*)	SSC	This species breeds in densely vegetated, shallow freshwater marshes and wet meadows. Breeding occurs from May through September. Wintering birds frequent mature salt marshes well above the water line.	**Low (Nesting). Moderate (Foraging/Wintering).** Marginal wetland breeding habitat and suitable wintering habitat are present within the study area along coastal marsh/wetland areas. This species has been recently documented between 1 and 5 miles of the Alternative 4 and 6a/6b study area based on CNDDB records.
Invertebrates			
conservancy fairy shrimp (*Branchinecta conservatio*)	FE	This species occurs within vernal pool habitats in California's Central Valley. It mostly lives in relatively large, turbid freshwater vernal pools called playa pools. This species can be found at elevations ranging from 16 to 5,577 feet in grassland, rural, and wetland habitats. This species opportunistically filter-feeds on various planktonic food sources including algae and protozoa.	**Low.** Suitable vernal pool habitat is unlikely to be present in the study area. However, it is possible that suitable vernal pool habitat for this species may develop during the rainy season. This species has been recently documented between 1 and 5 miles of the Alternative 4 and 6a/6b study area.

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 4 and 6a/6b Study Area
Crotch's bumble bee (*Bombus crotchii*)	SC	Species historic range is widespread throughout California, generally inhabiting open grassland and scrub habitats foraging for pollen and nectar. Nesting occurs underground and the colony active period is April-August.	**Moderate (Nesting). Moderate (Foraging).** This species has been documented between 1 and 5 miles of the Alternative 4 and 6a/6b study area based on CNDDB records; however, the single record is over 30 years old. Species has been recently listed as a state candidate and CNDDB data may be lacking. Suitable habitat and floristic resources are likely present throughout the study area and area is within range of species.
Lange's metalmark butterfly (*Apodemia mormo langei*)	FE	This species is associated with the Antioch Dunes, a riverbank dune system along the San Joaquin River. Currently, this species can only be found in the Antioch Dunes National Wildlife Refuge, the last remnants of the Antioch Dunes. All life stages are closely associated with naked-stemmed buckwheat (*Eriogonum nudum* var. *psychicola*), which is the primary nectar source for adults, is used to lay eggs, and is a larval food plant. The leaves of the larval host plant provide both food and shelter throughout the larval instar phases.	**Low.** This species has been recently documented within 0.25 miles of Alternative 4 and 6a/6b study area based on CNDDB records. However, suitable dune habitat for this species is not present within the study area. This species may occur incidentally within the study area given the proximity of the documented occurrence, but the lack of suitable foraging and breeding habitat within the study area makes this unlikely.
monarch butterfly (*Danaus plexippus*)	PT	Monarchs are known to migrate long distances but may also occupy suitable habitat year-round. They are known to overwinter along the California coast roosting in tree stands. Adult monarchs occupy a variety of habitats such as grasslands, wetlands, coastal, urban, and residential areas. They feed on the nectar of flowers during breeding and migration, but they lay eggs on milkweed plants which are required for reproduction.	**Moderate.** The study area contains suitable foraging habitat with floristic resources. Potential for reproduction exists in areas where milkweed is present. This species has not been recently documented within 5 miles of the Alternative 4 and 6a/6b study area; however, this species' known range overlaps with the study area.

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 4 and 6a/6b Study Area
vernal pool fairy shrimp (*Branchinecta lynchi*)	FT	This species occurs within vernal pool habitats throughout California. Female vernal pool fairy shrimp carry fertilized eggs in a sac on the underside of their body. The eggs are either dropped to the pool bottom or remain in the brood sac until the mother dies and sinks to the bottom of the pool. This species opportunistically filter-feeds on various planktonic food sources, including algae and protozoa.	**Low.** Suitable vernal pool habitat is unlikely to be present in the study area. However, it is possible that suitable vernal pool habitat for this species may develop during the rainy season. This species has been recently documented between 1 and 5 miles of the Alternative 4 and 6a/6b study area.
vernal pool tadpole shrimp (*Lepidurus packardi*)	FE	This species occurs within vernal pool habitats with a patchy distribution within California's Central Valley. Female vernal pool tadpole shrimp produce up to six clutches of eggs containing 32 to 61 eggs per clutch during each wet season. They carry fertilized eggs in a sac on the underside of their body. The eggs are either dropped to the pool bottom or remain in the brood sac until the mother dies and sinks to the bottom of the pool. This species opportunistically filter-feeds on other fairy shrimp (*Branchinecta* spp.), invertebrates, and waste from other vernal pool species.	**Low.** Suitable vernal pool habitat is unlikely to be present in the study area. However, it is possible that suitable vernal pool habitat for this species may develop during the rainy season. This species has been recently documented between 1 and 5 miles of the Alternative 4 and 6a/6b study area.
western bumble bee (*Bombus occidentalis*)	SC	This species can be found throughout the western United States and Canada and are not limited to any particular host plant.	**Moderate (Nesting). Moderate (Foraging).** Suitable nesting and foraging habitat is present within the study area and is within the species' known range. This species has been documented between 1 and 5 miles of the Alternative 4 and 6a/6b study area based on CNDDB records; however, the single record is over 30 years old.
Mammals			
salt marsh harvest mouse (*Reithrodontomys raviventris*)	FE, SE, FP	This species inhabits salt marshes in California and is adapted to live in marsh vegetation, including pickleweed and cordgrass, which provide cover, food sources, and breeding habitats. Breeding typically occurs between March and October. Diet consists of marsh vegetation, including seeds, stems, and leaves.	**High.** Suitable salt marsh habitat and upland foraging habitat is present within the study area. This species has been recently documented within 0.25 miles of the Alternative 4 and 6a/6b study area.

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 4 and 6a/6b Study Area
San Joaquin kit fox (*Vulpes macrotis mutica*)	FE; ST	This species inhabits a variety of open habitats, including grasslands, chenopod scrublands, and semi-arid regions. Breeding occurs from January to March, with a gestation period of 49 to 55 days. The female constructs a den in the ground, often utilizing existing burrows dug by other animals. Its diet primarily consists of small mammals, such as rodents, rabbits, and ground squirrels.	**Low.** Open grassland habitat suitable for foraging and denning is present within the study area. No occurrences for this species are documented within 5 miles of Alternative 4 and 6a/6b study area based on CNDDB records and study area is on the margins of species' known range.
western red bat (*Lasirurs blossevillii*)	SSC, WBWG -H	This species occurs in a variety of habits, including forests, woodlands, and riparian areas. It roosts and forages among trees and vegetation and exhibits a preference for mixed coniferous and deciduous forests. Breeding occurs in the spring and early summer. This species typically seeks out tree foliage, such as leaves or branches, to create roosting sites. The diet consists mainly of insects, such as moths, beetles, and flies.	**Moderate (Roosting). Moderate (Foraging).** Suitable roosting habitat is present in the study area within the limited stands of trees, but forest habitat is generally lacking. Suitable foraging habitat is present, and this species has been recently documented between 1 and 5 miles of the Alternative 4 and 6a/6b study area.
Reptiles			
Northern California legless lizard (*Anniella pulchra*)	SSC	This species is found in grasslands, chaparral, and open woodlands and requires loose, friable soils for burrowing. Breeding typically occurs in the spring or early summer. Females lay small clutches of eggs in underground burrows or hidden areas. The diet primarily consists of small invertebrates, such as insects, spiders, and other arthropods.	**Moderate.** Grassland habitat for this species is present within the study area, but chaparral and woodland habitat is lacking. This species has been recently documented between 1 and 5 miles of the Alternative 4 and 6a/6b study area based on CNDDB records.
northwestern pond turtle (*Actinemys marmorata*)	FPT; SSC	This freshwater turtle species primarily inhabits ponds, lakes, and slow-moving streams with suitable basking sites. It spends a significant amount of time basking on logs or rocks. Breeding typically occurs in the spring and early summer. Females dig nests in sandy or gravelly areas near water, where they lay their eggs. The hatchlings emerge several months later and make their way to the water. The diet is omnivorous and consists of various aquatic plants, insects, small fish, and amphibians.	**High.** Wetland habitat is present within the study area that may provide suitable foraging and dispersal habitat. This species has been recently documented between 0.25 and 1 mile of the Alternative 4 and 6a/6b study area.

* Evaluated for the Proposed Project and determined to have no potential to occur within the Proposed Project.

** Not evaluated for the Proposed Project because database record searches found no records within the vicinity of the Proposed Project.

[a] Explanation of listing status codes:

Federal

- FE: Federally listed as endangered
- FT: Federally listed as threatened
- PT: Proposed to be federally listed as threatened
- BCC: United States (U.S.) Fish and Wildlife Service (USFWS) Bird of Conservation Concern
- BGEPA: Bald and Golden Eagle Protection Act

State

- Delisted (S): Delisted from the State
- SE: State-listed as endangered
- ST: State-listed as threatened
- SC: State candidate for listing as threatened or endangered
- SSC: Species of Special Concern
- FP: Fully protected species
- WL: Watch List species
- WBWG-H: Western Bat Working Group high designation

Source: (AECOM 2018a; 2018b; Area West Environmental, Inc. 2017; CDFW 2025b; 2025c; 2025a; Cornell Lab of Ornithology (CLO) 2025j; 2024; 2025i; 2025h; 2025g; 2025f; 2025e; 2025d; 2025c; 2025b; 2025a; Hatfield et al. 2015; National Audubon Society 2025; NatureServe 2025; USFWS 2025b; 2025d; 2023; 2025c; Xerces Society for Invertebrate Conservation 2025)

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
			areas where food is present. Nesting habitat is generally absent.
California least tern (*Sternula antillarum browni*)	FE; SE; FP	This species is found throughout California and requires undisturbed stretches of beach and coastline. Adults forage in bays and estuaries for a variety of fish species. The California least tern nests in colonies on relatively open beaches where vegetation is limited by natural scouring from tidal action. However, to avoid humans, tern colonies have been known to move to inland mud flats and dredge fill sites. The breeding season typically begins in early to mid-May, and nests are constructed directly on the ground.	**Alternative 1: None (Nesting) Low (Foraging).** Suitable mudflat, beach, or coastline is not present within the Alternative 1 study area to support nesting. Suitable foraging habitat exists in adjacent to the Delta south of the Alternative 1 study area. This species has been recently documented between 1 and 5 miles of the Alternative 1 study area based on CNDDB records. **Alternative 2: None (Nesting) Low (Foraging).** Suitable mudflat, beach, or coastline is not present within the Alternative 2 study area to support nesting. Suitable foraging habitat exists in adjacent to the Delta south of the Alternative 2 study area. This species has been recently documented between 1 and 5 miles of the Alternative 2 study area based on CNDDB records.
California Ridgeway's rail (*Rallus obsoletus)*	FE; SE; FP	This species occurs almost exclusively in tidal and brackish marshes with unrestricted daily tidal flow, adequate invertebrate prey food supply, well-developed tidal channel networks, and suitable nesting and escape cover to provide habitat during extreme high tides.	**Alternative 1: Low (Nesting). Low (Foraging).** Marginal marsh foraging habitat is present adjacent to the Delta in the southern reach of the Alternative 1 study area. However, this area lacks the large stands of pickleweed and cordgrass and tidal flux preferred by the species and is

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
			unlikely to support nesting. This species has not been recently documented within 5 miles of the Alternative 1 study area based on CNDDB records; however, this species' known range overlaps with the Alternative 1 study area. **Alternative 2: Low (Nesting) Low (Foraging).** Marginal marsh foraging habitat is present adjacent to the Delta in the southern reach of the Alternative 2 study area. However, this area lacks the large stands of pickleweed and cordgrass and tidal flux preferred by the species and is unlikely to support nesting. This species has not been recently documented within 5 miles of the Alternative 2 study area based on CNDDB records; however, this species' known range overlaps with the Alternative 2 study area.
Clark's grebe (*Aechmophorus clarkii*)	BCC	Typically found on ocean shores, bays, rivers, and estuaries. Breeds June through August and typically nests on large freshwater lakes and marshes with emergent vegetation. Nesting in tidal areas is unusual. Feeds mostly on fish as well as crustaceans, and aquatic insects/larvae.	**Alternative 1: Low (Nesting). Low (Foraging).** Nesting is unlikely due to lack of tidal areas with emergent vegetation. Marginal foraging habitat occurs in areas with open water and wetland vegetation in the southern reach of the Alternative 1 study area adjacent to the Delta. **Alternative 2: Low (Nesting). Moderate (Foraging).** Nesting is unlikely due to lack of tidal areas

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
			with emergent vegetation. Marginal foraging habitat occurs in areas with open water and wetland vegetation in the southern reach of the Alternative 2 study area adjacent to the Delta.
double-crested cormorant** (*Nannopterum auritum*)	WL	This species primarily feeds on fish and is likely found foraging within marine environments along the Sacramento River. The species most often nest in colonies/rookeries and nest in trees, shrubs, artificial structures and cliffs.	**Alternative 1: Moderate (Nesting). High (Foraging)** This species primarily feeds on fish and is likely found foraging within marine environments along the Sacramento River. The species most often nest in colonies/rookeries and nest in trees, shrubs, artificial structures and cliffs. The trees and artificial structures near Stratton Lane and other similar features would provide suitable nesting habitat. **Alternative 2: Moderate (Nesting). High (Foraging)** This species primarily feeds on fish and is likely found foraging within marine environments along the Sacramento River. The species most often nest in colonies/rookeries and nest in trees, shrubs, artificial structures and cliffs. The trees and artificial structures near Stratton Lane and other similar features would provide suitable nesting habitat.

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
golden eagle (*Aquila chrysaetos*)	FP; WL; BGEPA	Golden eagles inhabit a variety of habitats including forests, canyons, shrub lands, grasslands, and oak woodlands. Golden eagles generally feed on a variety of small mammals but may also feed on birds, reptiles, and carrion. This species breeds from late January through August and nests are typically constructed on platforms on steep cliffs or in large trees.	**Alternative 1: Low (Nesting). High (Foraging).** Suitable grassland foraging habitat is present within the Alternative 1 study area, but nesting habitat is generally scarce, lacking trees and cliffs. However, existing transmission line structures in the area may be used by golden eagles for nesting. This species has been recently documented within 1 mile of the Alternative 1 study area based on CNDDB records. **Alternative 2: Low (Nesting) High (Foraging).** Suitable grassland foraging habitat is present within the Alternative 2 study area, but nesting habitat is generally scarce, lacking trees and cliffs. However, existing transmission line structures in the area may be used by golden eagles for nesting. This species has been recently documented within 1 mile of the Alternative 2 study area based on CNDDB records.
northern harrier (*Circus hudsonius*)	SSC; BCC	This species is found in a variety of open grassland, wetland, and agricultural habitats. Open wetland habitats used for breeding include marshy meadows, wet and lightly grazed pastures, freshwater and brackish marshes. Breeding habitat also includes dry upland habitats, such as grassland, cropland, drained	**Alternative 1: High (Nesting). High (Foraging).** Suitable foraging and nesting habitat are present in the Alternative 1 study area in the form of open grassland, marsh, and agricultural habitat. This species has been recently documented within 1

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
		marshland, and shrub-steppe in cold deserts. Wintering habitat includes open areas dominated by herbaceous vegetation, such as grassland, pastures, cropland, coastal sand dunes, brackish and freshwater marshes, and estuaries.	mile of the Alternative 1 study area based on CNDDB records. **Alternative 2: High (Nesting) High (Foraging).** Suitable foraging and nesting habitat are present in the Alternative 2 study area in the form of open grassland, marsh, and agricultural habitat. This species has been recently documented within 1 mile of the Alternative 2 study area based on CNDDB records.
saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*)	SSC; BCC	This species occurs in freshwater and saltwater marshes. It requires thick, continuous cover down to the water surface for foraging, and tall grasses, tule patches, and willows for nesting.	**Alternative 1: Low (Nesting). Moderate (Foraging).** Suitable marsh habitat for this species is present within the southern portion of the Alternative 1 study area located on the northern shore of the Delta. This species has been recently documented between 1 and 5 miles of the Alternative 1 study area based on CNDDB records. **Alternative 2: Low (Nesting) Moderate (Foraging).** Suitable marsh habitat for this species is present within the southern portion of the Alternative 2 study area located on the northern shore of the Delta. This species has been recently documented between 1 and 5 miles of the Alternative 2 study area based on CNDDB records.

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
short-eared owl (*Asio flammeus*)	SSC; BCC	This species occurs in agricultural fields, grazed and ungrazed grasslands, and freshwater and saltwater marshes. This species requires open country that supports concentrations of microtine rodents and herbaceous cover sufficient to conceal its nest from predators. Its nests are built on the ground. This species' diet consists of small mammals and is particularly affected by the 3- to 4-year cycle of the California vole (*Microtus californicus*). Its breeding season occurs from April through July.	**Alternative 1: Moderate (Nesting). Moderate (Foraging).** Suitable grassland and agricultural foraging/nesting habitat is present throughout the Alternative 1 study area. This species has been recently documented between 1 and 5 miles of the Alternative 1 study area based on CNDDB records. **Alternative 2: Moderate (Nesting) Moderate (Foraging).** Suitable grassland and agricultural foraging/nesting habitat is present throughout the Alternative 2 study area. This species has been recently documented between 1 and 5 miles of the Alternative 2 study area based on CNDDB records.
song sparrow ("Modesto" population) (*Melospiza melodia* pop. 1)	SSC	This species inhabits freshwater marshes, riparian thickets, sparsely vegetated irrigation canals, and valley oak restoration sites. It seeks cover and nests in willow and nettle thickets, growths of tules and cattails, and riparian oak forests with a sufficient understory of blackberry.	**Alternative 1: Low (Nesting). Low (Foraging).** Suitable breeding and foraging habitat for this species can be found within the southern portion of the Alternative 1 study area near open water and wetland vegetation. This species has been recently documented between 1 and 5 miles of the Alternative 1 study area based on CNDDB records; however, all records are over 30 years old. **Alternative 2: Low (Nesting) Low (Foraging).** Suitable breeding and foraging habitat for this species can

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
			be found within the southern portion of the Alternative 2 study area near open water and wetland vegetation. This species has been recently documented between 1 and 5 miles of the Alternative 2 study area based on CNDDB records; however, all records are over 30 years old.
Suisun song sparrow (*Melospiza melodia maxillaris*)	SSC	This species occurs throughout California, primarily in saltwater and brackish marshes. The species requires dense vegetation as protection from predators and high tide, for perching, and for nesting habitat. Breeding season is from early March through July.	**Moderate 1: Moderate (Nesting). Moderate (Foraging).** Suitable breeding and foraging habitat for this species can be found within the southern portion of the Alternative 1 study area near open water and wetland vegetation. Species has been recently documented between 1 and 5 miles of the Alternative 1 study area based on CNDDB records. **Alternative 2: Moderate (Nesting) Moderate (Foraging).** Suitable breeding and foraging habitat for this species can be found within the southern portion of the Alternative 2 study area near open water and wetland vegetation. This species has been recently documented between 1 and 5 miles of the Alternative 2 study area based on CNDDB records.
Swainson's hawk (*Buteo swainsoni*)	ST	This species occurs in open grasslands, prairies, and farmlands that have nearby trees for nesting. It nests in bushes and in several tree	**Alternative 1: High (Nesting). Present (Foraging/Migration).** Suitable foraging and breeding habitat is present, although nesting trees are

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
		species, including oaks (*Quercus* spp.), willow, and eucalyptus, and usually nests in trees in riparian areas near open fields. This species primarily hunts small rodents, rabbits, birds, and reptiles during the breeding season. It largely lives off insects, such as grasshoppers and beetles, during the non-breeding season. It reproduces from March through April, incubates for 34 to 35 days, and fledges 6 weeks later.	limited. Species has been recently documented between 1 and 5 miles of the Alternative 1 study area based on CNDDB records. **Alternative 2: High (Nesting) High (Foraging).** Suitable foraging and breeding habitat is present, although nesting trees are limited. This species has been recently documented between 1 and 5 miles of the Alternative 2 study area based on CNDDB records.
tricolored blackbird (*Agelaius tricolor*)	ST; SSC; BCC	This highly colonial species requires open water, protected nesting substrate, and foraging areas adjacent to the colony with insect prey. Breeding occurs near fresh water, often in emergent wetlands with tall, dense cattails or tules, but also in thickets of willow; blackberry; wild rose; or tall, dense forbs. Seeds and cultivated grains, such as rice and oats, compose most of its fall and winter diet. Tricolored blackbird forages on the ground in croplands, grassy fields, flooded land, and along edges of ponds. The breeding season usually occurs from mid-April to late July.	**Alternative 1: Low (Nesting). Moderate (Foraging).** Fresh waterbodies suitable for nesting are generally not present but small patches of open water and wetland vegetation is present in the southern reach of the Alternative 1 study area and foraging habitat is present. This species has been documented between 1 and 5 miles of the Alternative 1 study area based on CNDDB records; however, all records are over 30 years old. **Alternative 2: Low (Nesting) Moderate (Foraging).** Fresh waterbodies suitable for nesting are generally not present but small patches of open water and wetland vegetation is present in the southern reach of the Alternative 2 study area and foraging habitat is present. This

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
			species has been documented between 1 and 5 miles of the Alternative 2 study area based on CNDDB records; however, all records are over 30 years old.
western grebe (*Aechmophorus occidentalis*)	BCC	Species breeds from June through August and nests on large freshwater lakes and marshes with reeds and rushes. Nesting in tidal areas is unusual. After breeding, most migrate to saltwater or brackish habitats, including ocean shores, sheltered bays, rivers, and estuaries. Feeds mostly on fish as well as crustaceans, and aquatic insects/larvae.	**Alternative 1: Low (Nesting). Low (Foraging).** Nesting is unlikely due to lack of freshwater lakes/marshes in the Alternative 1 study area but may rarely occur in tidal areas with emergent vegetation. Foraging habitat is present within the Delta but species is unlikely to occur in inland terrestrial areas. Open water and wetland vegetation is present in the southern reach of the Alternative 1 study area. **Low (Nesting). Low (Foraging).** Nesting is unlikely due to lack of freshwater lakes/marshes in the Alternative 2 study area but may rarely occur in tidal areas with emergent vegetation. Foraging habitat is present within the Delta but species is unlikely to occur in inland terrestrial areas. Open water and wetland vegetation is present in the southern reach of the Alternative 2 study area.
western gull (*Larus occidentalis*)	BCC	This species is often found along coastlines and forage out at sea and along tidal rocky/sandy shores but	**Alternative 1: Low (Nesting). High (Foraging).** Species utilizes a wide variety of habitats for foraging which

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
		also form flocks in garbage dumps, docks, parking lots, ball fields, and beaches. Breeds from mid-April through August and nests only in places free from disturbance and isolated from predators such as islands, headlands, and abandoned seaside structures like piers and old buildings. Nest is typically a small scrape on the ground nest to a windbreak. California gulls are omnivorous and opportunistic and will feed on a wide variety of items, primarily fish and marine invertebrates.	is present within the Alternative 1 study area. Nesting habitat is generally absent. **Alternative 2: Low (Nesting). High (Foraging).** Species utilizes a wide variety of habitats for foraging which is present within the Alternative 2 study area. Nesting habitat is generally absent.
western snowy plover (*Charadrius nivosus nivosus*)	FT; SSC	This species requires barren to sparsely vegetated sand beaches, dry salt flats in lagoons, dune habitat, levees and flats at salt-evaporation ponds, lakes, reservoirs, or ponds. Nests are a natural or scraped depression on dry ground usually lined with materials such as pebbles, shell fragments, fish bones, mud chips, or vegetation. Breeding season is March-September.	**Alternative 1: Low (Nesting). Low (Foraging).** Marginally suitable nesting and foraging habitat is present along coastal wetland areas of the Alternative 1 study area. This species has been recently documented between 1 and 5 miles of the Alternative 1 study area near the Montezuma wetlands based on CNDDB records. **Alternative 2: Low (Nesting) Moderate (Foraging).** Marginally suitable nesting and foraging habitat is present along coastal wetland areas of the Alternative 2 study area. This species has been recently documented within 1 mile of the Alternative 2 study area near the

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
			Montezuma wetlands based on CNDDB records.
white-tailed kite (*Elanus leucurus*)	FP	This species nests in riparian or oak woodland adjacent to undisturbed, open fields and grasslands, meadows, farmlands, and emergent wetlands, where it hunts rodents. Breeding generally occurs from February through October. White-tailed kite lays three to five eggs, which it incubates for 30 to 32 days, after which fledging occurs at 5 to 6 weeks of age.	**Alternative 1: Low (Nesting). Moderate (Foraging).** Suitable foraging habitat for the species is present in the Alternative 1 study area; however, oak woodland suitable for nesting is not present. This species has been documented between 1 and 5 miles of the Alternative 1 study area based on CNDDB records; however, all records are over 30 years old. **Alternative 2: Low (Nesting) Moderate (Foraging).** Suitable foraging habitat for the species is present in the Alternative 2 study area; however, oak woodland suitable for nesting is not present. This species has been documented between 1 and 5 miles of the Alternative 2 study area based on CNDDB records; however, all records are over 30 years old.
wrentit (*Chamaea fasciata*)	BCC	In coastal California, this species is a year-round resident in coastal scrub and chaparral habitat. Breeds Mar 15 to Aug 10 and nest is typically built in plants such as California sage, coyote brush, blackberry, poison oak, and coffeeberry. Species feeds	**Alternative 1: Low (Nesting). Moderate (Foraging).** Nesting habitat is generally not present due to lack of scrub and chapparal habitat. However, vegetation such as coyote brush may be present and has low potential to support nesting. Foraging

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
		primarily on arthropods as well as fruit and seeds.	habitat is present within the Alternative 1 study area. **Alternative 2: Low (Nesting). Moderate (Foraging).** Nesting habitat is generally not present due to lack of scrub and chapparal habitat. However, vegetation such as coyote brush may be present and has low potential to support nesting. Foraging habitat is present within the Alternative 2 study area.
yellow-billed magpie (*Pica nuttalli)*	BCC	This species is a permanent resident in open oak woodlands and grassy oak savannas of central California. May forage and nest in a wide variety of habitats such as agricultural areas with tall trees for nesting, riparian areas, orchards, and lower foothills. Typically nests high in tall trees. Feed on a variety of items including insects and other invertebrates, plant matter, avian nestlings/eggs, small mammals/reptiles.	**Alternative 1: Low (Nesting). Moderate (Foraging).** Suitable nesting trees are generally limited within the Alternative 1 study area. Foraging habitat is present and species is wide ranging in California and able to occupy a variety of habitats. **Alternative 2: Low (Nesting). Moderate (Foraging).** Suitable nesting trees are generally limited within the Alternative 2 study area. Foraging habitat is present and species is wide ranging in California and able to occupy a variety of habitats.
yellow rail (*Coturnicops noveboracensis*)	SSC	This species breeds in densely vegetated, shallow freshwater marshes and wet meadows. Breeding occurs from May through September. Wintering birds frequent	**Alternative 1: Low (Nesting). Moderate (Foraging/Wintering).** Marginal breeding habitat and suitable wintering habitat are present within the Alternative 1 study area.

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
		mature salt marshes well above the water line.	This species has been recently documented between 1 and 5 miles of the Alternative 1 study area based on CNDDB records. **Alternative 2: Low (Nesting) Moderate (Foraging/Wintering).** This species has been recently documented between 1 and 5 miles of the Alternative 2 study area based on CNDDB records.
Invertebrates			
conservancy fairy shrimp (*Branchinecta conservatio*)	FE	This species occurs within vernal pool habitats in California's Central Valley. It mostly lives in relatively large, turbid freshwater vernal pools called playa pools. This species can be found at elevations ranging from 16 to 5,577 feet in grassland, rural, and wetland habitats. This species opportunistically filter-feeds on various planktonic food sources including algae and protozoa.	**Alternative 1: Low.** Suitable vernal pool habitat is unlikely to be present in the Alternative 1 study area. It is possible that suitable vernal pool habitat for this species may develop during the rainy season. This species has been recently documented between 1 and 5 miles of the Alternative 1 study area. **Alternative 2: Low.** Suitable vernal pool habitat is unlikely to be present in the Alternative 2 study area. It is possible that suitable vernal pool habitat for this species may develop during the rainy season. This species has been recently documented between 1 and 5 miles of the Alternative 2 study area.
Crotch's bumble bee (*Bombus crotchii*)	SC	Species historic range is widespread throughout California, generally	**Alternative 1: Moderate.** No occurrences documented within 5

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
		inhabiting open grassland and scrub habitats foraging for pollen and nectar. Nesting occurs underground and the colony active period is April-August.	miles of Alternative 1 study area based on CNDDB records, but species has been recently listed as a state candidate and CNDDB data may be lacking. Floristic resources are likely present throughout the Alternative 1 study area and area is within range of species **Alternative 2: Moderate.** CNDDB records only show 1 occurrence from 1926, but species has been recently listed as a state candidate and CNDDB data may be lacking. Floristic resources are likely present throughout the Alternative 2 study area and is within range of species. This species has been documented between 1 and 5 miles of the Alternative 2 study area; however, the single record is over 30 years old.
Lange's metalmark butterfly (*Apodemia mormo langei*)	FE	This species is associated with the Antioch Dunes, a riverbank dune system along the San Joaquin River. Currently, this species can only be found in the Antioch Dunes National Wildlife Refuge, the last remnants of the Antioch Dunes. All life stages are closely associated with naked-stemmed buckwheat (*Eriogonum nudum* var. *psychicola*), which is the primary nectar source for adults, is used to lay eggs, and is a larval food plant. The leaves of the larval host	**Alternative 1: Low.** This species has been recently documented within 0.25 miles of Alternative 1 study area based on CNDDB records. However, suitable dune habitat for this species is not present within the Alternative 1 study area. This species may occur incidentally within the Alternative 1 study area given the proximity of the documented occurrence, but the lack of suitable foraging and breeding habitat within the Alternative 1 study area makes this unlikely.

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
		plant provide both food and shelter throughout the larval instar phases.	**Alternative 2: Low.** This species has been recently documented within 0.25 miles of Alternative 2 study area based on CNDDB records. However, suitable dune habitat for this species is not present within the Alternative 2 study area. This species may occur incidentally within the Alternative 2 study area given the proximity of the documented occurrence, but the lack of suitable foraging and breeding habitat within the Alternative 2 study area makes this unlikely.
monarch butterfly (*Danaus plexippus*)	PT	Monarchs are known to migrate long distances but may also occupy suitable habitat year-round. They are known to overwinter along the California coast roosting in tree stands. Adult monarchs occupy a variety of habitats such as grasslands, wetlands, coastal, urban, and residential areas. They feed on the nectar of flowers during breeding and migration, but they lay eggs on milkweed plants which are required for reproduction.	**Alternative 1: Moderate.** The Alternative 1 study area contains suitable foraging habitat with floristic resources. Potential for reproduction exists in areas where milkweed is present. No recorded CNDDB occurrences within 5 miles but the Alternative 1 study area is within known range of the species. **Alternative 2: Moderate.** The Alternative 2 study area contains suitable foraging habitat with floristic resources. Potential for reproduction in areas where milkweed is present. No recorded CNDDB occurrences within 5 miles but the Alternative 2 study area is within known range of the species.

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
vernal pool fairy shrimp (*Branchinecta lynchi*)	FT	This species occurs within vernal pool habitats throughout California. Female vernal pool fairy shrimp carry fertilized eggs in a sac on the underside of their body. The eggs are either dropped to the pool bottom or remain in the brood sac until the mother dies and sinks to the bottom of the pool. This species opportunistically filter-feeds on various planktonic food sources, including algae and protozoa.	**Alternative 1: Low.** Suitable vernal pool habitat is unlikely to be present in the Alternative 1 study area. It is possible that suitable vernal pool habitat for this species may develop during the rainy season. This species has been recently documented between 1 and 5 miles of the Alternative 1 study area. **Alternative 2: Low.** Suitable vernal pool habitat is unlikely to be present in the Alternative 2 study area. It is possible that suitable vernal pool habitat for this species may develop during the rainy season. This species has been recently documented between 1 and 5 miles of the Alternative 2 study area.
vernal pool tadpole shrimp (*Lepidurus packardi*)	FE	This species occurs within vernal pool habitats with a patchy distribution within California's Central Valley. Female vernal pool tadpole shrimp produce up to six clutches of eggs containing 32 to 61 eggs per clutch during each wet season. They carry fertilized eggs in a sac on the underside of their body. The eggs are either dropped to the pool bottom or remain in the brood sac until the mother dies and sinks to the bottom of the pool. This species opportunistically filter-feeds on other fairy shrimp (*Branchinecta* spp.),	**Alternative 1: Low.** Suitable vernal pool habitat is unlikely to be present in the Alternative 1 study area. It is possible that suitable vernal pool habitat for this species may develop during the rainy season. This species has been recently documented between 1 and 5 miles of the Alternative 1 study area. **Alternative 2: Low.** Suitable vernal pool habitat is unlikely to be present in the Alternative 2 study area. It is possible that suitable vernal pool habitat for this species may develop

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
		invertebrates, and waste from other vernal pool species.	during the rainy season. This species has been recently documented between 1 and 5 miles of the Alternative 2 study area.
western bumble bee (*Bombus occidentalis*)	SC	This species can be found throughout the western United States and Canada and are not limited to any particular host plant.	**Alternative 1: Moderate.** Suitable habitat is present within the Alternative 1 study area and is within the species' known range. However, there are no occurrences documented within 5 miles of Alternative 1 study area based on CNDDB records. **Alternative 2: Moderate.** Suitable habitat is present within the Alternative 2 study area. This species has been documented between 1 and 5 miles of the Alternative 2 study area; however, the single record is over 30 years old.
Mammals			
salt marsh harvest mouse (*Reithrodontomys raviventris*)	FE, SE, FP	This species inhabits salt marshes in California and is adapted to live in marsh vegetation, including pickleweed and cordgrass, which provide cover, food sources, and breeding habitats. Breeding typically occurs between March and October. Diet consists of marsh vegetation, including seeds, stems, and leaves.	**Alternative 1: Low.** This species has been recently documented between 1 and 5 miles of the Alternative 1 study area. Upland foraging habitat is present adjacent to the Delta in the southern reach of the Alternative 1 study area. However, marsh habitat is not present within the Alternative 1 study area and this area lacks the large stands of pickleweed and cordgrass preferred by the species;

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
			therefore, the Alternative 1 study area is unlikely to support breeding. **Alternative 2: Low.** This species has been recently documented within 0.25 miles of the Alternative 2 study area. Upland foraging habitat is present adjacent to the Delta in the southern reach of the Alternative 2 study area. However, marsh habitat is not present within the Alternative 2 study area and this area lacks the large stands of pickleweed and cordgrass preferred by the species; therefore, the Alternative 2 study area is unlikely to support breeding.
San Joaquin kit fox (*Vulpes macrotis mutica*)	FE; ST	This species inhabits a variety of open habitats, including grasslands, chenopod scrublands, and semi-arid regions. Breeding occurs from January to March, with a gestation period of 49 to 55 days. The female constructs a den in the ground, often utilizing existing burrows dug by other animals. Its diet primarily consists of small mammals, such as rodents, rabbits, and ground squirrels.	**Alternative 1: Low.** Grassland habitat suitable for foraging and denning is present within the Alternative 1 study area. No occurrences for this species are documented within 5 miles of Alternative 1 study area based on CNDDB records but is within the species' known range. **Alternative 2: Low.** Grassland habitat suitable for foraging and denning is present within the Alternative 2 study area. No occurrences for this species are documented within 5 miles of Alternative 2 study area based on CNDDB records but is within the species' known range.

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
western red bat (*Lasirurs blossevillii*)	SSC, WBWG-H	This species occurs in a variety of habits, including forests, woodlands, and riparian areas. It roosts and forages among trees and vegetation and exhibits a preference for mixed coniferous and deciduous forests. Breeding occurs in the spring and early summer. This species typically seeks out tree foliage, such as leaves or branches, to create roosting sites. The diet consists mainly of insects, such as moths, beetles, and flies.	**Alternative 1: Low (Roosting). Low (Foraging).** Marginally suitable roosting habitat is present in the Alternative 1 study area within the limited stands of trees, but forest habitat is generally lacking. Suitable foraging habitat is present but no occurrences are documented for this species within 5 miles of Alternative 1 study area based on CNDDB records. **Alternative 2: Low (Roosting) Moderate (Foraging).** Marginally suitable roosting habitat is present in the Alternative 2 study area within the limited stands of trees, but forest habitat is generally lacking. Suitable foraging habitat is present and this species has been recently documented between 1 to 5 miles of the Alternative 2 study area.
Reptiles			
giant garter snake* (*Thamnophis gigas*)	FT; ST	This semi-aquatic species inhabits marshes, wetlands, and slow-moving bodies of water. It is often closely associated with water sources, which serve as its hunting grounds. Breeding typically occurs in the spring and early summer. After mating, females give birth to live young. The diet primarily consists of	**Alternative 1: None.** This species has been recently documented between 1 and 5 miles of the Alternative 1 study area, but suitable freshwater wetland habitat is not present within the Alternative 1 study area. **Alternative 2: Low.** Potentially suitable freshwater emergent wetland habitat is present north of the Alternative 2 study area, but not

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
		small fish, amphibians, and aquatic invertebrates.	directly within the work areas. This species has been recently documented between 1 and 5 miles of the Alternative 2 study area.
Northern California legless lizard (*Anniella pulchra*)	SSC	This species is found in grasslands, chaparral, and open woodlands and requires loose, friable soils for burrowing. Breeding typically occurs in the spring or early summer. Females lay small clutches of eggs in underground burrows or hidden areas. The diet primarily consists of small invertebrates, such as insects, spiders, and other arthropods.	**Alternative 1: Low.** Grassland habitat for this species is present within the Alternative 1 study area but chaparral and woodland habitat is lacking. No occurrences documented within 5 miles of the Alternative 1 study area based on CNDDB records. **Alternative 2: Moderate.** Grassland habitat for this species is present within the Alternative 2 study area but chaparral and woodland habitat is lacking. This species has been recently documented between 1 and 5 miles of the Alternative 2 study area.
northwestern pond turtle (*Actinemys marmorata*)	FPT; SSC	This freshwater turtle species primarily inhabits ponds, lakes, and slow-moving streams with suitable basking sites. It spends a significant amount of time basking on logs or rocks. Breeding typically occurs in the spring and early summer. Females dig nests in sandy or gravelly areas near water, where they lay their eggs. The hatchlings emerge several months later and make their way to the water. The diet	**Alternative 1: Moderate.** Wetland habitat is present within the Alternative 1 study area with areas of open water in the southern reach of the Alternative 1 study area north of the Delta. NWI wetland features are present throughout the Alternative 1 study area and may provide suitable foraging and dispersal habitat. This species has been recently documented between 1 and 5 miles of the Alternative 1 study area.

Common Name (*Scientific Name*)	Listing Status[a]	Habitat and Life History	Potential to Occur in the Alternative 1 or Alternative 2 Study Areas
		is omnivorous and consists of various aquatic plants, insects, small fish, and amphibians.	**Alternative 2: Moderate.** Wetland habitat is present within the Alternative 2 study area with areas of open water in the southern reach of the Alternative 2 study area north of the Delta. NWI wetland features are present throughout the Alternative 2 study area and may provide suitable foraging and dispersal habitat. This species has been recently documented between 1 and 5 miles of the Alternative 2 study area.

* Evaluated for the Proposed Project and determined to have no potential to occur within the Proposed Project.

** Not evaluated for the Proposed Project because database record searches found no records within the vicinity of the Proposed Project.

[a] Explanation of listing status codes:

Federal

- FE: Federally listed as endangered
- FT: Federally listed as threatened
- PT: Proposed to be federally listed as threatened
- BCC: United States (U.S.) Fish and Wildlife Service (USFWS) Bird of Conservation Concern
- BGEPA: Bald and Golden Eagle Protection Act

State

- Delisted (S): Delisted from the State
- SE: State-listed as endangered
- ST: State-listed as threatened
- SC: State candidate for listing as threatened or endangered
- SSC: Species of Special Concern
- FP: Fully protected species
- WL: Watch List species

- WBWG-H: Western Bat Working Group high designation

Source: (AECOM 2018a; 2018b; Area West Environmental, Inc. 2017; CDFW 2025b; 2025c; 2025a; Cornell Lab of Ornithology (CLO) 2025j; 2024; 2025i; 2025h; 2025g; 2025f; 2025e; 2025d; 2025c; 2025b; 2025a; Hatfield et al. 2015; National Audubon Society 2025; NatureServe 2025; USFWS 2025b; 2025d; 2023; 2025c; Xerces Society for Invertebrate Conservation 2025)

INSIGNIA ENVIRONMENTAL

LS POWER GRID CALIFORNIA, LLC

COLLINSVILLE 500/230 KILOVOLT SUBSTATION PROJECT

BREEDING SEASON BURROWING OWL SURVEY REPORT

OCTOBER 2025

PREPARED FOR:

LS Power

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Attachment B: Burrowing Owl Survey Results and Vegetation Communities Map
Attachment C: Photograph

1 – INTRODUCTION

LS Power Grid California, LLC (LSPGC) retained Insignia Environmental (Insignia) to conduct a habitat assessment and focused surveys for the western burrowing owl (*Athene cunicularia hypogea*) for the Collinsville 500/230 Kilovolt (kV) Substation Project (Proposed Project) in Contra Costa, Sacramento, and Solano counties in California. The Proposed Project would involve the construction of a new 500/230 kV substation (Collinsville Substation), the construction of two new 500 kV single-circuit transmission line segments that will loop Pacific Gas and Electric Company's (PG&E's) existing Vaca Dixon-Tesla 500 kV Transmission Line into the proposed LSPGC Collinsville Substation, and the construction of one new 230 kV double-circuit transmission line that would connect the proposed LSPGC Collinsville Substation to PG&E's existing Pittsburg Substation. The Proposed Project's general location is depicted in Figure 1: Project Overview Map, and the Proposed Project components are depicted in Figure 2: Project Components Map.

Insignia conducted a habitat assessment for the Proposed Project in 2023, as documented in Attachment A: Collinsville 500/230 Kilovolt Substation Project Burrowing Owl Habitat Assessment Memo. This report acts as an extension of the habitat assessment and documents the methodology and results of the breeding season survey conducted by Insignia between April 2025 and June 2025. Additionally, this report fulfills the reporting requirements outlined in the *Staff Report on Burrowing Owl Mitigation* (Survey Protocol) (California Department of Fish and Wildlife [CDFW] 2012).

1.0 PROJECT DESCRIPTION

1.0.0 Project Location

As depicted in Figure 1: Project Overview Map, the proposed LSPGC Collinsville Substation would be located near the unincorporated community of Collinsville in the southwestern portion of Solano County. The burrowing owl survey area is bordered on the south and southwest by the Sacramento River, where it debouches into Suisun Bay; on the west by the Montezuma Hills and Suisun Marsh; and to the north and east by agricultural lands. The Proposed Project would create a connection to PG&E's existing Pittsburg Substation, which is located in the city of Pittsburg in the northern portion of Contra Costa County. The Proposed Project is mapped on the Antioch North, California, United States (U.S.) Geological Survey (USGS) 7.5-minute series topographic quadrangles (USGS 2025).

1.0.1 Project Overview

The main components are depicted on Figure 2: Project Components Map and include the following:

- Constructing a new 500/230 kV substation (the proposed LSPGC Collinsville Substation).
- Constructing two new approximately 1.2-mile-long, single-circuit 500 kV transmission line segments extending to interconnect (or "loop") PG&E's existing Vaca Dixon-Tesla 500 kV Transmission Line into the proposed LSPGC Collinsville Substation.

- Constructing a new approximately 6-mile-long, double-circuit 230 kV transmission line to connect the proposed LSPGC Collinsville Substation to PG&E's existing Pittsburg Substation.

- Extending and connecting PG&E's existing 12 kV Peabody 2107 Circuit distribution line to the proposed LSPGC Collinsville Substation.

- Constructing two new telecommunications paths to the proposed LSPGC Collinsville Substation, including a new microwave tower that would be constructed and owned by PG&E at the proposed substation, as well as a new fiber optic path consisting of two fiber optic cables for redundancy that would be installed between existing fiber in the city of Pittsburg and the proposed substation.

- Constructing three new PG&E 500 kV transposition structures, removing two existing lattice steel poles (LSPs), and replacing two existing lattice steel towers with two new three-pole dead-end tubular steel poles along PG&E's existing Vaca Dixon-Tesla 500 kV Transmission Line.

1.1 BURROWING OWL NATURAL HISTORY

The burrowing owl is a small ground-dwelling owl. The owl is long-legged and short-tailed, with relatively long, narrow wings and a flat head with no ear tufts. Distinguishing markings on the burrowing owl include pale eyebrows, a white throat, and a spotted dark brown and buffy breast (Sibley 2000). Burrowing owls are comparatively easy to see because they are often active in daylight, and they are surprisingly bold and approachable. The females are usually darker than the males (The Institute for Bird Populations 2007).

The burrowing owl prefers annual and perennial grasslands, typically with sparse or nonexistent tree or shrub canopies (covering less than 30 percent of the ground surface), but it persists and even thrives in some landscapes that are highly altered by human activity. The overriding characteristic of suitable habitat appears to be burrows for roosting or nesting; in California, burrowing owls are found in close association with California ground squirrel (*Otospermophilus beecheyi*). Ground squirrels provide nesting and refuge burrows, and aid in the maintenance of short vegetation height, which provides foraging habitat and allows for visual detection of avian predators by burrowing owls. In the absence of ground squirrel populations, burrowing owls may use surrogate burrows (e.g., standpipes, debris piles, rock piles, and other man-made structures) for nesting (Shuford and Gardali 2008). Western burrowing owl was declared a candidate species for listing under the California Endangered Species Act by the CDFW on October 10, 2024.

Figure 1: Project Overview Map **Collinsville 500/230 Kilovolt Substation Project**

- Proposed LSPGC Collinsville Substation
- Existing PG&E Pittsburg Substation
- Proposed PG&E 500 kV Transposition Structure
- Proposed Project Transmission Lines
- Proposed PG&E 12 kV Distribution Line
- Proposed LSPGC Telecommunications Line
- Existing PG&E Vaca Dixon-Tesla Transmission Line
- Navigational Channel

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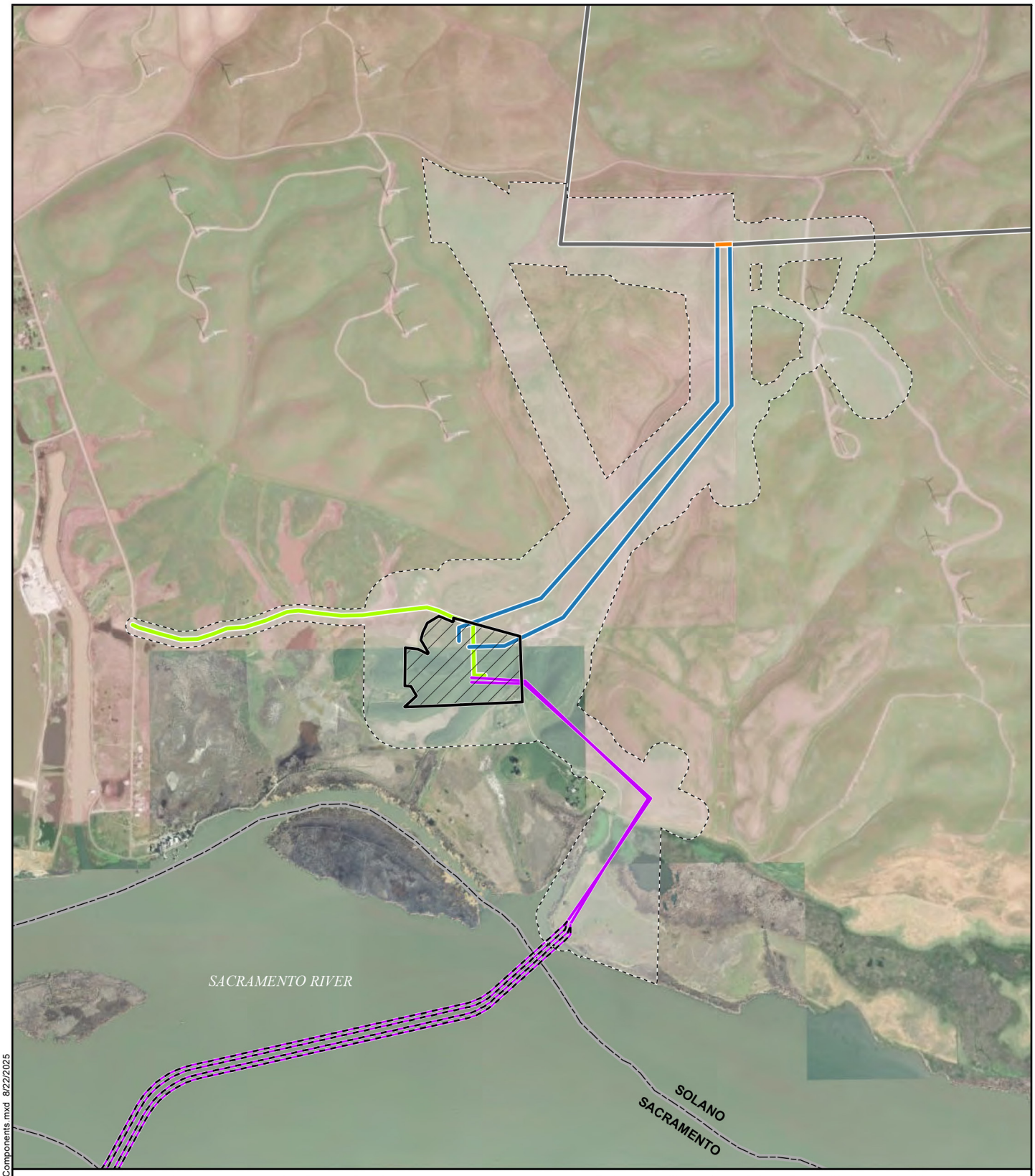

Figure 2: Project Components Map 1 of 2 **Collinsville 500/230 Kilovolt Substation Project**

- Existing PG&E 500 kV Overhead Transmission Line
- Proposed LSPGC 230 kV Overhead Segment
- Proposed LSPGC 230 kV Submarine Segment
- Proposed PG&E 12 kV Distribution Line
- Proposed PG&E 500 kV Interconnection
- Existing PG&E 500 kV Overhead Transmission Line to be Removed
- County Boundary
- Habitat Assessment Area
- Proposed Collinsville Substation

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Figure 2: Project Components Map 2 of 2 **Collinsville 500/230 Kilovolt Substation Project**

- Proposed LSPGC 230 kV Submarine Segment
- Proposed LSPGC 230 kV Underground Segment
- Proposed LSPGC Telecommunications Line
- Habitat Assessment Area
- Existing PG&E Pittsburg Substation
- Proposed Riser
- Proposed Utility Vault

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2 – METHODS

Prior to initiating field surveys, a review of previous reports, electronic databases, and other sources was conducted to assess the history of burrowing owl presence, activity, and habitat suitability in the Proposed Project vicinity (i.e., within 5 miles of the Proposed Project). Sources reviewed included the following:

- Database searches of the California Natural Diversity Database (CDFW 2025),
- Burrowing Owl Survey Protocol and Mitigation Guidelines (California Burrowing Owl Consortium [CBOC] 1993),
- Survey Protocol (CDFW 2012),
- Soil Survey (U.S. Department of Agriculture [USDA] 2025), and
- Aerial photography.

2.0 SURVEY PROTOCOL

As documented in Attachment A: Collinsville 500/230 Kilovolt Substation Project Burrowing Owl Habitat Assessment Memo and in accordance with Appendix C of the Survey Protocol, a habitat assessment was conducted within the Proposed Project's Habitat Assessment Area[1] to determine whether the site contained habitat suitable for burrowing owls.

The assessment concluded that the Habitat Assessment Area provides only marginal habitat for burrowing owl occupation. Marginal habitat is present in nonnative annual grasslands located in the immediate uplands surrounding aquatic features, along fence lines, and adjacent to unpaved access roads. However, these areas lack suitable burrows or burrow surrogates, and the presence of fossorial mammals (which are essential for creating burrows) was limited. In addition, the soil types in grassland habitats surrounding aquatic features are poorly draining, further reducing suitability for burrowing owl habitation.

Although only marginal habitat was identified within the Habitat Assessment Area—not meeting the full definition of suitable habitat outlined in Appendix A of the Survey Protocol—the Proposed Project's Proponent's Environmental Assessment (Insignia 2024a) commits LSPGC to conducting up to four protocol-level surveys for burrowing owl, in accordance with the Survey Protocol, prior to the initiation of construction. Accordingly, Insignia staff conducted breeding season surveys in accordance with Appendix D of the Survey Protocol within all accessible portions of the Habitat Assessment Area. These surveys were designed to determine whether potential burrows or live owls were present within marginal burrowing owl habitat identified during the habitat assessment. For purposes of the Survey Protocol, potential burrows are defined

[1] As documented in Attachment A: Collinsville 500/230 Kilovolt Substation Project Burrowing Owl Habitat Assessment Memo, the Proposed Project-specific habitat assessment accounted for a majority of the potentially suitable habitat within 500 feet of the Proposed Project; substantial portions of the unassessed areas are developed or are open water and lack suitable habitat for the species. All areas north of the Sacramento-San Joaquin River Delta (Delta) were covered by a previous habitat assessment associated with the Solano Phase 4 Wind Project. Further, LSPGC does not have landowner permission to conduct any additional field surveys. Due to the consistent nature of the vegetation, soil types, and land use in the vicinity of the Proposed Project and ample previous studies in the area, the desktop analysis was sufficient to identify burrowing owl habitat within the Habitat Assessment Area.

as burrows showing burrowing owl sign (e.g., the presence of owls, pellets, prey remains, whitewash, or decoration).

Four survey visits were completed in accordance with the Survey Protocol between April and June 2025, as detailed in Table 1: Survey Data. One survey visit was conducted between February 15 and April 15, 2025, and three additional visits were conducted between April 15 and July 15, 2025; each visit was at least 3 weeks apart.

Insignia biologists walked transects spaced no more than 10 meters (approximately 100 feet) apart within marginal burrowing owl habitat to document potential burrows. The locations of potential burrows were recorded using a submeter-accurate Global Positioning System device. At the beginning of each transect, and at least every 100 meters, the entire visible Proposed Project area was scanned with binoculars. Bird vocalizations were also monitored while biologists walked transects.

Breeding season surveys were conducted during weather conditions conducive to observing owls outside their burrows and detecting burrowing owl sign, and in the morning during the optimal detectability window (i.e., between the 2 hours before sunrise and 1 hour after sunrise). Surveys were not conducted during rain; within 5 days of a rain event; or under high winds (i.e., winds greater than 20 miles per hour [mph]), dense fog, or temperatures exceeding 90 degrees Fahrenheit (°F). Although surveys frequently extended beyond the optimal detectability window for the species, all suitable burrowing owl habitat identified within the Habitat Assessment Area was evaluated during the optimal detectability window. The remainder of each survey day (i.e., the time outside the optimal detectability window) was used to evaluate suitable burrowing owl habitat within suitable landcover types where fossorial mammal activity had not previously been recorded. These land cover types were exclusively located north of the Delta.

Table 1: Survey Data

Date	Survey Time	Biologists	Temperature (°F)	Precipitation (inches)	Wind Speed (mph)	Cloud Cover (%)	Visibility (miles)
04/10/2025	0500-1300	Mark Oates and Joshua Rodriguez	51-79	0.0	0-9	0	10
05/01/2025	0500-1300	Mark Oates and Sidney Wells	51-79	0.0	0-10	0	10
05/22/2025	0500-1200	Mark Oates and Sidney Wells	62-79	0.0	6-12	0	10
06/16/2025	0500-1100	Mark Oates and Sidney Wells	51-86	0.0	13-20	0	10

All Insignia biologists who conducted surveys for this burrowing owl protocol-level survey fulfilled all the biologist qualifications outlined in the Survey Protocol, including:

- Familiarity with the species and its local ecology;
- Experience conducting habitat assessments and non-breeding and breeding season surveys or experience conducting them under the direction of an experienced surveyor;
- Familiarity with the appropriate state and federal statutes related to burrowing owl, scientific research, and conservation; and
- Experience with analyzing impacts of development on burrowing owls and their habitat, as detailed in Table 1: Survey Data.

3 – RESULTS

3.0 SURVEY

No burrowing owls or potential burrows were detected during breeding season surveys. The Habitat Assessment Area continues to provide only marginal habitat for the species. However, in one area just south of Talbert Lane, along a north-south fence line, ground squirrels were observed establishing burrows. This activity was not recorded during the 2023 habitat assessment, indicating that the area has only recently been colonized. These burrows would be suitable for burrowing owl occupation and are shown on pages 8 and 9 of Attachment B: Burrowing Owl Survey Results and Vegetation Communities Map. However, they are located along an electrified barbed-wire fence line and did not contain any burrowing owl sign. A representative photograph of this suitable habitat is provided in Attachment C: Photograph.

No other suitable burrowing owl habitat was observed within the Habitat Assessment Area, and no ground squirrels or other fossorial mammals were observed at any additional locations.

3.1 GENERAL WILDLIFE SPECIES

Other wildlife species observed during surveys include 11 species of birds and four species of mammals. The following species were identified:

- Black-tailed jackrabbit (*Lepus californicus*),
- Coyote (*Canis latrans*),
- Desert cottontail (*Sylvilagus audubonii*),
- Great egret (*Ardea alba*),
- House finch (*Haemorhous mexicanus*),
- Killdeer (*Charadrius vociferus*),
- Mallard (*Anas platyrhynchos*),
- Northern harrier (*Circus cyaneus*),
- Red-tailed hawk (*Buteo jamaicensis*),
- Red-winged blackbird (*Agelaius phoeniceus*),
- Ring-necked pheasant (*Phasianus colchicus*),
- River otter (*Lontra canadensis*),
- Turkey vulture (*Cathartes aura*),

- White-crowned sparrow (*Zonotrichia leucophrys*), and
- White pelican (*Pelecanus erythrorhynchos*).

Notably, coyotes and red-tailed hawks—both known burrowing owl predators—were observed within the Habitat Assessment Area during surveys. No evidence of burrowing owl predation was observed.

4 – CONCLUSIONS

Burrowing owls and burrowing owl sign were not detected during the surveys. The timing and weather conditions under which breeding season surveys were conducted met the requirements of the Survey Protocol: surveys occurred during the breeding season, they occurred between the 2 hours before sunrise and 1 hour after sunrise, and they were not conducted under adverse weather conditions (e.g., rain, within 5 days of a rain event, winds greater than 20 mph, dense fog, or temperatures exceeding 90°F). Therefore, if burrowing owls or their sign had been present on site, the probability of detection during the surveys would have been high.

As presented in Attachment A: Collinsville 500/230 Kilovolt Substation Project Burrowing Owl Habitat Assessment Memo, habitat suitable for nesting and overwintering is scarce; however, burrowing owls may still forage and disperse within the Habitat Assessment Area north of the Delta. Several records of overwintering owls occur within 5 miles of the Proposed Project, but no records have been documented within the Habitat Assessment Area itself. Further, breeding season records from the area north of the Delta—where soils and vegetation may otherwise be suitable—have either been potentially extirpated or show no evidence of breeding activity for nearly 25 years. In addition, the presence of predators such as coyotes and red-tailed hawks, both known burrowing owl predators, further reduces the suitability of the area for burrowing owl occupation. Suitable burrow habitat established by ground squirrels in the northern portion of the Habitat Assessment Area may provide overwintering habitat or stopovers for dispersing owls. However, the presence of an electrified fence immediately adjacent to these burrows may limit their suitability.

In summary, breeding season surveys indicate that no habitat within the Habitat Assessment Area is currently being used by breeding burrowing owls.

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ATTACHMENT A: COLLINSVILLE 500/230 KILOVOLT SUBSTATION PROJECT BURROWING OWL HABITAT ASSESSMENT MEMO

MEMO

Collinsville 500/230 Kilovolt Substation Project Burrowing Owl Habitat Assessment Memo

To: Dustin Joseph, LS Power Grid California (LSPGC)

From: Mark Oates, Insignia Environmental (Insignia)

Date: December 4, 2024

INTRODUCTION

LSPGC retained Insignia to conduct a habitat assessment for the western burrowing owl (*Athene cunicularia hypogea*) for the Collinsville 500/230 Kilovolt (kV) Substation Project (Proposed Project). The Proposed Project's general location and the Proposed Project components are depicted in Attachment A: Project Overview Map. The Proposed Project involves the construction of a new 500/230 kV substation (Collinsville Substation), the construction of two new 500 kV single-circuit transmission line segments that would interconnect Pacific Gas and Electric Company's (PG&E's) existing Vaca Dixon-Tesla 500 kV Transmission Line into the proposed Collinsville Substation, and the construction of one new 230 kV double-circuit transmission line that would connect the proposed Collinsville Substation to PG&E's existing Pittsburg Substation. The Proposed Project has been designed to address overloads on the existing Contra Costa-Newark 230 kV corridor and provide an additional supply into the northern greater San Francisco Bay Area to increase reliability to the area and advance additional renewable generation.

This Burrowing Owl Habitat Assessment Memo was prepared to evaluate the likelihood that the Proposed Project and its associated habitat assessment area support burrowing owl individuals or suitable habitat for the species, in accordance with the habitat assessment recommendations outlined in *Appendix C, Habitat Assessment and Reporting Details* of the *Staff Report on Burrowing Owl Mitigation* (Protocol) (California Department of Fish and Wildlife [CDFW] 2012). A habitat assessment is the first step in evaluating the potential impacts of the Proposed Project on the species and will inform whether focused surveys for the species are necessary.

PROJECT COMPONENTS

The main components of the Proposed Project are depicted in Attachment A: Project Overview Map and include the following:

- A new approximately 11-acre 500/230 kV substation near the unincorporated community of Collinsville in Solano County (Proposed LSPGC Collinsville Substation);
- Two new approximately 1.5-mile-long single-circuit 500 kV onshore transmission line segments (Proposed PG&E 500 kV Interconnection) that would interconnect PG&E's

existing Vaca Dixon-Tesla 500 kV Transmission Line into the proposed Collinsville Substation;[1]

- A new approximately 6-mile-long double-circuit 230 kV transmission line that would connect the proposed Collinsville Substation to PG&E's existing Pittsburg Substation, including the following components:

    - An approximately 1-mile-long overhead transmission line segment that would connect the proposed Collinsville Substation to transition structures on the north side of the Sacramento-San Joaquin River Delta (Delta) waterways (Proposed LSPGC 230 kV Overhead Segment),

    - Four approximately 4.5-mile-long submarine cables installed 6 to 15 feet below the sediment surface (Proposed LSPGC 230 kV Submarine Segment), and

    - An onshore underground utility vault near PG&E's existing Pittsburg Substation that would transition the submarine cables to underground cables that would terminate at approximately two new riser poles adjacent to PG&E's existing Pittsburg Substation (Proposed LSPGC 230 kV Underground Segment), where the conductors would transition from underground cables to overhead lines; and

- Two new telecommunications paths to the proposed Collinsville Substation (a new microwave tower that would be constructed at the substation and a new fiber optic path that would be installed between existing fiber in the City of Pittsburg and the proposed Collinsville Substation (Proposed LSPGC Telecommunications Extension).

METHODS

Desktop Review

Ahead of all field surveys, a review of previous reports, electronic databases, and other sources was conducted to assess the history of burrowing owl presence, activity, and habitat suitability in the Proposed Project vicinity (up to 5 miles). Sources reviewed included the following:

- Aerial photography (Google Earth 2024),
- Database searches of the California Natural Diversity Database (CNDDB) (CDFW 2024a),[2]
- California Wildlife Habitat Relationships (CWHR) species range maps (CDFW 2024b),
- Web Soil Survey (Natural Resources Conservation Service [NRCS] 2024),
- Sacramento Municipal Utility District Solano 4 Wind Project (Solano 4), Burrowing Owl Habitat Assessment (AECOM 2018), and
- The Solano County General Plan Land Use Element (Solano County 2008).

[1] PG&E would be responsible for the final configuration of the northern tie-in of the 500 kV loop-in between the proposed Collinsville Substation and the existing Vaca Dixon-Tesla 500 kV Transmission Line. LSPGC would be responsible for the installation of dead-end structures near the proposed Collinsville Substation to facilitate looping in the 500 kV lines.

[2] The CNDDB search included a 5-mile buffer around the Proposed Project footprint.

Field Survey Method

The geographical boundaries of the Proposed Project components were provided by LSPGC in the form of Geographic Information System shapefiles. As outlined in Attachment B: Biological Resources Map, a habitat assessment area was established to include all terrestrial areas within 100 to 500 feet of Proposed Project components.

On the dates of May 23 to 26, 30, and 31; June 9; July 10, 11, and 12; September 21 and 22; and December 19, 2023, Insignia biologists conducted habitat assessments to characterize the existing conditions within the habitat assessment area and identify potential biological resources, including habitat for burrowing owl, that may occur. Approximately 569.7 acres of terrestrial habitat and land cover were surveyed.

Insignia biologists searched for areas of potential burrowing owl habitat by walking meandering transects that covered 100 percent of the habitat assessment area that was accessible. Areas that were inaccessible due to tall, non-transparent fencing and/or lack of landowner permission were observed to the greatest extent feasible from adjacent and accessible properties. Biologists noted the presence or absence of burrows and conducted an inspection of burrows for burrowing owl sign as defined by the Protocol, including tracks, molted feathers, cast pellets, prey remains, eggshell fragments, owl whitewash, nest burrow decoration materials, possible owl perches, and other relevant indicators.

As part of the habitat assessment, natural communities were mapped; other non-vegetative land covers were documented as well. The biologists identified dominant species and mapped the natural community and land cover boundaries using a submeter-accurate Global Positioning System unit.

Surveys were conducted during daylight hours with clear to partly cloudy skies and did not occur in inclement weather conditions or fog cover. Temperatures ranged from 65 to 91 degrees Fahrenheit with wind speeds between 5 and 20 miles per hour.

RESULTS

Desktop Review

Range and Occurrence Data

As shown in Attachment C: Burrowing Owl Range and Occurrence Data, CWHR maps indicate that the entire habitat assessment area occurs within the recognized year-round range of burrowing owl (CDFW 2024a). Further, as shown in Attachment C: Burrowing Owl Range and Occurrence Data, there are 17 CNDDB records of burrowing owls within 5 miles of the Proposed Project. The closest burrowing owl observation was recorded in 2010, approximately 0.3 mile from the Proposed Project, in the Collinsville-Montezuma Hills Wind Resource Area with a record accuracy of 80 meters (CDFW 2024a). The closest CNDDB record of a breeding pair of burrowing owls is an observation from 2000 in the Montezuma Wetlands, approximately 1.2 miles from the Proposed Project. However, the last observation of owls at this location occurred during protocol-level burrowing owl surveys conducted in accordance with the *Burrowing Owl Survey Protocol and Mitigation Guidelines* (California Burrowing Owl Consortium 1993) in 2007, in association with Phase 1 of the Montezuma Wetlands Restoration Project. Subsequent protocol-level surveys conducted for this project in 2010 and 2011 did not detect any burrowing owls. The next-closest CNDDB record of a breeding pair is 1.6 miles from the Proposed Project, also in the Montezuma Wetlands, and is potentially extirpated. No other CNDDB records of breeding pairs of burrowing owls occur within 5 miles of the Proposed

Project north of the Delta. A 2007 CNDDB record of a nesting pair was recorded within 2.6 miles of the Proposed Project south of the Delta.

Prior Assessments

The most recent burrowing owl habitat assessment was conducted in a location that fully overlaps the Proposed Project habitat assessment area (AECOM 2018) in support of the Solano 4 Environmental Impact Report (EIR). That assessment determined that suitable habitat for burrowing owl nesting and wintering sites may occur within isolated and limited patches of habitat or under specific conditions within the Proposed Project's habitat assessment area. These areas include annual grassland habitat with sparse vegetation, undisked agricultural lands, and unvegetated areas near fence lines and buildings, or where erosion exposes soil. No evidence of burrowing owl occupancy was detected during this habitat assessment. Focused surveys and take avoidance surveys for the species, in accordance with the Protocol, were proposed as a mitigation measure in the Solano 4 EIR; however, focused surveys were not conducted prior to the drafting and submittal of the Solano 4 EIR.

Soils

As depicted in Attachment D: Soils Crossed by the Proposed Project, the Proposed Project would be constructed on the following soil types:

- Clear Lake clay (Cc),
- Diablo-Ayar clays (DaC),
- Diablo-Ayar clays eroded (DaE2),
- Omni silt clay (Ob),
- Rincon clay loam (RbC),
- Tamba mucky clay (Ta),
- Valdez silty clay loam (Vd), and
- Valdez silt loam (Va).

DaE2, DaC, and RbC soil types are well-draining and would be suitable for burrowing owl occupancy. These soil types are present at the Proposed PG&E 500 kV Interconnection and portions of the Proposed LSPGC 230 kV Overhead Segment, Proposed PG&E 12 kV Distribution Line, and Proposed LSPGC Telecommunications Line.

Land Use

The Proposed PG&E 500 kV Interconnection, Proposed LSPGC Collinsville Substation, Proposed LSPGC 230 kV Overhead Segment, and Proposed PG&E 12 kV Distribution Line would be located on lands designated as Agriculture by the Solano County General Plan Land Use Element and within the Solano County-identified Montezuma Hills agricultural region (Solano County 2008). Management practices include:

- Disking;
- Periodic agricultural burning;
- Grazing;
- Management for fire control; and
- Crop planting, growth, and harvest within a 3-year period.

The areas adjacent to the proposed PG&E 500 kV Interconnection, LSPGC Collinsville Substation, LSPGC 230 kV Overhead Segment have been developed and are in use as an

active windfarm. The Proposed LSPGC 230 kV Underground Segment and Proposed LSPGC Telecommunications Line would be located in industrial and residential areas within the city of Pittsburg.

Field Survey

Biological Setting

The habitat assessment area north of the Delta (Sections 22, 23, and 26; Township 3 North; Range 1 East; Mount Diablo Principal Meridian) consists of a series of gently rolling hills that transition to low-lying wetlands as they approach the Delta, while the habitat assessment area south of the Delta (Section 00; Township 2 North; Range 1 East; Mount Diablo Principal Meridian) is relatively flat and developed.

Vegetation

Vegetation within the habitat assessment area consists primarily of nonnative annual grasslands, particularly in the area north of the Delta. Portions of these areas were undergoing harvest at the time of the survey. In areas where agricultural harvest was not underway, evidence of livestock grazing and disking was observed, including extensive hoofprints and furrowing along hillsides that is indicative of prior disking. Vegetation varied in height, ranging from 1 to 6 feet in stands of black mustard (*Brassica nigra*), but was uniformly dense throughout; exposed soils were scarce and were primarily found along the edges of aquatic features. Freshwater and brackish wetland vegetation is found in the southern portion of the habitat assessment area north of the Delta, along with scattered shrubland and willow communities. Disturbed and developed land covers constitute the majority of the habitat assessment area south of the Delta where vegetation is ruderal, ornamental, or entirely absent.

Prey Availability

Multiple avian prey species for the burrowing owl were observed throughout the habitat assessment area north of the Delta and found to be abundant, including songbirds such as the house finch (*Haemorhous mexicanus*) and song sparrow *(Melospiza melodia*). Reptilian and amphibian prey species were not observed in the habitat assessment area, and suitable mammalian prey species, including California ground squirrel (*Otospermophilus beecheyi*), were found to be scarce throughout the area.

Burrows and Burrow Surrogates

Throughout the habitat assessment area, fossorial mammal activity was rare, and no small mammal burrows suitable for burrowing owl occupation (i.e., with burrow entrance diameters measuring 3 to 5 inches) were observed. Further, burrow surrogates (e.g., culverts, piles of concrete rubble, piles of soil, burrows created along soft banks of ditches and canals, pipes, and similar structures that could offer suitable alternative nesting and roosting habitat for the species) were not observed within the habitat assessment area. No evidence of burrowing owl presence nor their sign was observed.

CONCLUSION

The habitat assessment area provides limited suitable habitat for burrowing owl occupation. Marginal habitat is present in nonnative annual grasslands located in the immediate uplands surrounding aquatic features, along fence lines, and adjacent to unpaved access roads. However, these areas lack suitable burrows and burrow surrogates; in addition, the presence of fossorial mammals, which are essential for creating burrows, was limited. Further, in grassland

habitats surrounding aquatic features, the soil types are not well-draining (e.g., TA and VA), making them unsuitable for burrowing owl habitation.

Land use practices north of the Delta further reduce habitat suitability and limit the availability of habitat for burrowing owls and the fossorial mammals on which they depend for food and burrows. In fields surrounding the Proposed LSPGC 230 kV Overhead Segment and the Proposed PG&E 12 kV Distribution Line, fossorial mammals are scarce, but may reoccupy grassland habitats if these fields are left fallow, potentially creating suitable nesting and overwintering habitat, as well as additional foraging opportunities for burrowing owls. South of the Delta, existing development limits the availability of suitable habitat for the species.

Although habitat for nesting and overwintering is scarce, burrowing owls may still forage and disperse within the habitat assessment area north of the Delta. There are several records of overwintering owls within 5 miles of the Proposed Project, but no records have been documented within the habitat assessment area itself. Further, records documented during the breeding season in the area north of the Delta, where soils and vegetation may be suitable for the species, have either been potentially extirpated or show no recorded breeding activity in nearly 25 years. Nevertheless, the proximity of the habitat assessment area to recent records and the presence of suitable prey species within the area provide suitable foraging habitat for the species and potential dispersal habitat between breeding and overwintering sites. Therefore, while there is a low potential for burrowing owls to nest or overwinter within the habitat assessment area, there is a moderate potential for the species to use the site for foraging or dispersal.

As depicted in Attachment E: Habitat Assessment Area Comparison, the Proposed Project-specific habitat assessment accounted for a majority of the potentially suitable habitat within 500 feet of the Proposed Project (substantial portions of the unassessed areas are developed or are open water and lack suitable habitat for the species). All areas north of the Delta were covered by the previous habitat assessment associated with the Solano 4 project. Further, LSPGC does not have landowner permission to conduct any additional field surveys. Due to the consistent nature of the vegetation, soil types, and land use in the vicinity of the Proposed Project and ample previous studies in the area, no additional habitat assessment surveys are warranted.

As presented in the Proposed Project's Proponent's Environmental Assessment (Insignia 2024), LSPGC has committed to conducting up to four protocol-level surveys for burrowing owl, in accordance with the CDFW's staff report, within suitable grassland habitat prior to the initiation of construction. Take avoidance surveys for any active burrows would also be conducted prior to the start of construction.

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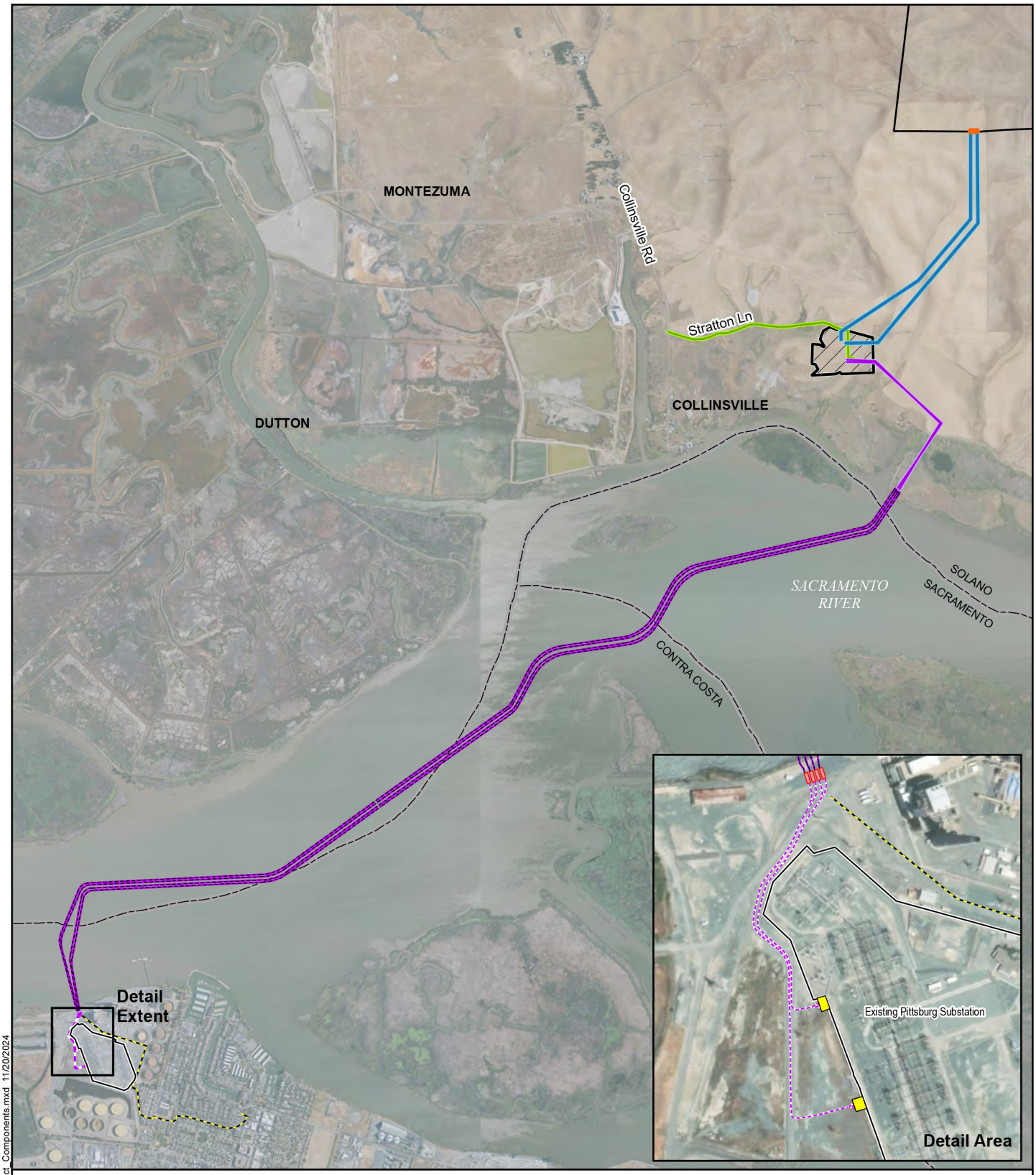
ATTACHMENT A: PROJECT OVERVIEW MAP



Attachment A: Project Overview Map

Collinsville 500/230 Kilovolt Substation Project

- Proposed LSPGC 230 kV Overhead Segment
- Proposed LSPGC 230 kV Submarine Segment
- Proposed LSPGC 230 kV Underground Segment
- Proposed PG&E 500 kV Interconnection
- Proposed PG&E 12 kV Distribution Line
- Existing PG&E 500 kV Transmission Line to be Removed
- County Boundary
- Existing PG&E Vaca Dixon-Tesla Transmission Line
- Existing Pittsburg Substation
- Proposed LSPGC Collinsville Substation Site
- Proposed LSPGC Telecommunications Line
- Proposed Riser
- Proposed Utility Vault

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0 2,000 4,000 Feet

LS POWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

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ATTACHMENT B: BIOLOGICAL RESOURCES MAP

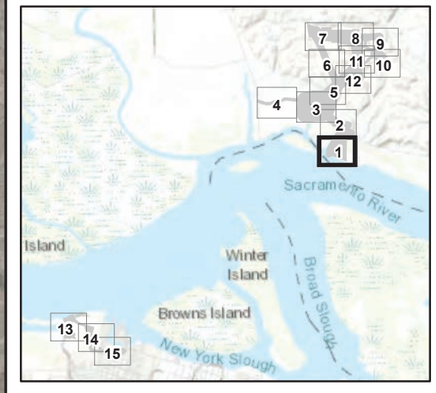
Attachment B:
Biological Resources Map
Map 1 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed LSPGC 230 kV Overhead Segment
- Proposed LSPGC 230 kV Submarine Segment
- Survey Area

Vegetation Community and Land Covers

- *Distichlis spicata* Herbaceous Alliance
- *Frankenia salina* Herbaceous Alliance
- *Juncus arcticus (var. balticus, mexicanus)* Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Rosa californica* Shrubland Alliance
- *Salix exigua* Shrubland Alliance
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- *Schoenoplectus acutus/rosa californica* Association
- Road/Bare Ground
- Open Water



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LSPOWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

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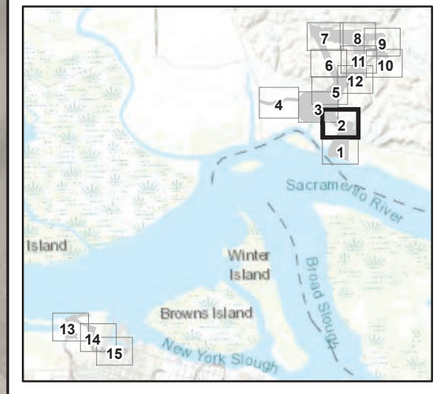
Attachment B:
Biological Resources Map
Map 2 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed LSPGC 230 kV Overhead Segment
- Proposed PG&E 12 kV Distribution Line
- Proposed LSPGC Collinsville Substation Site
- Survey Area

Vegetation Community and Land Covers

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Distichlis spicata* Herbaceous Alliance
- *Frankenia salina* Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Polygonum lapathifolium - Xanthium strumarium* Herbaceous Alliance
- *Rosa californica* Shrubland Alliance
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- Road/Bare Ground
- Open Water



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LSPOWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

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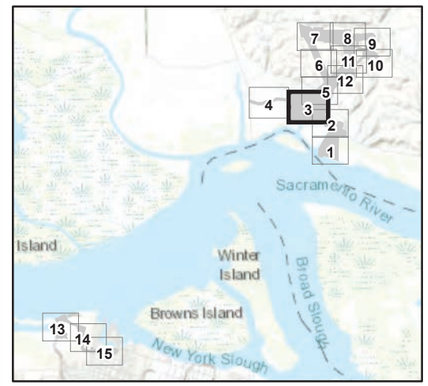
Attachment B:
Biological Resources Map
Map 3 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed LSPGC 230 kV Overhead Segment
- Proposed PG&E 500 kV Interconnection
- Proposed PG&E 12 kV Distribution Line
- Proposed LSPGC Collinsville Substation Site
- Survey Area

Vegetation Community and Land Covers

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Distichlis spicata* Herbaceous Alliance
- *Frankenia salina* Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Polygonum lapathifolium - Xanthium strumarium* Herbaceous Alliance
- *Sarcocornia pacifica* Herbaceous Alliance
- *Rosa californica* Shrubland Alliance
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- *Schoenoplectus americanus* Herbaceous Alliance
- *Typha (angustifolia, domingensis, latifolia)* Herbaceous Alliance
- Road/Bare Ground



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LSPOWER GRID CALIFORNIA

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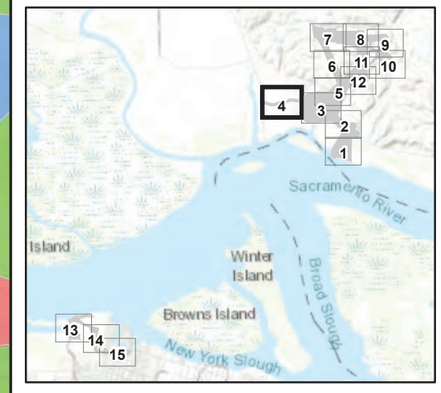
Attachment B:
Biological Resources Map
Map 4 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed PG&E 12 kV Distribution Line
- Survey Area

Vegetation Community and Land Covers

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Distichlis spicata* Herbaceous Alliance
- *Frankenia salina* Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Sarcocornia pacifica* Herbaceous Alliance
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- Road/Bare Ground
- Developed



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LSPOWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

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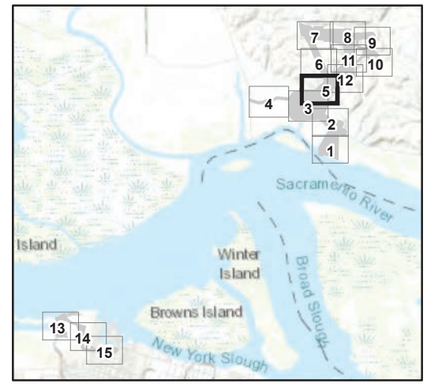
Attachment B:
Biological Resources Map
Map 5 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed PG&E 500 kV Interconnection
- Proposed PG&E 12 kV Distribution Line
- Proposed LSPGC Collinsville Substation Site
- Survey Area

Vegetation Community and Land Covers

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Distichlis spicata* Herbaceous Alliance
- *Frankenia salina* Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Typha (angustifolia, domingensis, latifolia)* Herbaceous Alliance
- Road/Bare Ground



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LSPOWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

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Attachment B:
Biological Resources Map
Map 6 of 15

Collinsville 500/230 Kilovolt Substation Project

Proposed PG&E 500 kV Interconnection

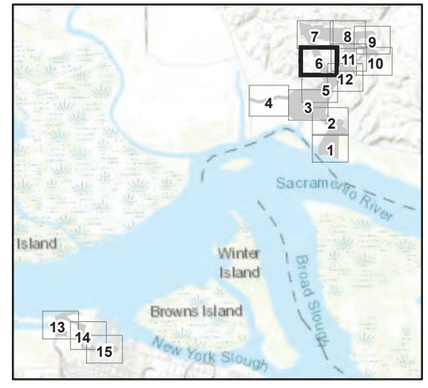
Survey Area

Vegetation Community and Land Covers

Brassica nigra - Centaurea (solstitialis, melitensis) Herbaceous Semi-Natural Alliance

Lolium perenne Herbaceous Semi-Natural Alliance

Road/Bare Ground



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LS POWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

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Attachment B:
Biological Resources Map
Map 7 of 15

Collinsville 500/230 Kilovolt Substation Project

Existing PG&E Vaca Dixon-Tesla Transmission Line

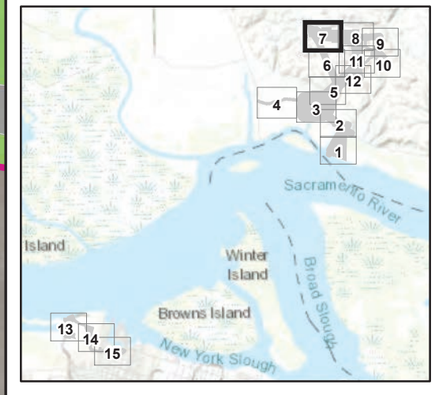
Survey Area

Vegetation Community and Land Covers

Brassica nigra - Centaurea (solstitialis, melitensis) Herbaceous Semi-Natural Alliance

Lolium perenne Herbaceous Semi-Natural Alliance

Road/Bare Ground



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LSPOWER GRID CALIFORNIA

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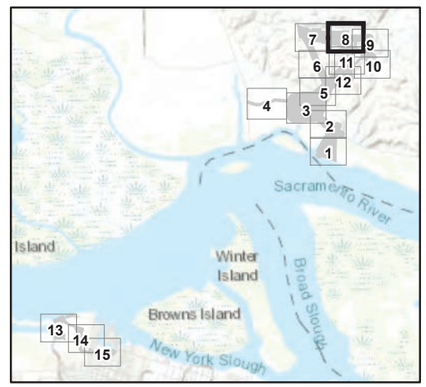
Attachment B:
Biological Resources Map
Map 8 of 15

Collinsville 500/230 Kilovolt Substation Project

- Existing PG&E 500 kV Transmission Line to be Removed
- Proposed PG&E 500 kV Interconnection
- Existing PG&E Vaca Dixon-Tesla Transmission Line
- Survey Area

Vegetation Community and Land Covers

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- Road/Bare Ground



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LSPOWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

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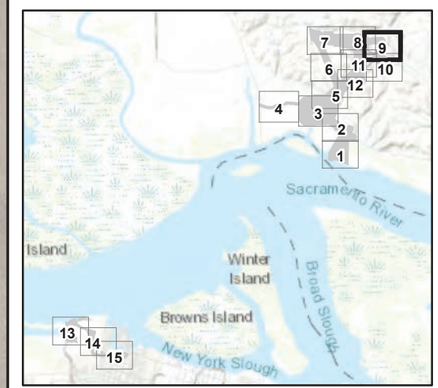
Attachment B:
Biological Resources Map
Map 9 of 15

Collinsville 500/230 Kilovolt Substation Project

- Existing PG&E Vaca Dixon-Tesla Transmission Line
- Survey Area

Vegetation Community and Land Covers

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- Road/Bare Ground



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LSPOWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

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Attachment B:
Biological Resources Map
Map 10 of 15

Collinsville 500/230 Kilovolt Substation Project

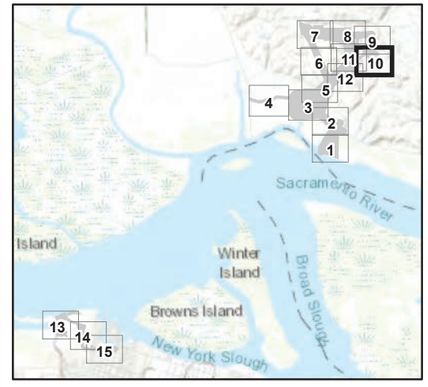
Survey Area

Vegetation Community and Land Covers

Brassica nigra - Centaurea (solstitialis, melitensis) Herbaceous Semi-Natural Alliance

Lolium perenne Herbaceous Semi-Natural Alliance

Road/Bare Ground



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LSPOWER GRID CALIFORNIA

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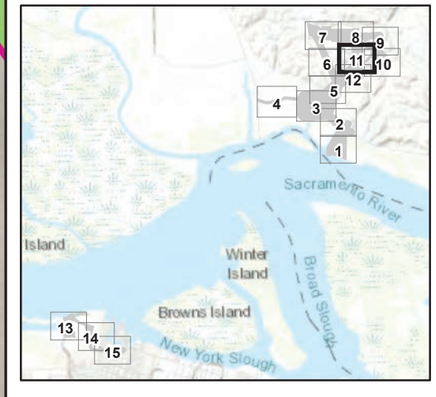
Attachment B:
Biological Resources Map
Map 11 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed PG&E 500 kV Interconnection
- Survey Area

Vegetation Community and Land Covers

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- Road/Bare Ground



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LS POWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

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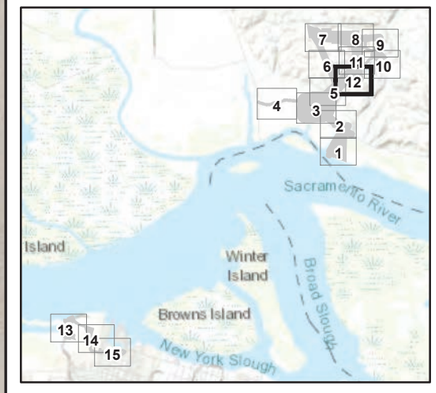
Attachment B:
Biological Resources Map
Map 12 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed PG&E 500 kV Interconnection
- Survey Area

Vegetation Community and Land Covers

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- Road/Bare Ground



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0 125 250 500 Feet

LSPOWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

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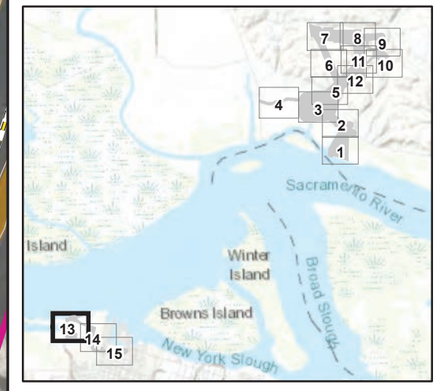
Attachment B:
Biological Resources Map
Map 13 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed LSPGC 230 kV Submarine Segment
- Proposed LSPGC 230 kV Underground Segment
- Proposed Underground Telecommunication Cable Route
- Vault
- Existing PG&E Pittsburg Substation
- Survey Area

Vegetation Community and Land Covers

- *Lepidium latifolium – Lactuca serriola* Herbaceous Alliance
- Ornamental Vegetation
- *Juncus arcticus (var. balticus, mexicanus)* Herbaceous Alliance
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- *Baccharis pilularis* Shrubland Alliance
- Disturbed
- Road/Bare Ground
- Rip Rap
- Open Water
- Developed
- Not Surveyed



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LSPOWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

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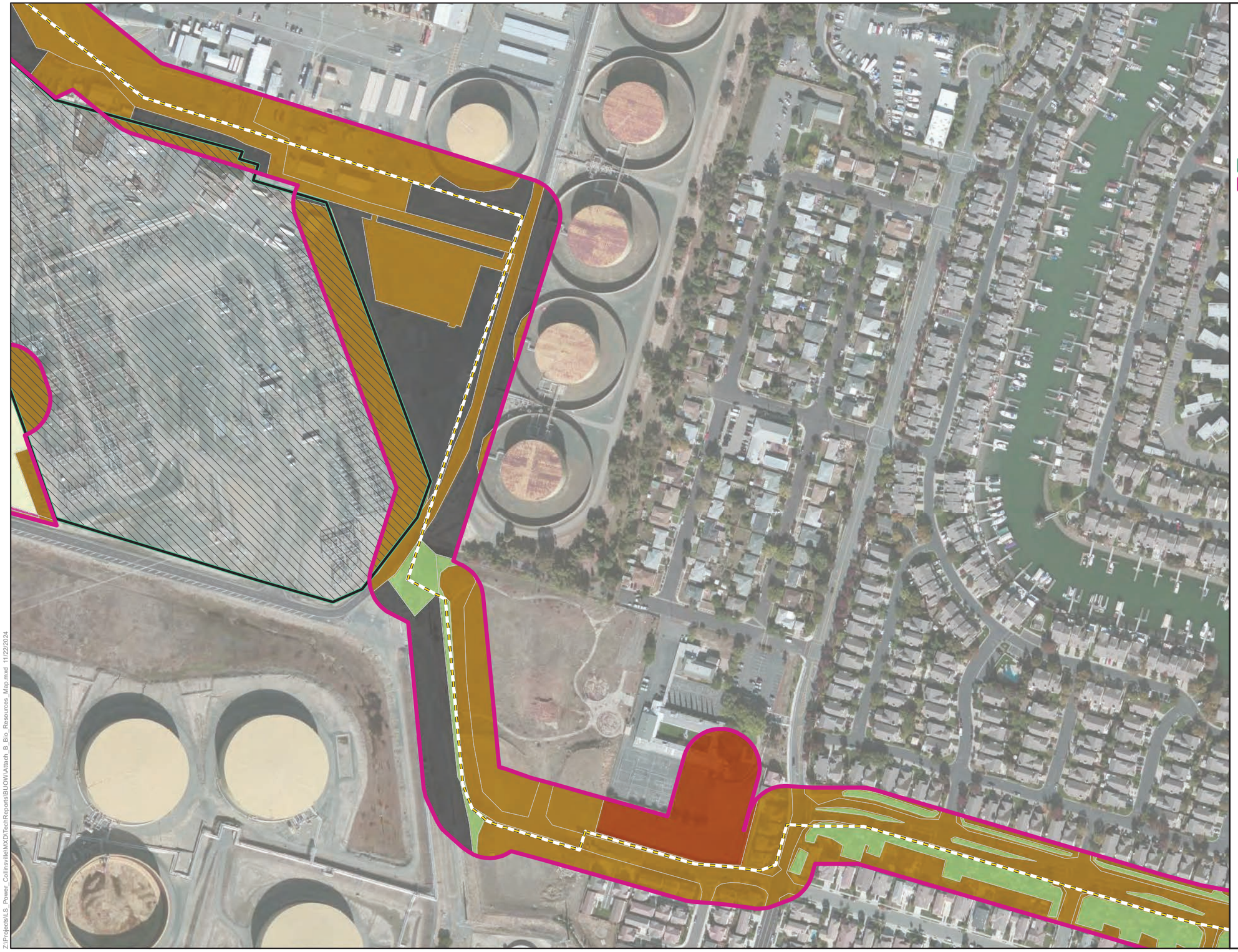


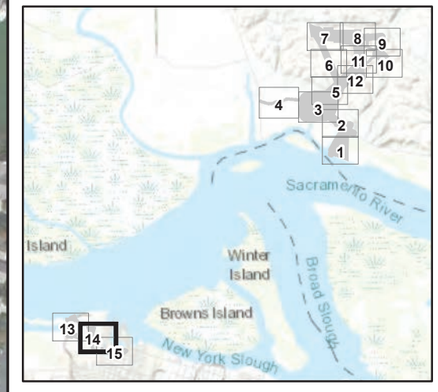
Attachment B:
Biological Resources Map
Map 14 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed Underground Telecommunication Cable Route
- Existing PG&E Pittsburg Substation
- Survey Area

Vegetation Community and Land Covers

- *Lepidium latifolium – Lactuca serriola* Herbaceous Alliance
- Ornamental Vegetation
- *Baccharis pilularis* Shrubland Alliance
- Disturbed
- Developed
- Not Surveyed



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0 125 250 500 Feet

LSPOWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

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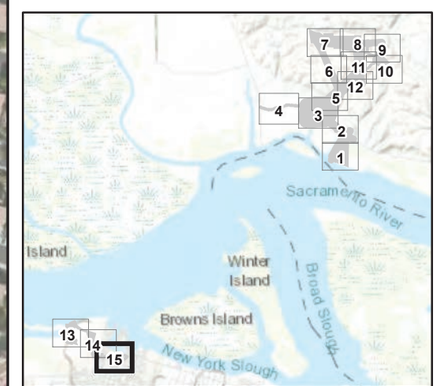
Attachment B:
Biological Resources Map
Map 15 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed Underground Telecommunication Cable Route
- Survey Area

Vegetation Community and Land Covers

- Ornamental Vegetation
- Disturbed
- Developed
- Not Surveyed



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0 125 250 500 Feet

LS POWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

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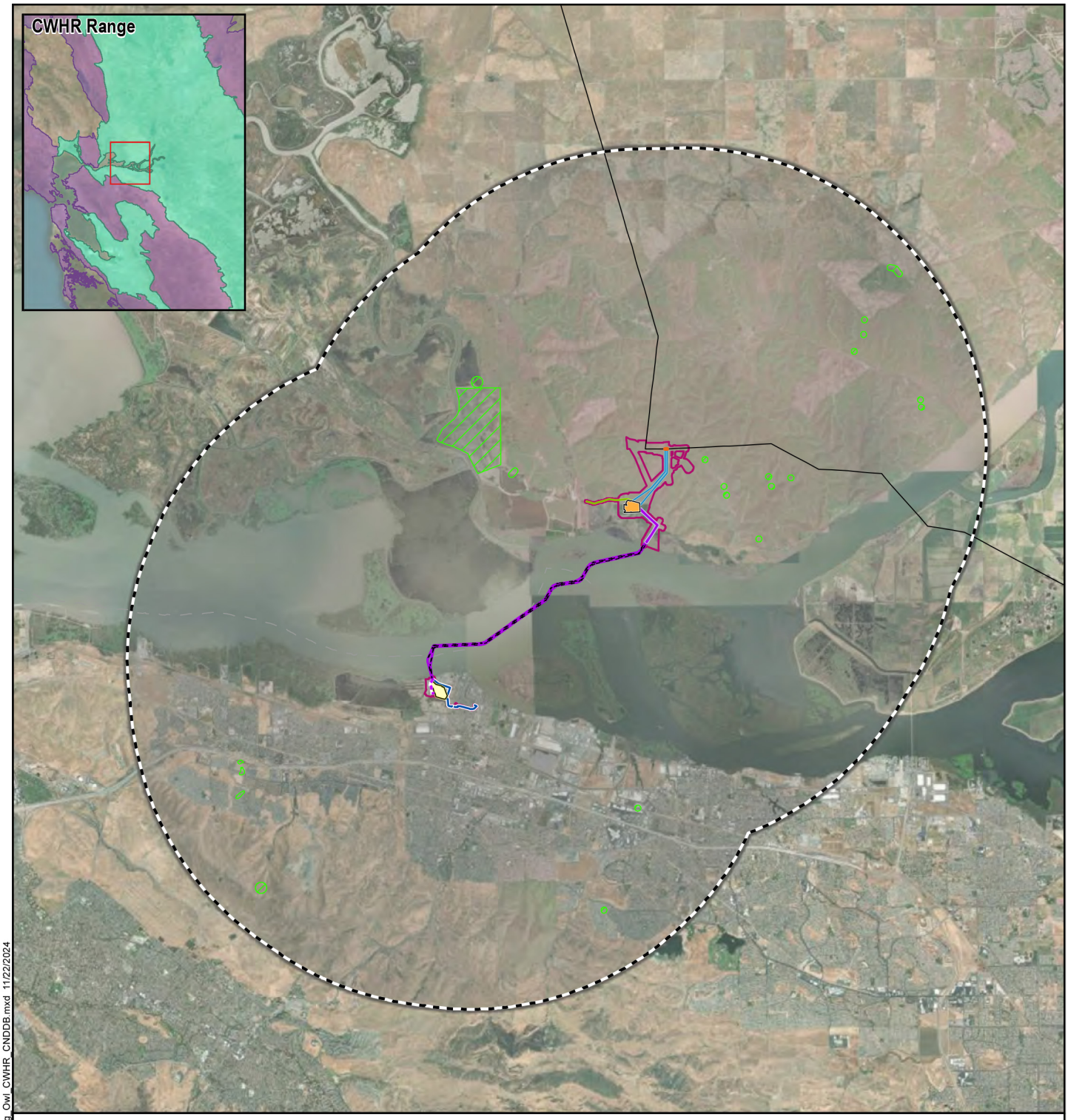
ATTACHMENT C: BURROWING OWL RANGE AND OCCURRENCE DATA



Attachment C: Burrowing Owl Range and Occurrence Data

Collinsville 500/230 Kilovolt Substation Project

- Existing PG&E Vaca Dixon-Tesla Transmission Line
- Existing PG&E 500 kV Transmission Line to be Removed
- Proposed LSPGC 230 kV Overhead Segment
- Proposed LSPGC 230 kV Submarine Segment
- Proposed LSPGC 230 kV Underground Segment
- Proposed PG&E 500 kV Interconnection
- Proposed PG&E 12 kV Distribution Line
- Proposed LSPGC Telecommunications Line
- Proposed LSPGC Collinsville Substation Site
- Existing PG&E Pittsburg Substation
- 5-Mile Buffer
- Survey Area
- California Natural Diversity Database Burrowing Owl (*Athene cunicularia hypugaea*) Occurrence
- California Wildlife Habitat Relationships Winter Range (Inset)
- California Wildlife Habitat Relationships Yearly Range (Inset)

1:150,000

0 2 4 Miles

LSPOWER GRID CALIFORNIA INSIGNIA ENVIRONMENTAL

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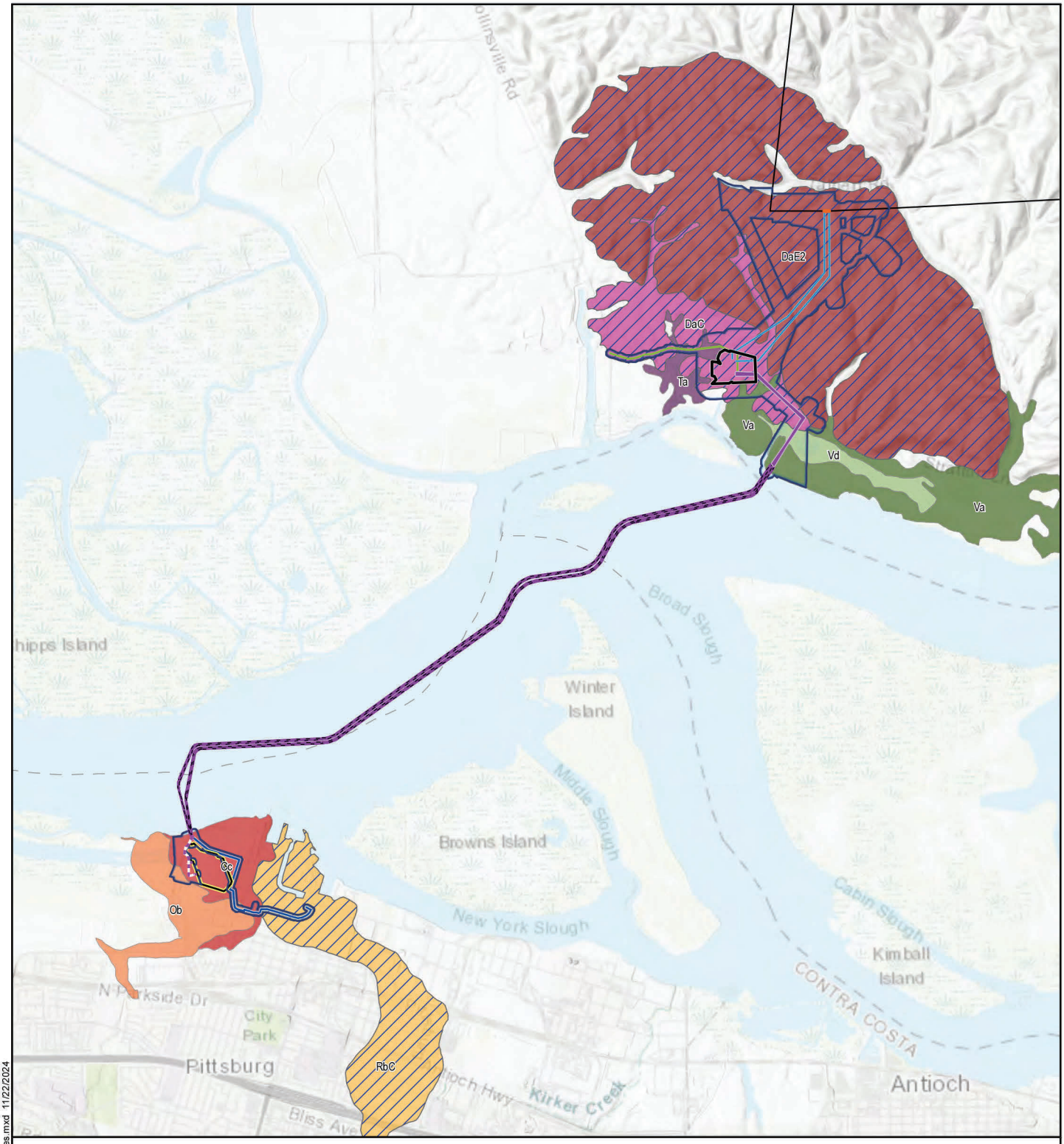
ATTACHMENT D: SOILS CROSSED BY THE PROPOSED PROJECT



Attachment D: Soils Crossed by the Proposed Project

Collinsville 500/230 Kilovolt Substation Project

- Ta
- Vd
- Cc
- Ob
- RbC
- Va
- DaE2
- DaC

- Existing PG&E Vaca Dixon-Tesla Transmission Line
- Existing PG&E 500 kV Transmission Line to be Removed
- Proposed LSPGC 230 kV Overhead Segment
- Proposed LSPGC 230 kV Submarine Segment
- Proposed LSPGC 230 kV Underground Segment
- Proposed PG&E 500 kV Interconnection
- Proposed PG&E 12 kV Distribution Line
- Proposed LSPGC Telecommunications Line

- Proposed LSPGC Collinsville Substation Site
- Existing PG&E Pittsburg Substation
- Well-Draining Soils
- Habitat Assessment Area

N

1:55,000

0 4,000 8,000 Feet

LS POWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

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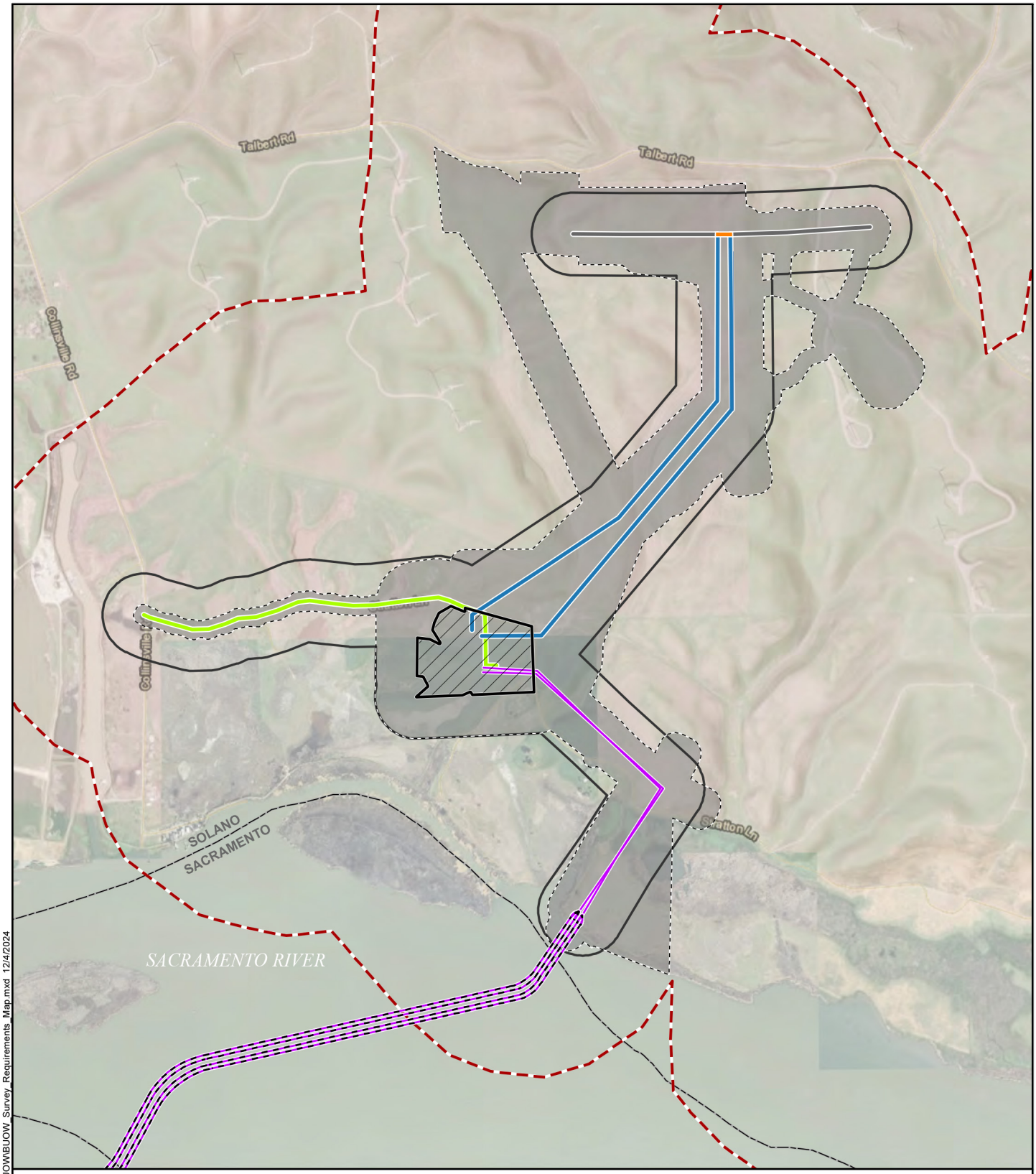
ATTACHMENT E: HABITAT ASSESSMENT AREA COMPARISON



Attachment E: Habitat Assessment Area Comparison

Collinsville 500/230 Kilovolt Substation Project

- Existing PG&E 500 kV Overhead Transmission Line
- Existing PG&E 500 kV Overhead Transmission Line to be Removed
- Proposed LSPGC 230 kV Overhead Segment
- Proposed LSPGC 230 kV Submarine Segment
- Proposed PG&E 12 kV Distribution Line
- Proposed PG&E 500 kV Interconnection
- County Boundary
- 500-Foot Buffer
- Completed BUOW Habitat Assessment Area
- Solano 4 Habitat Assessment Area
- Proposed Collinsville Substation

1:20,000

0 800 1,600 Feet

LS POWER GRID CALIFORNIA INSIGNIA ENVIRONMENTAL

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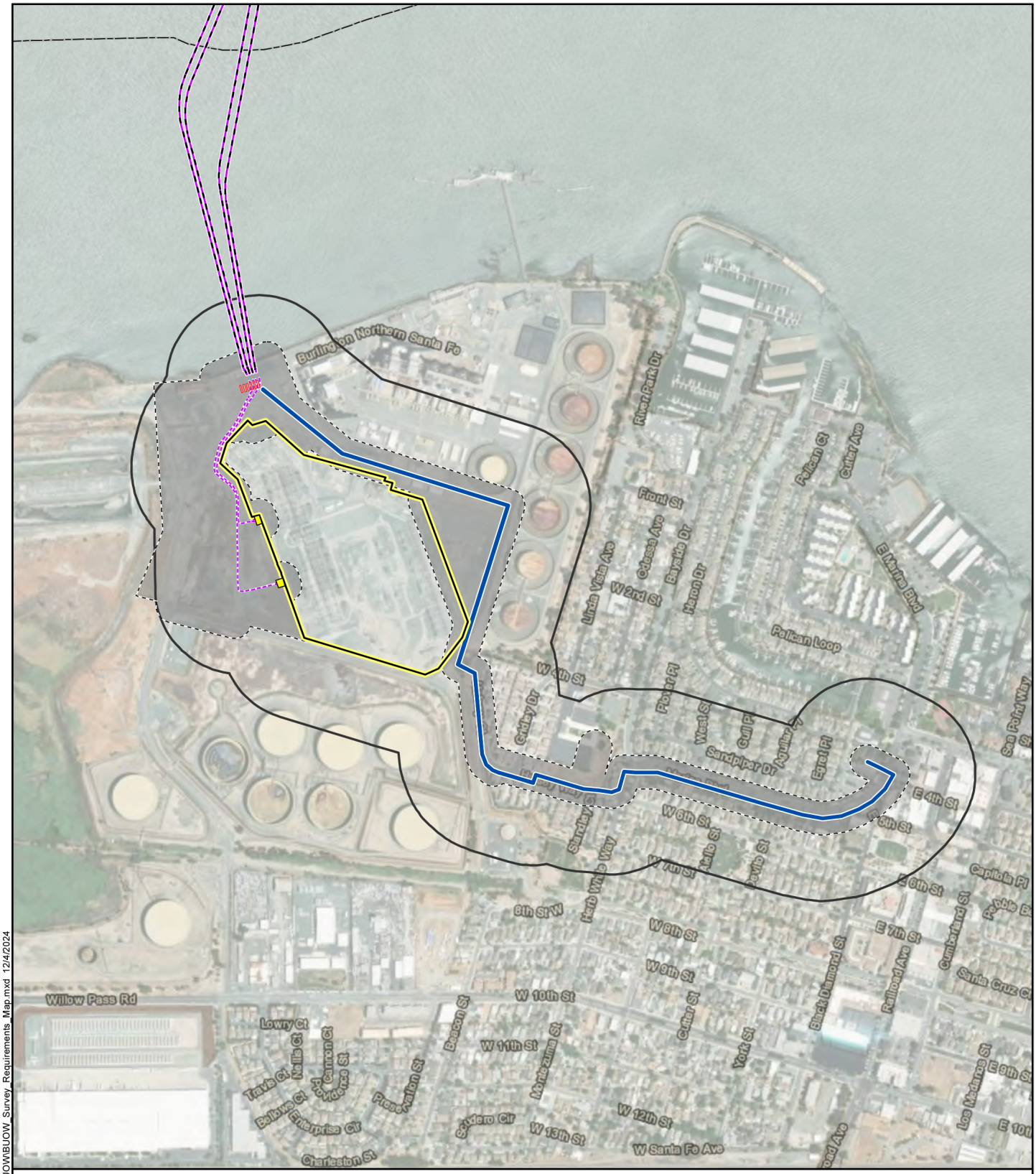

Attachment E: Habitat Assessment Area Comparison

Collinsville 500/230 Kilovolt Substation Project

- Proposed LSPGC 230 kV Submarine Segment
- Proposed LSPGC 230 kV Underground Segment
- Proposed LSPGC Telecommunications Line
- County Boundary
- Existing PG&E Pittsburg Substation
- Proposed Riser
- Proposed Utility Vault
- 500-Foot Buffer
- Completed BUOW Habitat Assessment Area

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0 800 1,600 Feet

LS POWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

ATTACHMENT B: BURROWING OWL SURVEY RESULTS AND VEGETATION COMMUNITIES MAP

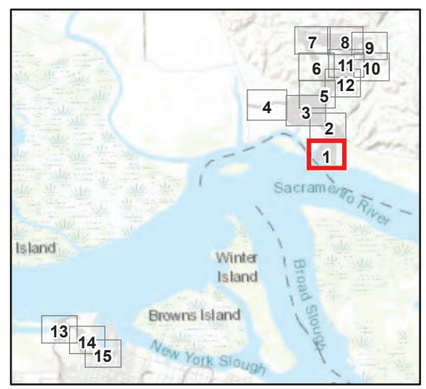
Attachment B:
Burrowing Owl Survey Results and Vegetation Communities
Map 1 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed LSPGC 230 kV Overhead Segment
- Proposed LSPGC 230 kV Submarine Segment
- Habitat Assessment
- Permanent Impact
- Temporary Impact

Vegetation Community

- *Distichlis spicata* Herbaceous Alliance
- *Frankenia salina* Herbaceous Alliance
- *Juncus arcticus (var. balticus, mexicanus)* Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Rosa californica* Shrubland Alliance
- *Salix exigua* Shrubland Alliance
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- *Schoenoplectus acutus/rosa californica* Association
- Road/Bare Ground
- Open Water



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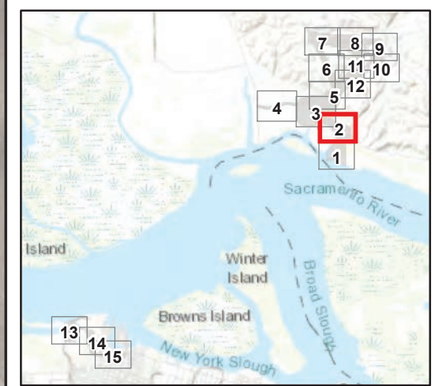
Attachment B:
Burrowing Owl Survey Results and Vegetation Communities
Map 2 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed LSPGC 230 kV Overhead Segment
- Proposed PG&E 12 kV Distribution Line
- Habitat Assessment
- Permanent Impact
- Temporary Impact

Vegetation Community

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Distichlis spicata* Herbaceous Alliance
- *Frankenia salina* Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Polygonum lapathifolium - Xanthium strumarium* Herbaceous Alliance
- *Rosa californica* Shrubland Alliance
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- Road/Bare Ground
- Open Water



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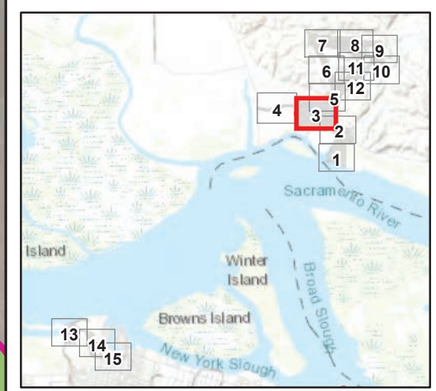
Attachment B:
Burrowing Owl Survey Results and Vegetation Communities
Map 3 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed LSPGC 230 kV Overhead Segment
- Proposed PG&E 12 kV Distribution Line
- Proposed PG&E 500 kV Overhead Interconnection
- Habitat Assessment
- Permanent Impact
- Temporary Impact

Vegetation Community

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Distichlis spicata* Herbaceous Alliance
- *Frankenia salina* Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Polygonum lapathifolium - Xanthium strumarium* Herbaceous Alliance
- *Sarcocornia pacifica* Herbaceous Alliance
- *Rosa californica* Shrubland Alliance
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- *Schoenoplectus americanus* Herbaceous Alliance
- *Typha (angustifolia, domingensis, latifolia)* Herbaceous Alliance
- Road/Bare Ground



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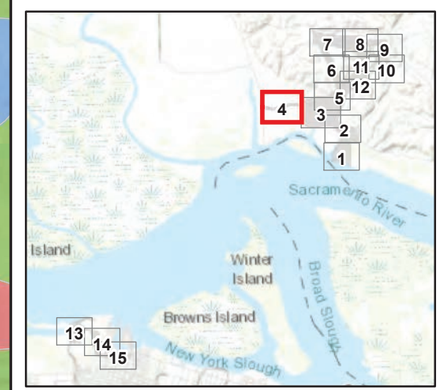
Attachment B:
Burrowing Owl Survey Results and Vegetation Communities
Map 4 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed PG&E 12 kV Distribution Line
- Habitat Assessment
- Permanent Impact
- Temporary Impact

Vegetation Community

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Distichlis spicata* Herbaceous Alliance
- *Frankenia salina* Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Sarcocornia pacifica* Herbaceous Alliance
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- Road/Bare Ground
- Developed



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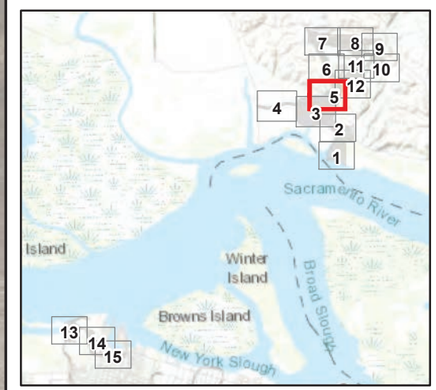
Attachment B:
Burrowing Owl Survey Results and Vegetation Communities
Map 5 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed PG&E 12 kV Distribution Line
- Proposed PG&E 500 kV Overhead Interconnection
- Habitat Assessment
- Permanent Impact
- Temporary Impact

Vegetation Community

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Distichlis spicata* Herbaceous Alliance
- *Frankenia salina* Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Typha (angustifolia, domingensis, latifolia)* Herbaceous Alliance
- Road/Bare Ground



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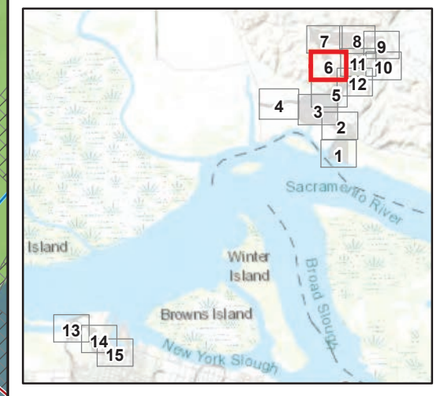
Attachment B:
Burrowing Owl Survey Results and Vegetation Communities
Map 6 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed PG&E 500 kV Overhead Interconnection
- Habitat Assessment
- Permanent Impact
- Temporary Impact

Vegetation Community

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- Road/Bare Ground



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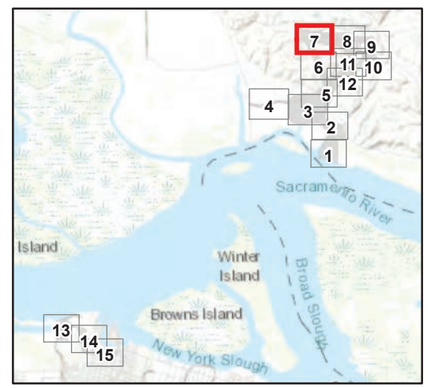
Attachment B:
Burrowing Owl Survey Results and Vegetation Communities
Map 7 of 15

Collinsville 500/230 Kilovolt Substation Project

- Existing PG&E Vaca Dixon-Tesla Transmission Line
- Habitat Assessment
- Temporary Impact

Vegetation Community

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- Road/Bare Ground



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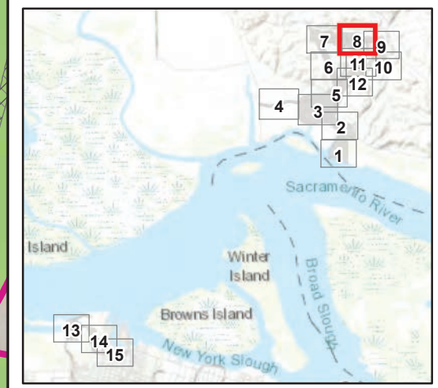
Attachment B:
Burrowing Owl Survey Results and Vegetation Communities Map
Map 8 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed PG&E 500 kV Overhead Interconnection
- Existing PG&E 500 kV Overhead Transmission Line to be Removed
- Existing PG&E Vaca Dixon-Tesla Transmission Line
- Suitable burrowing owl habitat
- Habitat Assessment
- Permanent Impact
- Temporary Impact

Vegetation Community

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- Road/Bare Ground



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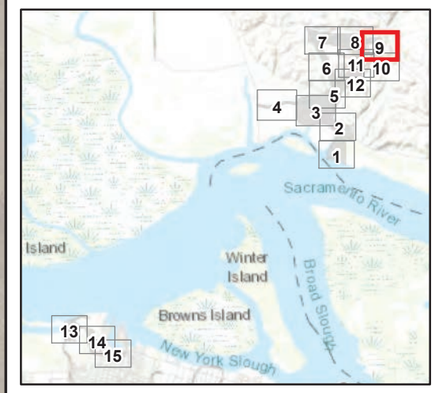
Attachment B:
Burrowing Owl Survey Results and Vegetation Communities
Map 9 of 15

Collinsville 500/230 Kilovolt Substation Project

- Suitable burrowing owl habitat
- Proposed PG&E 500 kV Overhead Interconnection
- Existing PG&E 500 kV Overhead Transmission Line to be Removed
- Existing PG&E Vaca Dixon-Tesla Transmission Line
- Habitat Assessment
- Permanent Impact
- Temporary Impact

Vegetation Community

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- Road/Bare Ground



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Attachment B:
Burrowing Owl Survey Results and Vegetation Communities
Map 10 of 15

Collinsville 500/230 Kilovolt Substation Project

Habitat Assessment

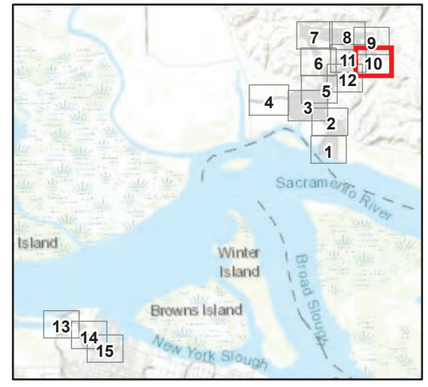
Temporary Impact

Vegetation Community

Brassica nigra - Centaurea (solstitialis, melitensis) Herbaceous Semi-Natural Alliance

Lolium perenne Herbaceous Semi-Natural Alliance

Road/Bare Ground



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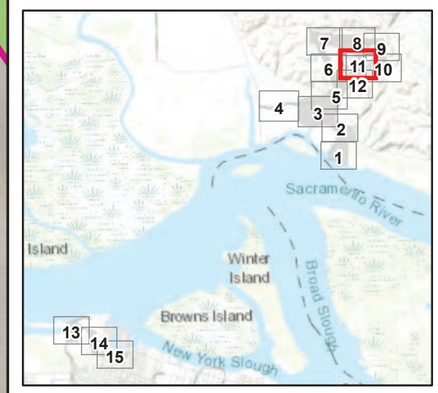
Attachment B:
Burrowing Owl Survey Results and Vegetation Communities
Map 11 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed PG&E 500 kV Overhead Interconnection
- Habitat Assessment
- Permanent Impact
- Temporary Impact

Vegetation Community

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- Road/Bare Ground



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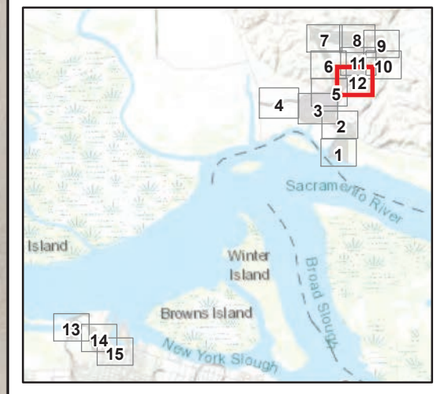
Attachment B:
Burrowing Owl Survey Results and Vegetation Communities
Map 12 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed PG&E 500 kV Overhead Interconnection
- Habitat Assessment
- Permanent Impact
- Temporary Impact

Vegetation Community

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- Road/Bare Ground



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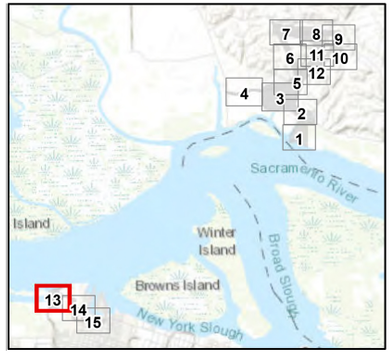
Attachment B:
Burrowing Owl Survey Results and Vegetation Communities
Map 13 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed LSPGC 230 kV Submarine Segment
- Proposed LSPGC 230 kV Underground Segment
- Proposed LSPGC Telecommunications Line
- Habitat Assessment
- Permanent Impact
- Temporary Impact

Vegetation Community

- *Lepidium latifolium – Lactuca serriola* Herbaceous Alliance
- Ornamental Vegetation
- *Juncus arcticus (var. balticus, mexicanus)* Herbaceous Alliance
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- *Baccharis pilularis* Shrubland Alliance
- Disturbed
- Road/Bare Ground
- Rip Rap
- Open Water
- Developed
- Not Surveyed



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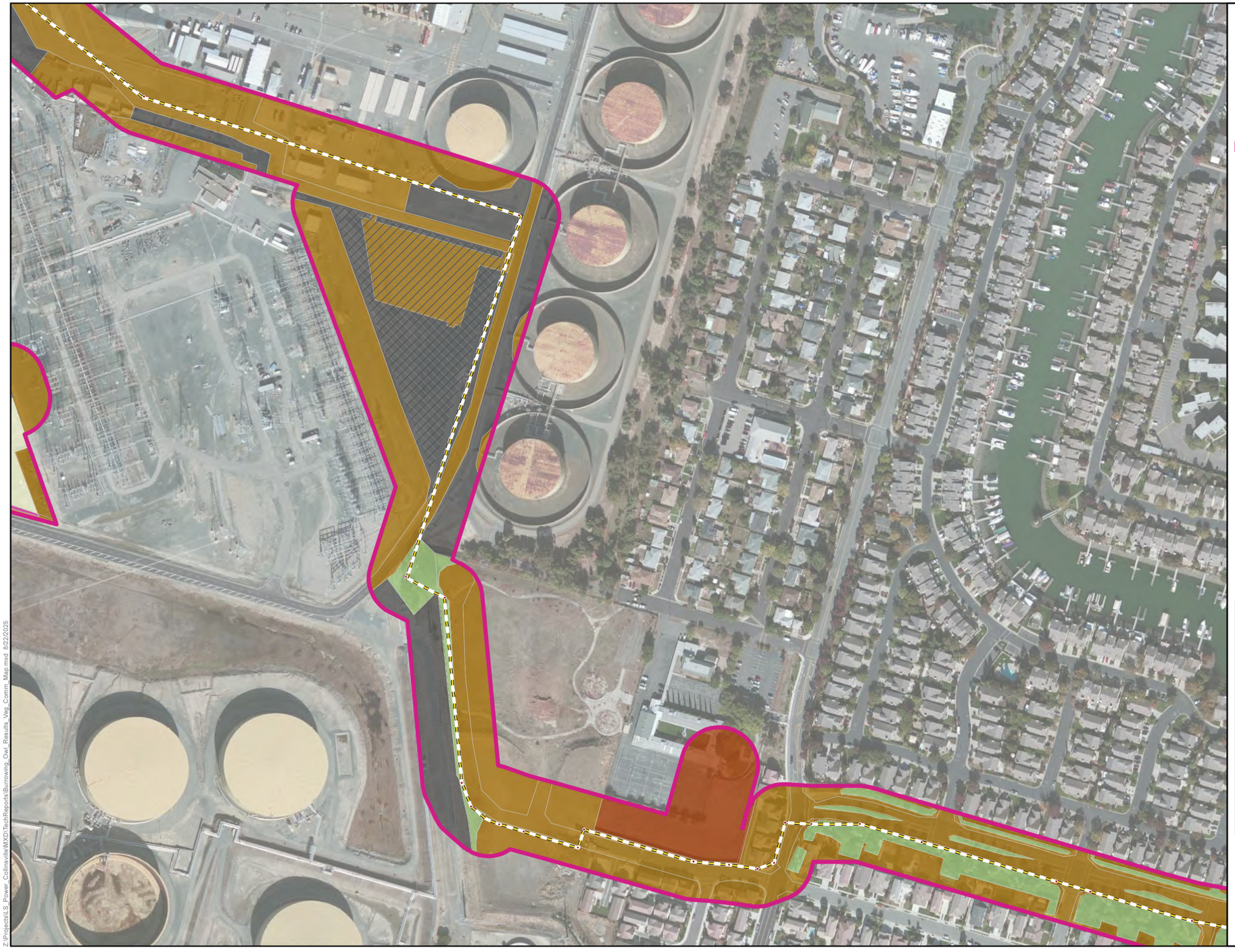


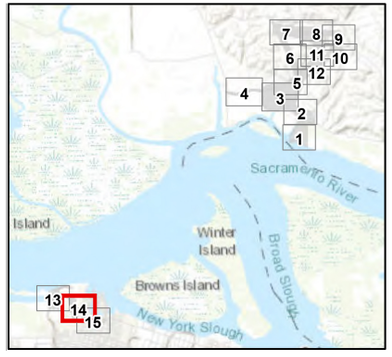
Attachment B:
Burrowing Owl Survey Results and Vegetation Communities
Map 14 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed LSPGC Telecommunications Line
- Habitat Assessment
- Permanent Impact
- Temporary Impact

Vegetation Community

- *Lepidium latifolium – Lactuca serriola* Herbaceous Alliance
- Ornamental Vegetation
- *Baccharis pilularis* Shrubland Alliance
- Disturbed
- Developed
- Not Surveyed



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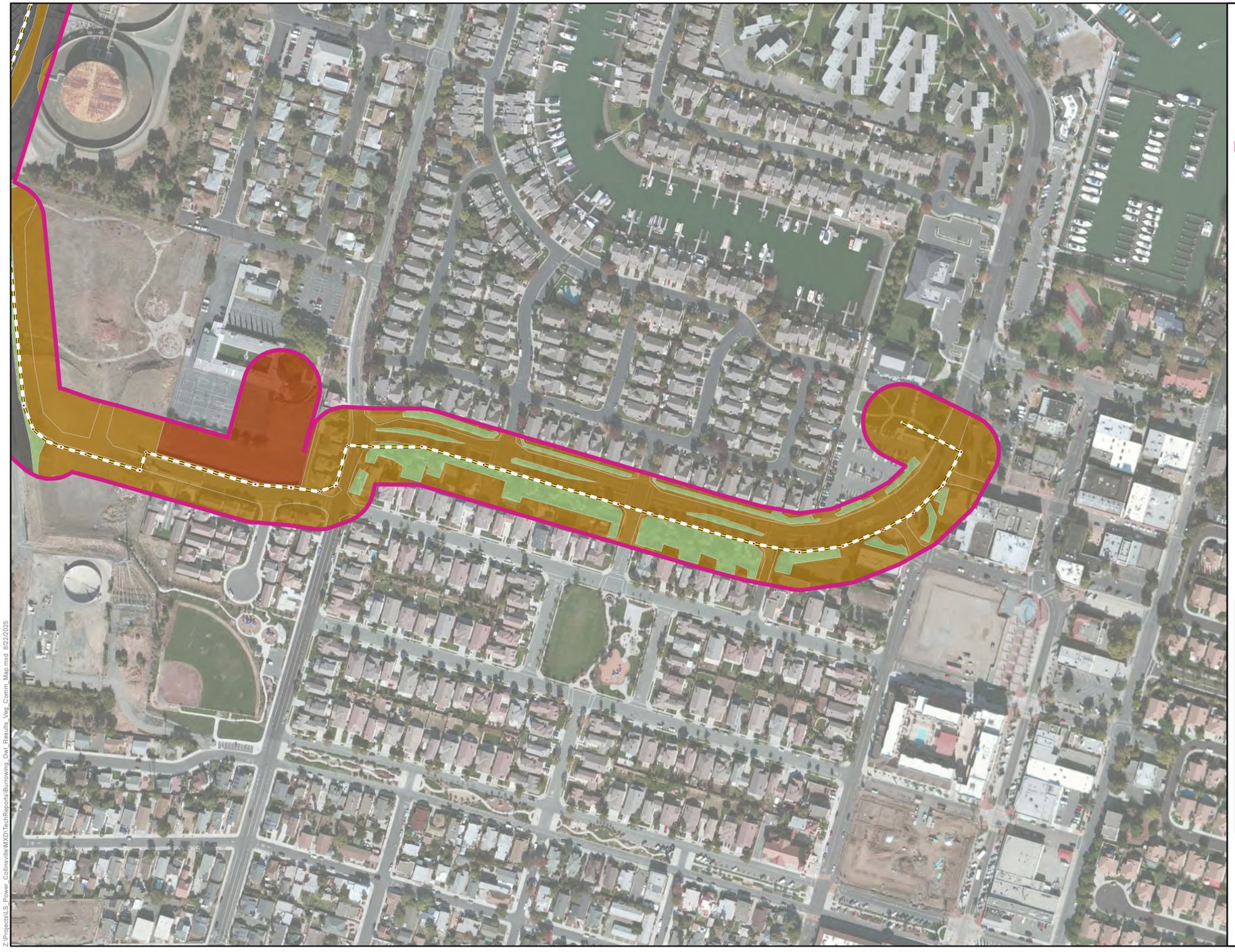


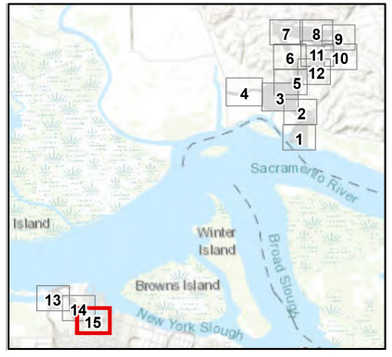
Attachment B:
Burrowing Owl Survey Results and Vegetation Communities
Map 15 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed LSPGC Telecommunications Line
- Habitat Assessment
- Permanent Impact
- Temporary Impact

Vegetation Community

- Ornamental Vegetation
- Disturbed
- Developed
- Not Surveyed



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ATTACHMENT C: PHOTOGRAPH

ATTACHMENT C: PHOTOGRAPH

Photograph 1: Northwest-facing view of suitable western burrowing owl (*Athene cunicularia hypogea*) burrows located within the Habitat Assessment Area on June 16, 2025.

PRELIMINARY DELINEATION OF AQUATIC RESOURCES, FOR THE

COLLINSVILLE SUBSTATION VACA-TESLA 500KV INTERCONNECTION PROJECT

CONTRA COSTA AND SOLANO COUNTIES, CALIFORNIA

PREPARED FOR:

Pacific Gas and Electric Company
300 Lakeside Drive
Oakland, CA 94612
Contact: Ode Bernstein
(415) 404-1482

PREPARED BY:

Kleinfelder
3130 Kilgore Road, Ste 200
Rancho Cordova, CA 95670
Contact: Rob Witthaus
(408) 621-8531

February 2026

Pacific Gas and Electric Company. 2026. *Preliminary Delineation of Aquatic Resources, for the Collinsville Substation Vaca-Tesla 500kV Interconnection Project*, Contra Costa and Solano Counties, CA. February. Prepared by Kleinfelder, Rancho Cordova, CA.

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Appendices

Appendix A Routine Wetland Delineation Data Forms
Appendix B Aquatic Resources Map
Appendix C Hydrologic Connectivity
Appendix D Site Photographs
Appendix E Hydric Soils List and Soil Map
Appendix F Antecedent Precipitation Table

Acronyms and Abbreviations

CWA	Clean Water Act
FAC	Facultative
FACU	Facultative Upland
FACW	Facultative Wetland
GPS	Global Positioning System
KLF	Kleinfelder
NRCS	Natural Resources Conservation Service
OBL	Obligate Wetland
OHWM	Ordinary High Water Mark
PG&E	Pacific Gas and Electric Company
UPL	Obligate Upland
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture

Collinsville Substation
Vaca-Tesla 500kV Interconnection Project
Preliminary Delineation of Aquatic Resources

Summary

The Pacific Gas & Electric Company (PG&E) owns and operates the Vaca-Tesla 500kV electric transmission line for energy transmission between the Vaca-Dixon and Tesla Substations as part of the statewide electric transmission system. LS Power is planning to construct a new 500kV substation near Collinsville in Solano County, CA that requires PG&E to design, construct, own, and operate a 500kV interconnection (loop) from PG&E's existing Vaca-Tesla 500kV Line to the new substation. Kleinfelder (KLF) conducted a preliminary delineation of aquatic resources at four sites – North, Maud, Bird's Landing, and Byron - along the transmission line to map aquatic resources associated with PG&E's Collinsville Substation Vaca-Tesla 500kV Interconnection Project (Project) in Solano and Contra Costa Counties, California. This report documents the location and extent of 5.238 acres of drainage ditches, 0.195 acre of ephemeral watercourses, and 0.085 acre of freshwater seasonal wetland within the 196.485-acre survey area encompassing the Project sites, which may meet the definition of waters of the U.S. as defined by the Clean Water Act (CWA). Agricultural drainage ditches and an ephemeral watercourse have relatively permanent flow with continuous surface hydrologic connection via culverts to Lindsay Slough, which is tributary to the Sacramento River, a traditional navigable watercourse (TNW). One additional drainage ditch with relatively permanent flow in the survey area has continuous surface hydrologic connection with the TNW at Discovery Bay.

This investigation followed the on-site routine wetland delineation methods described in the *Corps of Engineers Wetlands Delineation Manual* (USACE 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2008), and the *Corps Regulatory Guidance Letter No. 05-05 Ordinary High Water Mark Identification* (USACE 2005).

This report provides the aquatic resources information to support a U.S. Army Corps of Engineers (USACE) jurisdictional determination in accordance with Section 404 of the CWA. Supporting documentation includes routine wetland delineation data forms in Appendix A, maps of the locations and extent of aquatic resources in Appendix B, hydrology of the survey areas in Appendix C, site photographs in Appendix D, hydric soils lists and soil maps in Appendix E, and Antecedent Precipitation Tables in Appendix F. This report does not assess potential impacts to aquatic resources.

Introduction

This investigation considers the 196.485-acre area (survey area) that may be affected by the Project. The following describes the Project site and its location and provides directions to the site.

Contact Information

Project Applicant
Pacific Gas and Electric Company
300 Lakeside Drive
Oakland, CA 94612
Contact: Ode Bernstein
OMB3@pge.com
(415) 404-1482

Delineation Preparer
Kleinfelder
3130 Kilgore Road, Suite 200
Rancho Cordova, CA 95670
Contact: Rob Witthaus
rwitthaus@kleinfelder.com
(408) 621-8531

Site Description and Location

All four Project sites are set in grazed annual grasslands.

North Site. The North Site is in a field furrowed and cultivated for production of forage for cattle grazing (Photo 2, Appendix D). Lands surrounding the project location area used for crop production, orchards, and grazing, approximately 2.5 miles southeast from the urban boundary of the city of Vacaville, Solano County. The survey area is located in the southwest corner of Section 5, Township 5 North, Range 1 East on the Elmira U.S. Geological Survey 7.5-minute topographic quadrangle map. The terrain within and surrounding the survey area is nearly flat, with a grid-network of irrigation and drainage ditches lining the various pastures.

Maud Site. Similar as the North Site, the Maud Site is in a grazed pasture surrounded by grazed grasslands (Photo 7, Appendix D). The site is approximately 0.5 mile due east from Rio Vista Junction, along Highway 12 in Solano County, California. This survey area is in the northwest and northeast corners of Sections 9 and 10, respectively, at Township 4 North, Range 1 East on the Bird's Landing U.S. Geological Survey 7.5-minute topographic quadrangle map. The landscape in the survey area has a slight northeast gradient within a surrounding landscape characterized by gently rolling terrain with scattered drainages and depressions.

Bird's Landing Site. The Bird's Landing Site includes the developed Bird's Landing Substation and immediately adjacent lands, set on a hilltop within the Montezuma Hills approximately two (2) miles east of the unincorporated community of Bird's Landing, Solano County, California. The survey area and surrounding lands supporting sheep and cattle grazing amongst wind turbines operated for energy generation. The survey area is in the north of Section 11 and south of Section 2, Township 3 North, Range 1 East on the Bird's Landing and Antioch North U.S. Geological Survey 7.5-minute topographic quadrangle map.

Byron Site. The Byron Site is also on property utilized for agricultural production and surrounded by properties variably used for crop production and grazing. The survey area is approximately 0.5 mile south of the southwest corner of the unincorporated community of Discovery Bay, Contra Costa County, California. The survey area is within the southern and northern portions of Sections 35 and

2, respectively, Township 1 South, Range 3 East on the Woodward Island U.S. Geological Survey 7.5-minute topographic quadrangle map. The property where the survey area is situated is bounded to the south and east by large drainage ditches which are part of a network of ditches which drain the region for agricultural production.

Driving Directions

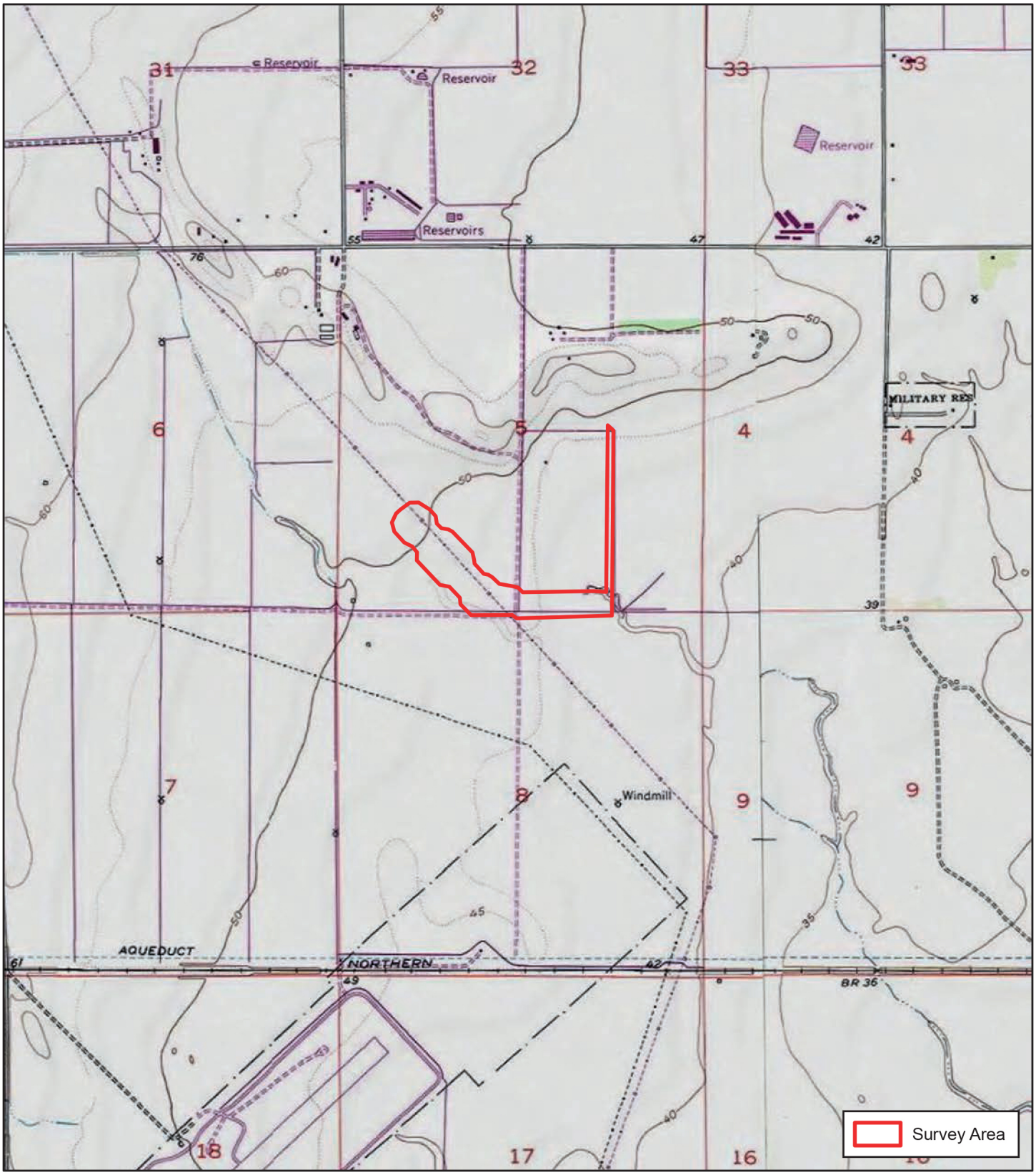
Figures 1a through 1d identify the Project locations in agricultural lands of Solano and Contra Costa Counties, California. To access all four Project sites from Sacramento, travel west on Highway 80.

North Site. Exit Highway 80 on Leisure Town Road in the city of Vacaville. Proceed south on Leisure Town Road for approximately 3.5 miles to the intersection with Fry Road. Turn left (east) onto Fry Road and drive approximately 2.0 miles to the intersection with Lewis Road. Turn right (south) onto Lewis Road. Drive south on Lewis Road for approximately 1.5 miles to the intersection with Hay Road and turn left (east). After approximately 0.75 mile on Hay Road, turn right (south) onto Box R Ranch Road. The survey area for the North Site starts approximately 0.5 mile down Box R Ranch Road. Continue another 0.5 mile along Box R Ranch Road to its terminus, where the remainder of the North Site survey area extends to the west.

Maud Site. Exit Highway 80 onto Highway 113 South in the town of Dixon. Follow Highway 113 south for approximately 7.0 miles to Highway 12 and follow the roundabout onto Highway 12 west toward Suisun City/Vacaville. Drive west on Highway 12 approximately 4.25 miles to Rio Vista Junction and turn right (east) onto Mauds Lane. Follow Mauds Lane approximately 0.65 mile east to the Maud Site survey area.

Bird's Landing Site. Exit Highway 80 onto Highway 113 South in the town of Dixon. Follow Highway 113 south for approximately 7.0 miles to the roundabout at Highway 12. Proceed around the roundabout and continue driving south on Bird's Landing Road. Drive nearly 4.75 miles on Bird's Landing Road to the intersection with Montezuma Hills Road and turn left (south). Proceed approximately 1.30 mile on Montezuma Hills Road to the survey area at the driveway to the Bird's Landing Substation on the left (north) side of the road.

Byron Site. Exit Highway 80 onto Highway 113 South in the town of Dixon. Follow Highway 113 south for approximately 7.0 miles to the roundabout at Highway 12. Continue east on Highway 12 for approximately 7.8 miles through the town of Rio Vista and turn right (south) onto Highway 160 after crossing the Sacramento River. Follow Highway 160 for approximately 13 miles to Highway 4 in the city of Antioch. Transition onto Highway 4 south toward the city of Brentwood. Remain on Highway 4 toward Discovery Bay for almost 26 miles. Turn right (south) onto Bixler Road. Drive south on Bixler Road for approximately 0.5 mile to the intersection with Kellogg Creek Road and turn left (east). Follow Kellogg Creek Road approximately 0.25 mile to the survey area.



USGS 7.5' Quad: ELMIRA (1980)
Legal Description: T05N, R01E, SEC 5, 8
NAD 1983 UTM Zone 10N

0 1,000 2,000 Feet

0 300 600 Meters

N

Scale 1:24,000
1 inch = 2,000 feet

Figure 1a. North Site Project Location
Collinsville Substation
Vaca-Tesla 500kV Interconnection
Solano County, California

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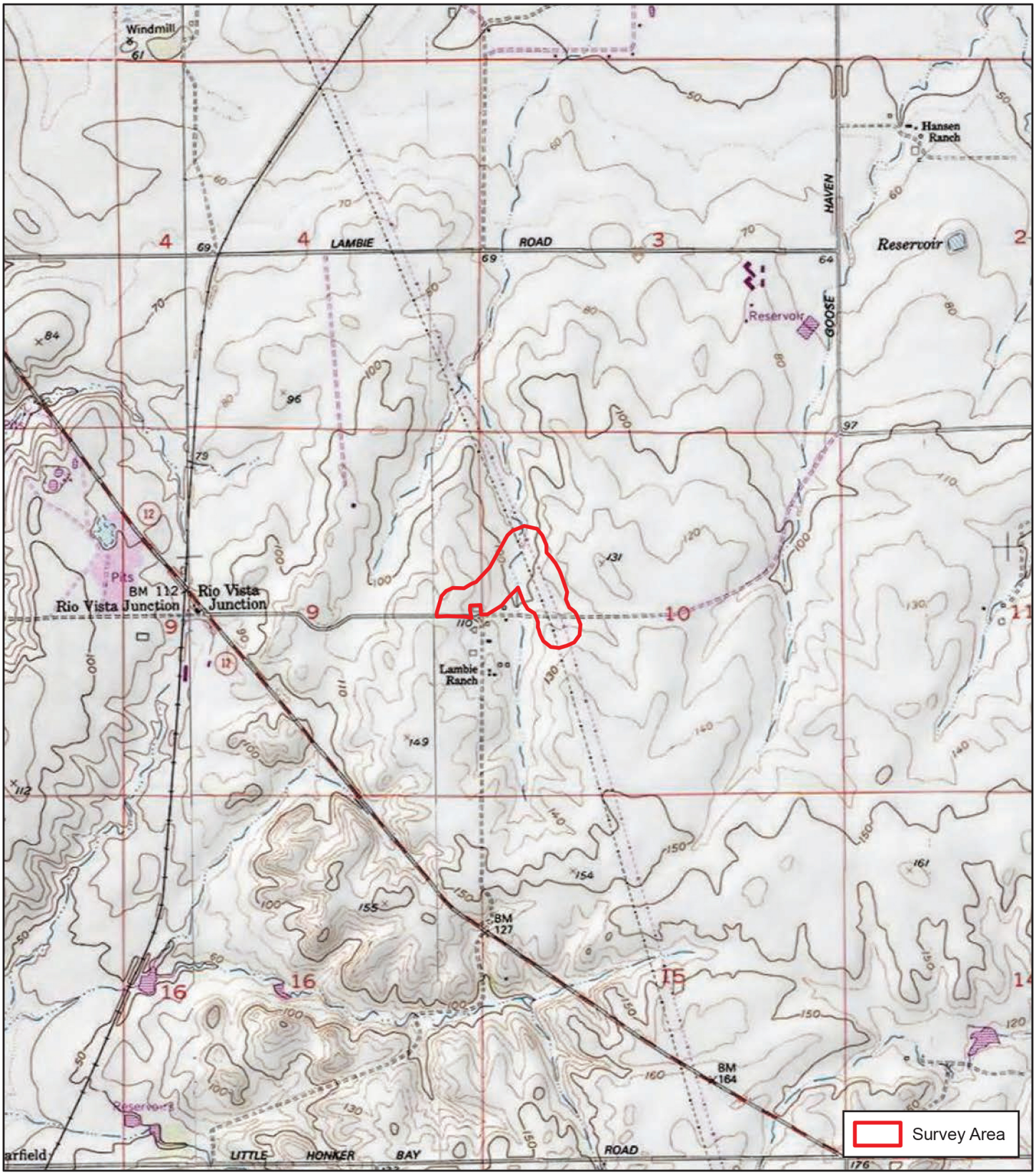
Bright People. Right Solutions.

Created By: JHiatt Document Path: \\azrgis\corp\03\GIS_Projects\Client\GANDA\PGE\20226076\20226076_002_76_Collinsville_Vet\Collinsville_210.aprx



USGS 7.5' Quad: BIRD LANDING (1992)
Legal Description: T04N, R01E, SEC 9, 10
NAD 1983 UTM Zone 10N

0 1,000 2,000 Feet
0 300 600 Meters

N

Scale 1:24,000
1 inch = 2,000 feet

Figure 1b. Maud Site Project Location
Collinsville Substation
Vaca-Tesla 500kV Interconnection
Solano County, California

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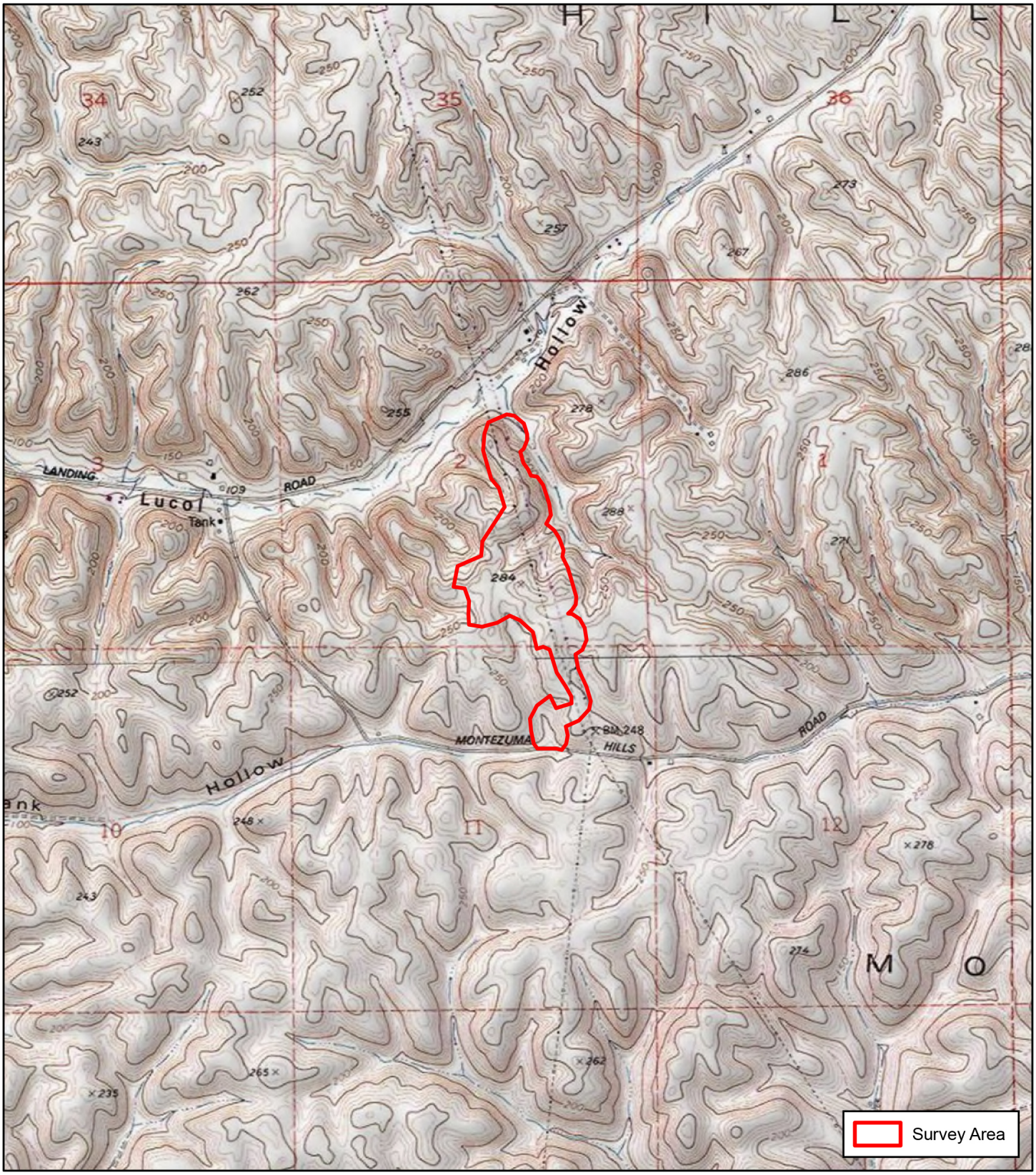

USGS 7.5' Quad: ANTIOCH NORTH (1978)
and BIDS LANDING (1992)
Legal Description: T03N, R01E, SEC 2, 11
NAD 1983 UTM Zone 10N

0 1,000 2,000 Feet

0 300 600 Meters

N

Scale 1:24,000
1 inch = 2,000 feet

Figure 1c. Bird's Landing Site Project Location
Collinsville Substation
Vaca-Tesla 500kV Interconnection
Solano County, California

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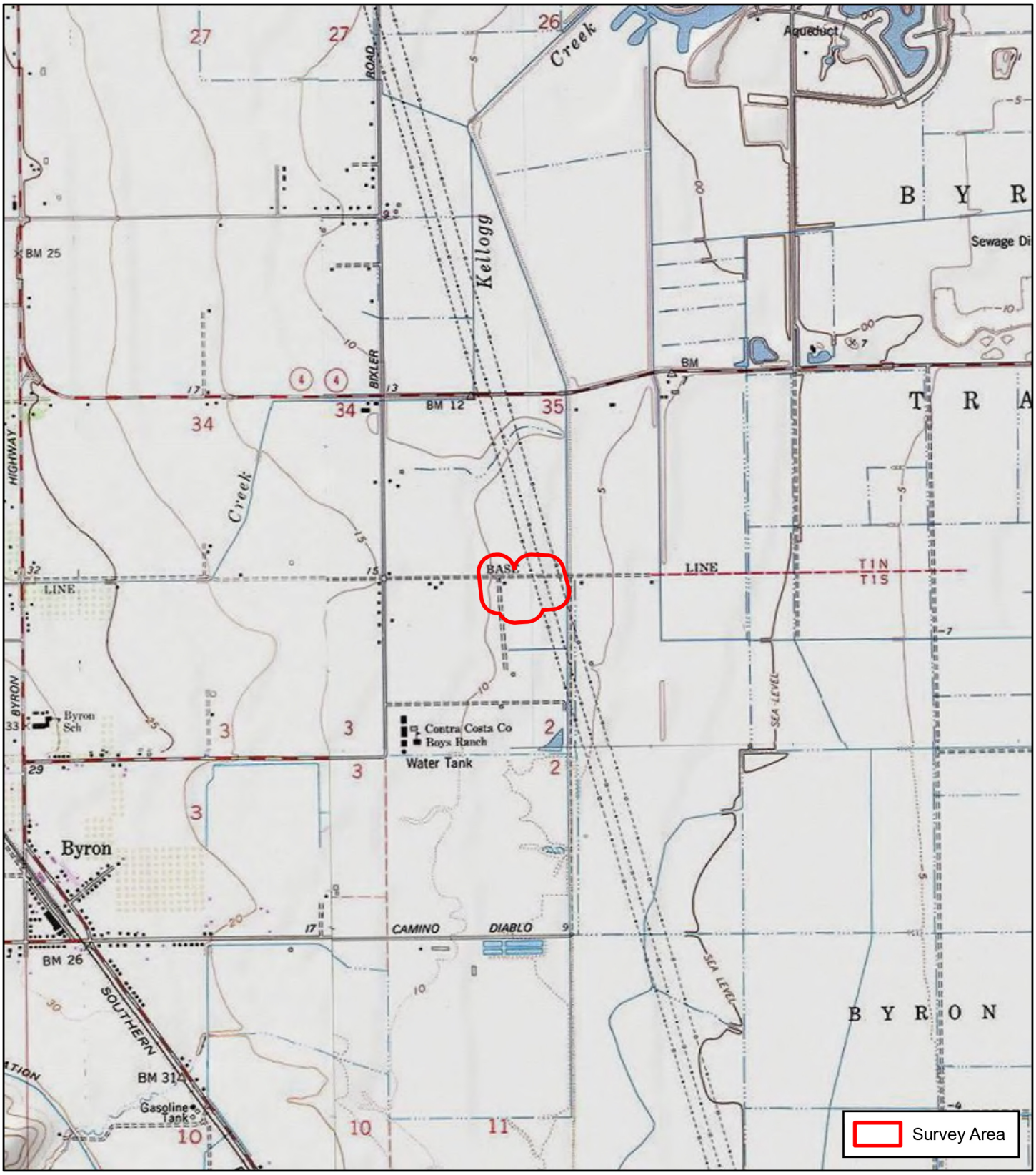

USGS 7.5' Quad: WOODWARD ISLAND (1978)
Legal Description: WET LANDS
LAND GRANT
NAD 1983 UTM Zone 10N

0 1,000 2,000 Feet
0 300 600 Meters

N

Scale 1:24,000
1 inch = 2,000 feet

Figure 1d. Byron Site Project Location
Collinsville Substation
Vaca-Tesla 500kV Interconnection
Contra Costa County, California

KLEINFELDER
Bright People. Right Solutions.

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Delineation Methods

This investigation followed the onsite routine wetland delineation methods described in the *Corps of Engineers Wetlands Delineation Manual* (USACE 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2008), and *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Lichvar and McColley 2008). The survey area lies within the Arid West Region described in the supplement. Prior to field investigations, the KLF biologist reviewed available aerial imagery, topographical maps, and soil maps of the survey area to characterize the onsite vegetation, soils, topography, and hydrology.

Senior Biologists, Mr. Rob Witthaus and Mr. Ode Bernstein, conducted field surveys on December 10 and 11, 2025 and January 21 and 27, 2026 to map the location and extent of aquatic resources within the survey areas. The investigators completed data forms along transects to document dominant vegetation, hydrology, soils, and geography present and define the lateral edges of vegetation types and geomorphic features representative of onsite wetland and water features. The surveyors mapped features using a sub-meter accurate Global Positioning System (GPS) device on a 1:1,200 scale base map with 2023 aerial imagery. KLF downloaded and differentially corrected the GPS data using the nearest available base-station data.

Field investigators identified plant species using the Jepson Manual (Baldwin et al. 2012); plant nomenclature follows the Jepson online interchange (UC Berkeley 2025). The specific wetland indicator status of each species observed has been reported from the *National Wetland Plant List, version 3.6* (USACE 2023). The list below describes each indicator status.

Indicator Status	**Indicator Code**	**Wetland Indicator Status description**
Obligate Wetland	OBL	Almost always occur in wetlands
Facultative Wetland	FACW	Usually occur in wetlands, but may occur in non-wetlands
Facultative	FAC	Occur in wetlands and non-wetlands
Facultative Upland	FACU	Usually occur in non-wetlands, but may occur in wetlands
Obligate Upland	UPL	Almost never occur in wetlands

Environmental Setting

The following provides a brief description of the precipitation and growing season at the Project site, followed by general descriptions of the vegetation, hydrology, and soil types within the survey area.

Precipitation and Growing Season

The Project area climate is Mediterranean, with warm, dry summers and cool, wet winters. Rainfall primarily occurs from November through March, with an average annual precipitation over the past 25 years ranging from approximately 20 inches at the northern sites and a little more than 10 inches at the Byron Site (NRCS 2025a). Appendix F provides an Antecedent Precipitation Table using National Oceanic and Atmospheric Administration (NOAA) data from the climate stations nearest to each survey area (Vacaville/Nut Tree, Martinez, and Tracy Pumping PLT). The United States Department of Agriculture (USDA) reports a nearly year-round growing season (NRCS 2025a). The 30-day rolling precipitation total for the survey areas was near the low end of the 30-year normal range to slightly dry at the time of the field surveys in December 2025, but near the upper end of the normal range at the time of field surveys in January 2026. A large storm system in late December 2025 was responsible for bringing precipitation levels into the normal range at the time of the January surveys (USACE 2025). Conditions were considered "dry" to "normal" at all survey areas at the times they were surveyed, with slightly above-average rainfall in the 30-days antecedent. Annual rainfall in 2025 ranged from approximately 97 percent of the previous 25-year annual average at the North Site to approximately 89 percent at the Byron Site (NRCS 2025a).

Vegetation

The Project is proposed on lands within the San Francisco Bay subregion of the Central Western Region of the California Floristic Province. All four survey areas are characterized by annual grassland vegetation communities, with dominant grass species varying from perennial rye grass (*Lolium perenne*) to ripgut brome (*Bromus diandrus*) and/or wild oats (*Avena barbata*). Additional species, both native and non-native, common to these annual grass-dominated communities are represented at all four survey areas, including, but not limited to: redstem filaree (*Erodium cicutarium*), field bindweed (*Convolvulus arvensis*), Indian clover (*Trifolium albopurpureum*), dwarf sack clover (*Trifolium depauperatum*), purple vetch (*Vicia benghalensis*), fiddleneck (*Amsinckia menziesii*), smooth cat's ear (*Hypochaeris glabra*), blow-wives (*Achyrachaena mollis*), Italian thistle (*Carduus pycnocephalus*), milk thistle (*Silybum marianum*), yellow starthistle (*Centaurea solstitialis*), prickly lettuce (*Lactuca serriola*), dog fennel (*Anthemis cotula*), dove weed (*Croton setigerous*), mustard (*Brassica* spp.), Mediterranean linseed (*Bellardia trixago*), tarweed (*Deinandra* spp.), pineapple weed (*Matricaria discoidia*), spiny cocklebur (*Xanthium spinosum*), burclover (*Medicago arabica*). The Byron site has more alkaline substrates resulting in presence of additional saline-tolerant species such as saltgrass (*Distichlis spicata*), alkali mallow (*Malvella leprosa*), alkali weed (*Cressa truxilensis*), alkali heath (*Frankenia salina*), and perennial pepperweed (*Lepidium latifolium*).

Hydrology

The survey areas are within the following national hydrologic units: North Site = Byron Slough, Maud Site = Lindsay Slough, Bird's Landing Site = Three-Mile Slough-Sacramento River, and Byron Site = Lower Kellogg Creek (USGS 2025b). Regional hydrology of the four survey areas and surrounding landscape is shown in Appendix C, Hydrologic Connectivity. With the exception of the Bird's Landing Site, the survey areas are relatively flat with subtle slope. Networks of drainage ditches at the North and Byron Sites capture surface and ground water and channel it to sloughs and waterways which drain eastward to the Sacramento River via Lindsay Slough. The Maud Site has a gentle northeast gradient. An ephemeral watercourse is mapped in the survey area in U.S.G.S. topographic survey maps and in the National Hydrography Dataset (USGS 2025a). The survey area at the Maud Site is

near the top of the watershed boundary where the ephemeral feature originates. Surface water in the Maud Site survey area collects in the ephemeral watercourse which flows northeast to Lindsay Slough, which is tributary to the Sacramento River. The rolling topography of the Montezuma Hills, where the Bird's Landing Site is situated, channels water into drainages which flow east to Montezuma Slough and the associated Suisun Marsh system. The north side of the Bird's Landing Site survey area slopes to the north toward a seasonal watercourse north of the survey area. The south side of the survey area is captured in drainage ditches constructed as elements of the substation infrastructure. The drainage ditches direct water out of the survey area along the west side of the substation driveway and west along the north roadside of Montezuma Hills Road.

Routine wetland delineation sampling points were established at two locations in the survey areas, the North Site and the Maud Site, where depressions in the local topography indicate potential for wetland development. At the North Site, data points were located where depressions have formed around the footings of an electric transmission tower. At the Maud Site, a sampling point was established along the path of the mapped ephemeral watercourse to establish whether wetland or vernal pool conditions have developed within the low points in the channel.

Soils

Table 1 describes the soil map units and inclusions within the survey area. The table also lists landforms associated with each inclusion and the criteria for designating these landforms as hydric. While the mapping units reported from the North, Maud, and Bird's Landing survey areas are not designated as hydric, inclusions of Omni, Clear Lake, Pescadero and Willow series on basin floors are designated as hydric. Hydric soils are mapped at the Byron Site. Appendix E provides the National Resources Conservation Service soil maps for the four (4) sites.

Table 1 Soil Map Units in the Survey Area

Map Symbol	Map Unit	Inclusions (Percent of Map Unit)	Landform	Hydric Status	Hydric Criteria [1]
North Site					
AoA	Antioch-San Ysidro Complex 0 to 2 percent slopes	Montara and similar soils (50)	Fan remnants	No	---
		San Ysidro and similar soils (35)	Fan remnants	No	---
		Solano (8)	Fan remnants	No	---
		Pescadero (7)	Basin floors on fan remnants	Yes	3
Pc	Pescadero silty clay loam, 0 percent slopes	Pescadero (85)	Basin floors on fan remnants	No	---
		Solano (8)	Fan remnants	No	---
		Willows (7)	Basin floors	Yes	2
SeA	San Ysidro sandy loam, 0 to 2 percent slopes	San Ysidro (85)	Fan remnants	No	---
		Antioch (8)	Fan remnants	No	---
		San Ysidro – Thick surface (7)	Fan remnants	No	---

Map Symbol	Map Unit	Inclusions (Percent of Map Unit)	Landform	Hydric Status	Hydric Criteria [1]
		San Ysidro (85)	Stream terraces	No	---
SfA	San Ysidro sandy loam, thick surface , 0 to 2 percent slopes	Antioch (8)	Stream terraces	No	---
		San Ysidro (7)	Stream terraces	No	---
		Solano (85)	Stream terraces	No	---
SH	Solano loam	Pescadero (5)	Basin floors on fan remnants	No	---
		Antioch (5)	Stream terraces	No	---
		San Ysidro – Thick surface (5)	Stream terraces	No	---
Maud Site					
AIC	Altamont-San Ysidro-San Benito complex, 2 to 9 percent slopes	Altamont (60)	Eroded fan remnant sideslopes	No	---
		San Ysidro (20)	Eroded fan remnant sideslopes	No	---
		San Benito (15)	Eroded fan remnants	No	---
		Ayar (3)	Eroded fan remnant sideslopes	No	---
		Diablo (2)	Eroded fan remnant sideslopes	No	---
AmC	Altamont-Diablo clays, 2 to 9 percent slopes	Altamont (50)	Eroded fan remnant sideslopes	No	---
		Diablo (40)	Eroded fan remnant sideslopes	No	---
		Ayar (5)	Eroded fan remnant sideslopes	No	---
		San Benito (5)	Eroded fan remnants	No	---
AoA	Antioch-San Ysidro Complex 0 to 2 percent slopes	Montara and similar soils (50)	Fan remnants	No	---
		San Ysidro and similar soils (35)	Fan remnants	No	---
		Solano (8)	Fan remnants	No	---
		Pescadero (7)	Basin floors on fan remnants	Yes	3
AsA	Antioch-San Ysidro complex, thick surface, 0 to 2 perce nt slopes	Antioch (55)	Fan remnants	No	---
		San Ysidro (35)	Fan remnants	No	---
Bird's Landing Site					

Map Symbol	Map Unit	Inclusions (Percent of Map Unit)	Landform	Hydric Status	Hydric Criteria [1]
AmE2	Altamont-Diablo clays, 9 to 30 percent slopes	Altamont (50)	Eroded fan remnant sideslopes, hillslopes	No	---
		Diablo (40)	Eroded fan remnant sideslopes, hillslopes	No	---
		Ayar (5)	Eroded fan remnant sideslopes, hillslopes	No	---
		San Benito (5)	Eroded fan remnant sideslopes, hillslopes	No	---
DaC	Diablo-Ayar clays, 2 to 9 percent slopes	Diablo (65)	Eroded fan remnant sideslopes	No	---
		Ayar (25)	Eroded fan remnant sideslopes	No	---
		Altamont (5)	Eroded fan remnant sideslopes	No	---
		San Benito (5)	Eroded fan remnant sideslopes	No	---
DaE2	Diablo-Ayar clays, 9 to 30 percent slopes, eroded	Diablo (60)	Eroded fan remnant sideslopes, hillslopes	No	---
		Ayar (30)	Eroded fan remnant sideslopes, hillslopes	No	---
		Altamont (5)	Eroded fan remnant sideslopes, hillslopes	No	---
		San Benito (5)	Eroded fan remnant sideslopes, hillslopes	No	---
Om	Omni clay loam	Omni (85)	Stream terraces	Yes	2
		Clear Lake (5)	Basin floors	Yes	2
		Solano (5)	Fan remnants	No	---
		Rincon (5)	Stream terraces	No	---
Byron Site					

Map Symbol	Map Unit	Inclusions (Percent of Map Unit)	Landform	Hydric Status	Hydric Criteria [1]
Bc	Brentwood clay loam, wet	Brentwood (85)	Valley floors	No	---
		Sycamore (10)	Flood plains	Yes	2
		Unnamed (5)	Depressions	Yes	2
Mb	Marcuse clay, moderately saline, sodic, partially drained 0 to 2 percent slopes	Marcuse (85)	Basin floors	Yes	2
		Marcuse – Strongly alkaline (10)	Basin floors	Yes	2
		Sacramento (5)	Basin floors	Yes	2
Mc	Marcuse clay, strongly saline, sodic, partially drained, 0 to 2 percent slopes	Marcuse (85)	Basin floors	Yes	2
		Marcuse – Moderately alkaline (10)	Basin floors	Yes	2
		Sacramento (5)	Basin floors	Yes	2

[1]Hydric Criteria

2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that:
    a. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
    b. Show evidence that the soil meets the definition of a hydric soil;
3. Soils that are frequently ponded for long or very long duration during the growing season.
    a. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
    b. Show evidence that the soil meets the definition of a hydric soil;

SOURCE: NRCS 2025b

Results

The field investigation identified two (2) freshwater seasonal wetlands, 14 drainage ditches, and six (6) ephemeral watercourses within the survey areas. The aquatic resources have been assigned alphanumeric binomial labels (e.g., DD-01) displayed on the maps in Appendix B. The first part of the binomial consists of an acronym for the feature type (i.e., EW for ephemeral watercourse). Each wetland/upland sample plot has been assigned a unique numerical identifier included on the data forms and maps (e.g. 001, 002). The maps in Appendix B display the plot locations as well as the location and extent of the aquatic resources mapped in this survey. Routine wetland delineation data forms describe the vegetation and geomorphic observations at each sample plot (see Appendix A).

Aquatic resources in the survey area cover a total of 5.341 acre. Table 2 lists the feature binomial and acreage of the aquatic resource. Table 3 lists the Cowardin code, type of aquatic resource feature in accordance with the "Rapanos Guidance," and latitude/longitude coordinates of the center of the mapped feature.

Table 2 Acreage of Aquatic Resources in the Survey Area

Feature Number	Acreage (length in feet)
WETLAND FEATURES	
Freshwater Seasonal Wetland	
FSW-01	0.048 (64)
FSW-02	0.037 (59)
TOTAL WETLANDS	**0.085 (123)**
WATER FEATURES	
Drainage Ditch	
DD-01	2.154 (2578)
DD-02	0.109 (325)
DD-03	0.059 (710)
DD-04	0.467 (1261)
DD-05	0.562 (658)
DD-06	0.708 (1384)
DD-07	0.070 (767)
DD-08	0.230 (786)
DD-09	0.408 (461)
DD-10	0.243 (899)
DD-11	0.027 (263)
DD-12	0.025 (250)
RDD-01	0.160 (315)
RDD-02	0.018 (177)
Total Drainage Ditch	***5.061 (10,342)***
Ephemeral Watercourse	
EW-01	0.105 (674)
EW-02	0.025 (213)
EW-03	0.037 (813)
EW-04	0.012 (262)
EW-05	0.007 (152)
EW-06	0.010 (209)
Total Ephemeral Watercourse	***0.195 (2322)***
TOTAL WATERS	**5.256 (12,664)**
TOTAL AQUATIC RESOURCES	**5.341 (12,787)**

Table 3 Aquatic Resources Data

Feature	Cowardin Code	Waters Type	Latitude	Longitude
FSW-01	PEM2Jf	B1WETNONADJ	38.30129	-121.890138
FSW-02	PEM2Jf	B1WETNONADJ	38.3014	-121.889980
DD-01	R4UBFx	A2TRIBINT	38.30445	-121.883508
DD-02	R4UBFx	A2TRIBINT	38.30125	-121.888314
DD-03	R4UBFx	A2TRIBINT	38.30084	-121.889728
DD-04	R4UBFx	A2TRIBINT	38.30074	-121.886057
DD-05	R4UBFx	A2TRIBINT	38.30065	-121.889581
DD-06	R4UBFx	A2TRIBINT	38.30062	-121.885967
DD-07	R4UBFx	A2TRIBINT	38.12199	-121.830035
DD-08	R4UBFx	B5DITCH	37.88195	-121.615802
DD-09	R4UBFx	A2TRIBINT	37.88117	-121.613904
DD-10	R4UBFx	B5DITCH	37.88186	-121.615630
DD-11	R4UBFx	B5DITCH	37.88195	-121.617823
DD-12	R4UBFx	B5DITCH	37.88186	-121.617844
RDD-01	R4RBJx	B5DITCH	38.1227	-121.829569
RDD-02	R4RBJx	B5DITCH	38.12263	-121.829452
EW-01	R4SBC	B3EPHEMERAL	38.20838	-121.859371
EW-02	R4SBC	B3EPHEMERAL	38.20699	-121.859440
EW-03	R4SBC	B3EPHEMERAL	38.12948	-121.830680
EW-04	R4SBC	B3EPHEMERAL	38.12846	-121.833694
EW-05	R4SBC	B3EPHEMERAL	38.1269	-121.833516
EW-06	R4SBC	B3EPHEMERAL	38.12703	-121.831563

PEM2Jf: palustrine nonpersistent emergent intermittently flooded farmed
R4SBC: riverine intermittent streambed seasonally flooded
B1WETNONADJ; (b)(1) Non-adjacent wetland
A2TRIBINT: (a)(2) Intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year
B5DITCH: (b)(5) Ditch that is not an (a)(1) or (a)(2) water, and those portions of a ditch constructed in an (a)(4) water that do not satisfy the conditions of (c)(1)
B3EPHEMERAL: (b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool

The following sections provide a description of the freshwater seasonal wetlands, drainage ditches, and ephemeral watercourses that cover a total of 5.341 acres of the survey area.

Freshwater Seasonal Wetland

The field investigators observed two freshwater seasonal wetlands (FSW-01 and FSW-02) within the survey area. Both features were observed at the North Site at the base of a steel lattice electric tower. The features were noted during the survey under dry conditions on December 11, 2025 to be slightly depressed from the surrounding cultivated field, with inclusions of cocklebur (*Xanthium strumarium*, FAC) and curly dock (*Rumex crispus*, FAC) not present in the surrounding upland grasslands. Upon survey of the location on January 21, 2026, following late-December rains and under normal precipitation conditions for the area, the depressions were observed to have surface water, a primary indicator of wetland hydrology, and soil samples showed a depleted matrix within the upper 6 inches of the soil profile. The features are isolated within the surrounding annual grasslands. The features likely formed as a combination of subsidence of soils around the footings of the electric transmission tower as well as compaction of the area from livestock congregating at the tower base. The wetland boundary follows the topographic change associated with the edge of the depressional feature, including both primary and secondary hydrology indicators.

Drainage Ditches

Field surveys identified a total of fourteen drainage ditches in the survey areas. Ditches in the survey area are variably vegetated and unvegetated and include two (2) features reinforced with rock rip-rap (RDD-01 and RDD-02). All ditches in the survey areas are constructed features designed to drain agricultural lands or convey water along roadsides. Ditch features are relatively steep-walled, such that aerial mapping of the OHWM is effectively consistent with the top of bank. For the purpose of this delineation, the mapped lateral extent of drainage ditches represents both the OHWM and top of bank of the features. The investigators observed drainage ditches at the North, Bird's Landing, and Byron Site survey areas.

Six (6) drainage ditches are mapped in the survey area at the North Site (DD-01, DD-02, DD-03, DD-04, DD-05, and DD-06). Dependent upon the width and depth of the various features, they are either fully vegetated or support vegetation along their margins. Evidence of relatively permanent flow in the ditches is present in the form of erosion lines and or water marks along their banks. Drainage ditches in the North Site survey area are part of a network of agricultural drainage ditches in the region which are connected by culverts. Private property access did not allow for detailed investigation of connectivity of the various drainage ditches; however, review of aerial imagery and topographic maps indicates drainage ditches in the survey area have relatively permanent surface connection via culverts to Lindsay Slough, to the east, which is tributary to the Sacramento River, a TNW.

Three (3) drainage ditches, including one unvegetated roadside ditch (DD-07) and two rip-rap reinforced ditches (RDD-01 and RDD-02) were observed in the Bird's Landing Site survey area. All three features are constructed in uplands near the south end of the survey area and are designed to drain surface runoff from the substation property. Reinforced drainage ditches are constructed on either side of a substation access road, and convey water downslope to culverts which open to DD-07 along the west side of the substation driveway, near the entrance to the property. Drainage ditch DD-07 runs south out of the survey area to the north roadside of Montezuma Hills Road. Beyond the survey area, the drainage ditch runs west along the roadside and drains to a natural watercourse which flows west to Montezuma Slough.

Five (5) drainage ditches are identified in the Byron Site survey area. One large ditch (DD-09) runs along the east side of the survey area and has a relatively permanent, continuous surface connection via culverts to the navigable waters at Discovery Bay to the north. The remaining four (4) ditch features in the Byron Site survey area (DD-08, DD-10, DD-11, and DD-12) are vegetated roadside ditches along the north and south sides of Kellogg Creek Road. Features along the north and south sides of the road are connected by culverts where they are crossed by private driveways. Due to safety and property owner concerns, it was not possible to directly investigate surface connectivity of these features with navigable waters. Connectivity with the drainage ditch associated with DD-09 was not observed during the survey on January 27, 2026.

Ephemeral Watercourse

Six (6) ephemeral watercourse features are identified at the Maud and Bird's Landing Site survey areas. Ephemeral watercourses in the survey areas include two (2) discontinuous, natural features at the Maud Site and four (4) erosional features at the Bird's Landing Site.

Maud Site. Investigators identified two (2) discontinuous ephemeral channels in the survey area (EW-01 and EW-02) at the Maud Site during surveys. During a survey completed at a time when the Antecedent Precipitation Table in Appendix F shows conditions were drier than normal, investigators observed a broad channel which roughly follows the alignment of the ephemeral feature shown on topographic and hydrologic maps (USGS 2025a). The lateral limit of the channel is marked by a shallow shelf which defines the transition from surrounding grasslands to the low terrace or active floodplain of the watercourse. Top of bank of the ephemeral watercourse is mapped along the upper edge of the shallow shelf. Hydrology in the survey area includes surface flows which are captured in a well-defined channel (EW-02; Photos 8 and 15 in Appendix D) then transition to unconfined overland flows before returning to a well-defined channel at EW-01. The transition from overland flow to the channel at EW-01 is visible in Photo 9 in Appendix D. Within the ephemeral channel, investigators identified compound low-flow channels/active floodplain and a series of livestock wallows (Photos 10, 11, and 12, Appendix D). The livestock wallows are separated by short terraces which lack defined bed, bank, or channel. Compound channels within the top of bank may be remnant alluvial features, as indicated by soils mapped in the survey area. A clear distinction in vegetation communities was not observed during the December survey between surrounding uplands to low terraces in the channel nor the active floodplain or low-flow channels; however, occurrences of wetland vegetation types were noted in the channels. Livestock wallows were observed to be mostly bare ground. Low-flow channels are mapped where distinct channels are visible within the top of bank, and the limits of the active floodplain are defined along lines of erosion and water marks on the upper margins of the channels and livestock wallows.

Data was collected from a sampling plot within the ephemeral channel to examine if wetland conditions develop within the channels. Standing water observed on January 21, 2026, following a winter storm event, is indicative of wetland hydrology, and soils with low chroma in the upper six inches were observed; however, a predominance of wetland vegetation is not present. Occurrences of obligate wetland species, including *Eleocharis palustris* and *Callitriche palustris*, were recorded within the sample plot and were similarly observed in other locations within the channel; however, vegetative cover does not show a dominance of hydrophytic vegetation. Water marks, drift lines, and sediment deposition confirmed boundaries of ephemeral watercourses mapped along erosion lines and water marks in the well-defined channels.

Review of aerial imagery shows the ephemeral watercourse in the survey area has a relatively permanent surface connection (via culverts beneath roads) to Lindsay Slough, approximately five (5) miles to the northeast.

Bird's Landing Site. Ephemeral watercourses documented in the Bird's Landing Site survey area (EW-03, EW-04, EW-05, and EW-06) are erosional features which extend from the developed substation pads. The substation pads are constructed on a hilltop. Each of the four (4) features originates from an unvegetated buffer surrounding the substation fence. The channels form where water flows downslope from the unvegetated buffer, creating deeply eroded channels (Photos 17, 18, 19 in Appendix D). The low-flow/active floodplain channel of each feature is defined and mapped along the upper limits of a narrow, deeply-cut, approximately one-foot wide channel where water currently flows. Top of bank of each feature is defined along the limits of erosion. Each of the four ephemeral features terminates in uplands below the substation where flow from the eroded channels dissipates into sheet flow across the grassland landscape.

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Appendix A

Routine Wetland Delineation Data Forms

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville 500kV Interconnect (North Site) City/County: Vacaville/Solano Sampling Date: 01/21/2026

Applicant/Owner: Pacific Gas & Electric Company State: CA Sampling Point: 001

Investigator(s): Rob Witthaus, Ode Bernstein Section, Township, Range: Section 5, T5N, R1E

Landform (hillslope, terrace, etc.): Fan remnant Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): LRR-C Lat: 38.301432° Long: -121.889930° Datum: WGS 84

Soil Map Unit Name: Solano Loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 1 sq. meters)			
1. Rumex crispus	15	Yes	FAC
2. Xanthium strumarium	5	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
	20 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 80 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 001

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	2.5Y 3/2	100					Sandy loa	
5-15	2.5Y 3/3	90	10YR 5/6	10	RM	M	Sandy cla	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ **No** _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No _____ Depth (inches): 3

Water Table Present? Yes ✓ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ✓ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville 500kV Interconnect City/County: Vacaville/Solano Sampling Date: 01/21/2026

Applicant/Owner: Pacific Gas & Electric Company State: CA Sampling Point: 002

Investigator(s): Rob Witthaus, Ode Bernstein Section, Township, Range: Section 5, T5N, R1E

Landform (hillslope, terrace, etc.): Fan remnant Local relief (concave, convex, none): None Slope (%): 0

Subregion (LRR): LRR-C Lat: 38.301466° Long: -121.889913° Datum: WGS 84

Soil Map Unit Name: Solano Loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 1 sq. meters)			
1. Festuca perenne	75	Yes	UPL
2. Geranium dissectum	10	No	UPL
3. Trifolium albopurpureum	5	No	FACU
4. Rumex crispus	2	No	FAC
5.			
6.			
7.			
8.			
	92 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 8 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: 002

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-15	10YR 3/4 5	90	5YR /8	10	C	PL	Sandy cla	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ **No** ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes ✓ No _____ Depth (inches): 12

Saturation Present? (includes capillary fringe) Yes ✓ No _____ Depth (inches): 6

Wetland Hydrology Present? Yes _____ **No** ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Water table and associated saturation are likely seasonally high due to sampling during the growing season when surface ponding from recent rains is present. Water table and saturation are not expected within 12 inches from the surface during non-growing season sampling (as evidenced by absence of hydric soils).

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville 500kV Interconnect (Maud Site) City/County: Suisun City/Solano Sampling Date: 01/21/2026

Applicant/Owner: Pacific Gas & Electric Company State: CA Sampling Point: 003

Investigator(s): Rob Witthaus, Ode Bernstein Section, Township, Range: Section 10, T4N, R1E

Landform (hillslope, terrace, etc.): Fan remnant Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): LRR-C Lat: 38.206827° Long: -121.859416° Datum: WGS 84

Soil Map Unit Name: Antioch-San Ysidro Complex NWI classification: R4SBC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 1 sq. meters)			
1. Avena barbata	50	Yes	UPL
2. Trifolium albopurpureum	30	Yes	FACU
3. Eleocharis palustris	10	No	OBL
4. Amsinckia menziesii	5	No	UPL
5. Erodium cicutarium	2	No	UPL
6. Rumex crispus	2	No	FAC
7. Callitriche palustris	1	No	OBL
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	11	x 1 =	11
FACW species	0	x 2 =	
FAC species	2	x 3 =	6
FACU species	30	x 4 =	120
UPL species	57	x 5 =	285
Column Totals:	100 (A)		422 (B)

Prevalence Index = B/A = 4.22

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: 003

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR 4/2	100					Sandy cla	
1-8	10YR 4/1 4	95	2.5YR /8	5	C	PL	Sandy cla	
8-14	10YR 4/1 4	99	2.5YR /8	1	C	PL	Sandy cla	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ **No** _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ✓ Water Marks (B1) (**Riverine**)
- ✓ Sediment Deposits (B2) (**Riverine**)
- ✓ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No _____ Depth (inches): 12

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ **No** _____

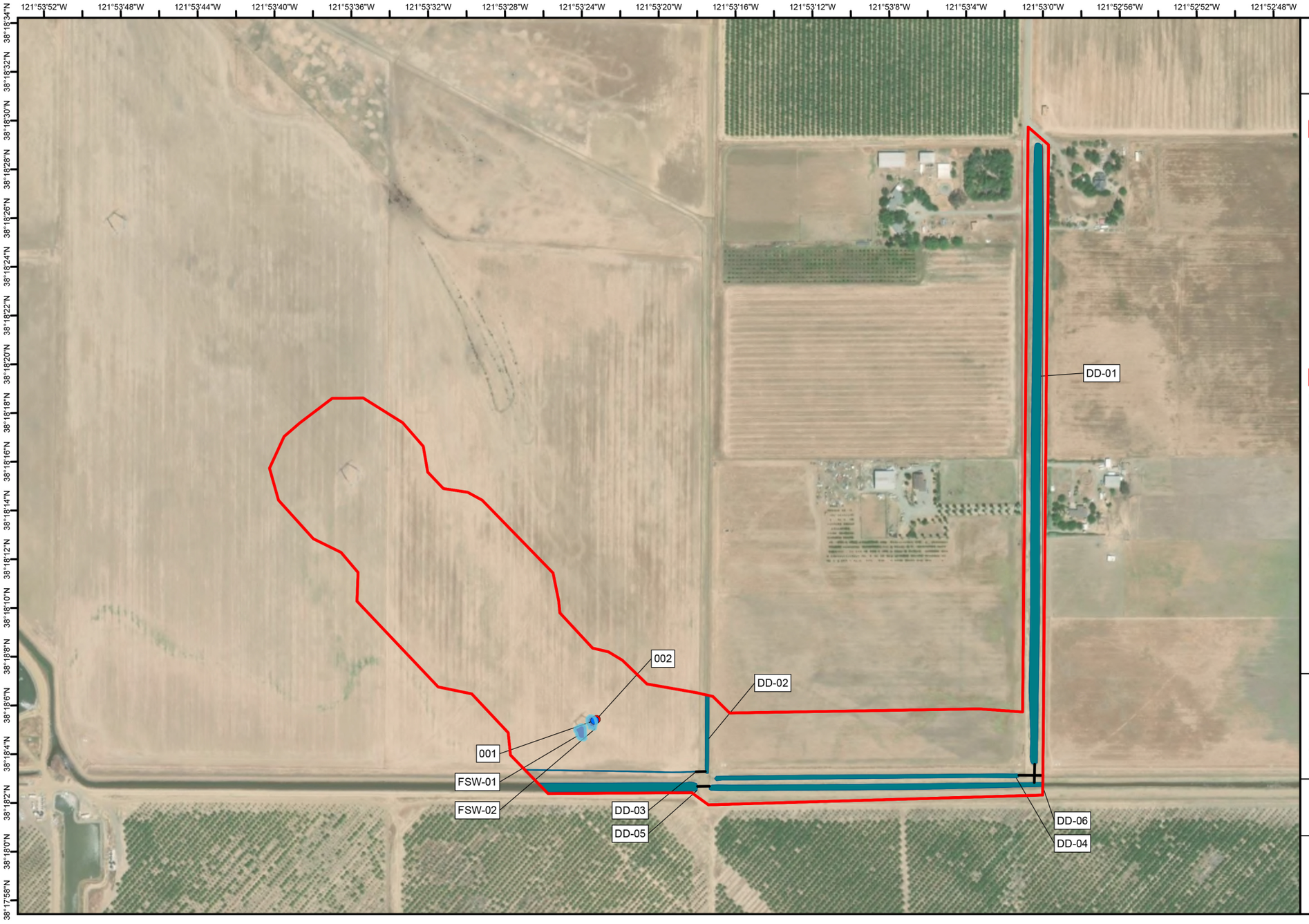
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Surface water present, but not currently flowing due to segmented channel and absence of active rainfall. Hydrology indicators for water marks, sediment deposits, and drift deposits are likely remnant from flow in the channel, indicating a more riverine character, as indicated in topographic mapping and NWI.

Appendix B

Delineation of Aquatic Resources Map



Collinsville Substation
Vaca-Tesla 500kV Interconnection
North Site
February 2026

Legend - North Site

- Survey Area (45.122 acres)
- Drainage Ditch (4.058 acres)
- Freshwater Seasonal Wetland (0.085 acres)
- Culvert
- Upland Sampling Point
- Wetland Sampling Point

Legend - Project Total

- Survey Area (196.485 acres)
- Drainage Ditch (5.061 acres)
- Ephemeral Watercourse (OHWM) (0.195 acres)
- Freshwater Seasonal Wetland (0.085 acres)
- Reinforced Drainage Ditch (0.177 acres)
- Top of Bank

N

0 200 400 Feet

1:4,800

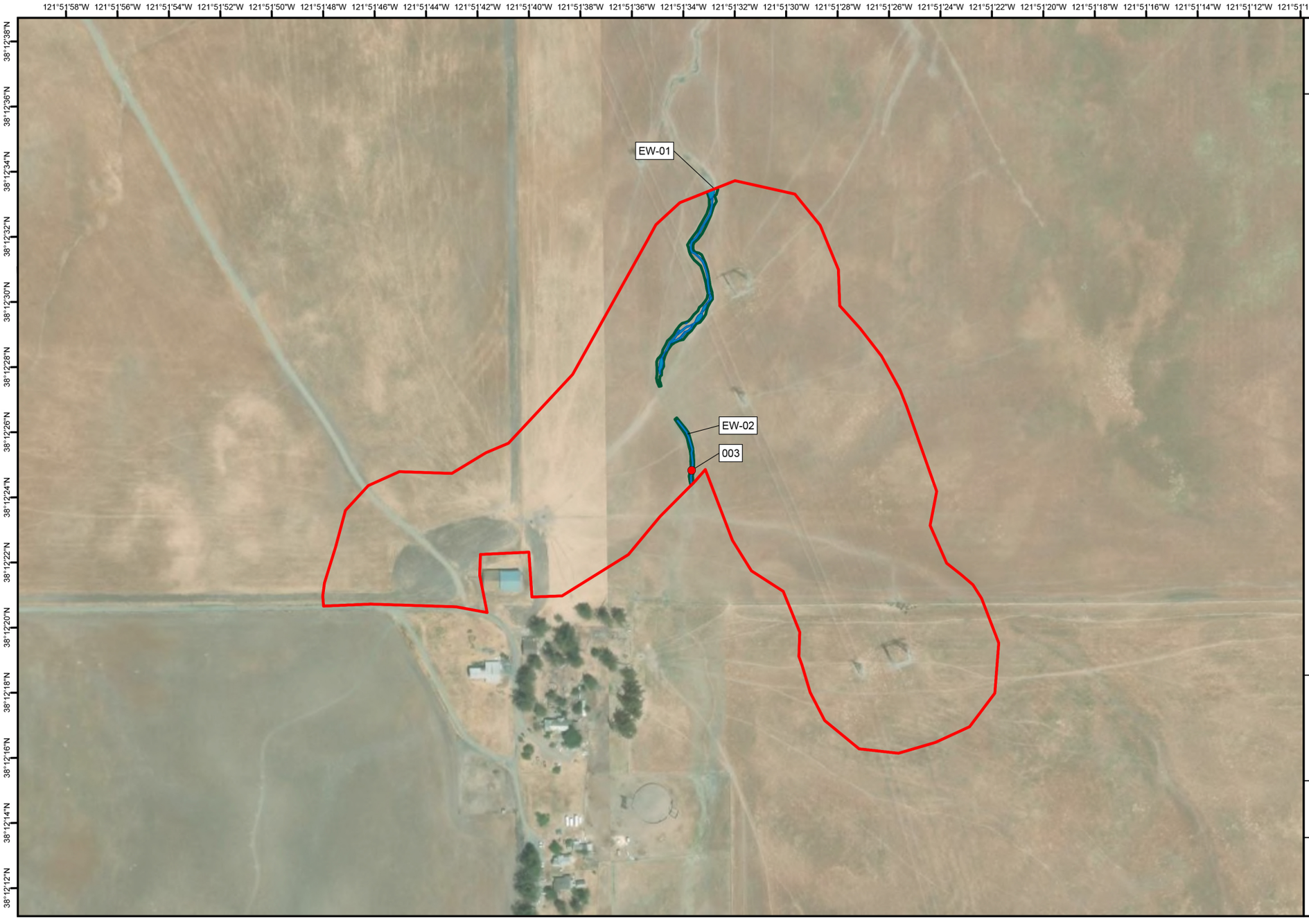
Notes:
1. Acreage shown for each class refers to the entire delineation area.
2. Feature label key provided below.
3. ESRI World Imagery (7/24/2014)
4. Projection: UTM NAD 83 Z10N
5. Vertical datum NAVD 88

USGS 7.5' Quad: ELMIRA (1980)
PLSS: T05N, R01E, SEC 5, 8

PG&E Contact: Ode Bernstein/415-404-1482
Prepared by: Kleinfelder/415-642-8969
Delineated by: Rob Witthaus
Delineation Survey Date: 12/10-11/2025
and 01/21, 27/2026
Drawn By: Joseph Hiatt

Pacific Gas and Electric Company®

Created By: JHiatt Document Path: \\arcgisstorp05\GIS_Projects\Client\GAND\APGE\2022050760202260705_002_76_Collinsville_ViaVCollinsville_Z10.aprx



Collinsville Substation
Vaca-Tesla 500kV Interconnection
Maud Site
February 2026

Legend - Maud Site

- Ephemeral Watercourse (OHWM) (0.129 acres)
- Top of Bank
- Upland Sampling Point

Legend - Project Total

- Survey Area (196.485 acres)
- Drainage Ditch (5.061 acres)
- Ephemeral Watercourse (OHWM) (0.195 acres)
- Freshwater Seasonal Wetland (0.085 acres)
- Reinforced Drainage Ditch (0.177 acres)
- Top of Bank

N

0 200 400 Feet

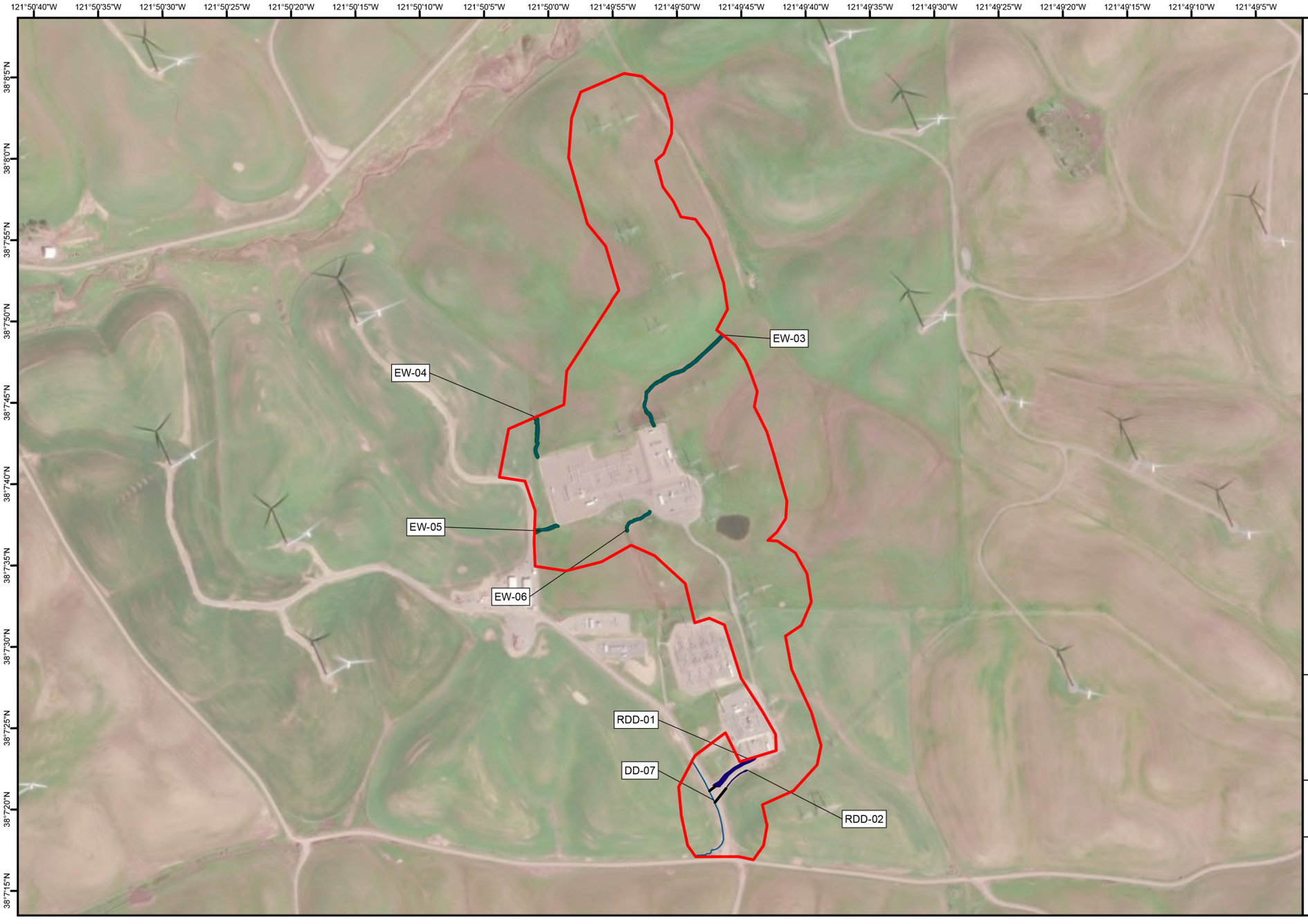
1:3,600

Notes:
1. Acreage shown for each class refers to the entire delineation area.
2. Feature label key provided below.
3. ESRI World Imagery (7/24/2014)
4. Projection: UTM NAD 83 Z10N
5. Vertical datum NAVD 88

USGS 7.5' Quad: BIRD LANDING (1992)
PLSS: T04N, R01E, SEC 9, 10

PG&E Contact: Ode Bernstein/415-404-1482
Prepared by: Kleinfelder/415-642-8969
Delineated by: Rob Witthaus
Delineation Survey Date: 12/10-11/2025 and 01/21, 27/2026
Drawn By: Joseph Hiatt

Pacific Gas and Electric Company®



Collinsville Substation
Vaca-Tesla 500kV Interconnection
Bird's Landing Site
February 2026

Legend - Bird's Landing Site

- Survey Area (90.486 acres)
- Drainage Ditch (0.070 acres)
- Ephemeral Watercourse (OHWM) (0.066 acres)
- Top of Bank
- Reinforced Drainage Ditch (0.177 acres)
- Culvert

Legend - Project Total

- Survey Area (196.485 acres)
- Drainage Ditch (5.061 acres)
- Ephemeral Watercourse (OHWM) (0.195 acres)
- Freshwater Seasonal Wetland (0.085 acres)
- Reinforced Drainage Ditch (0.177 acres)
- Top of Bank

N

0 300 600 Feet

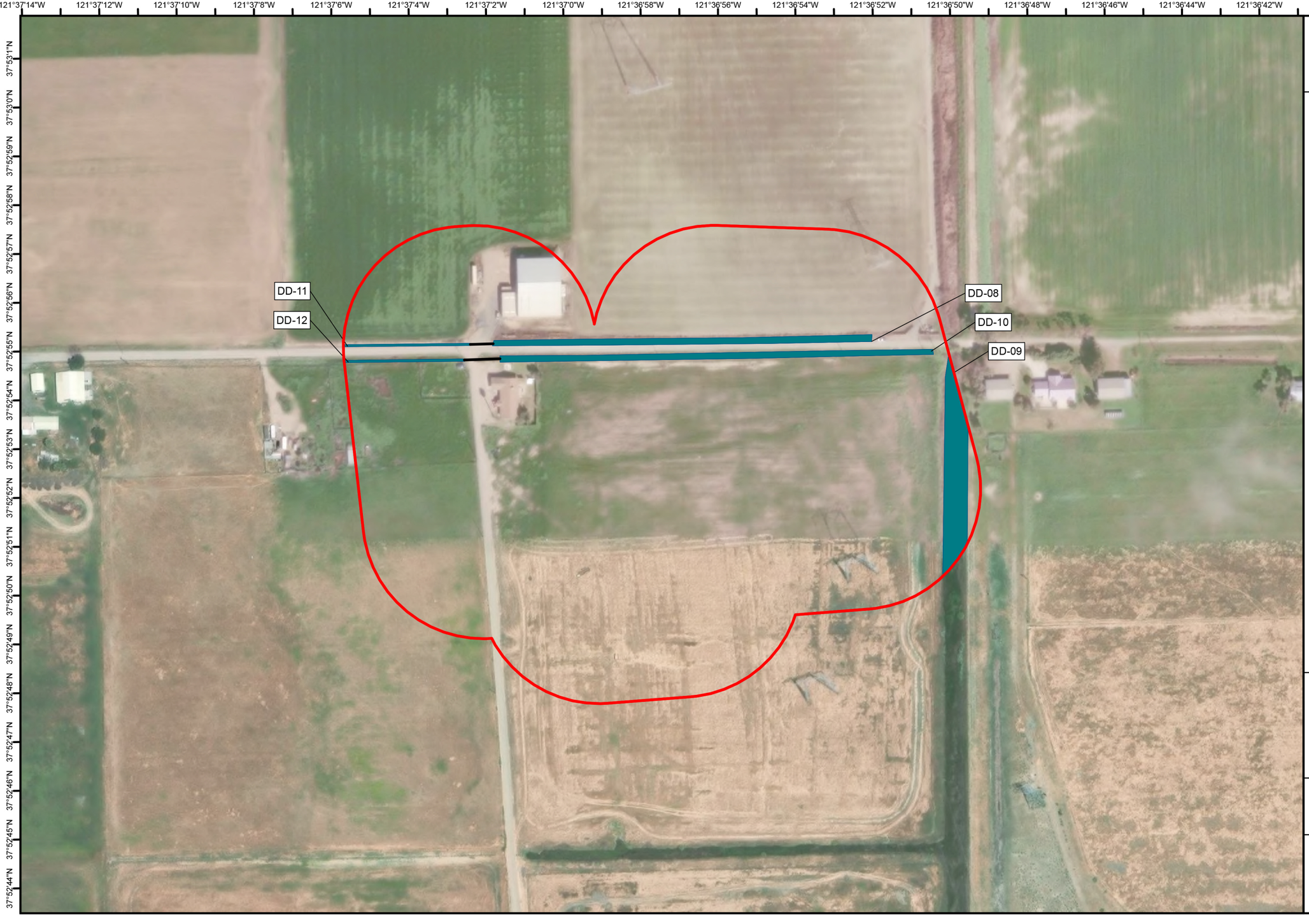
1:7,200

Notes:
1. Acreage shown for each class refers to the entire delineation area.
2. Feature label key provided below.
3. ESRI World Imagery (7/24/2014)
4. Projection: UTM NAD 83 Z10N
5. Vertical datum NAVD 88

USGS 7.5' Quad: ANTIOCH NORTH (1978) and BIDS LANDING (1992)
PLSS: T03N, R01E, SEC 2, 11

PG&E Contact: Ode Bernstein/415-404-1482
Prepared by: Kleinfelder/415-642-8969
Delineated by: Rob Witthaus
Delineation Survey Date: 12/10-11/2025 and 01/21, 27/2026
Drawn By: Joseph Hiatt

Pacific Gas and Electric Company®



Collinsville Substation
Vaca-Tesla 500kV Interconnection
Byron Site
February 2026

Legend - Byron Site

- Survey Area (23.953 acres)
- Drainage Ditch (0.881 acres)
- Culvert

Legend - Project Total

- Survey Area (196.485 acres)
- Drainage Ditch (5.061 acres)
- Ephemeral Watercourse (OHWM) (0.195 acres)
- Freshwater Seasonal Wetland (0.085 acres)
- Reinforced Drainage Ditch (0.177 acres)
- Top of Bank

N

0 100 200 Feet

1:2,400

Notes:
1. Acreage shown for each class refers to the entire delineation area.
2. Feature label key provided below.
3. ESRI World Imagery (7/24/2014)
4. Projection: UTM NAD 83 Z10N
5. Vertical datum NAVD 88

USGS 7.5' Quad: WOODWARD ISLAND (1978)
PLSS: WET LANDS
LAND GRANT

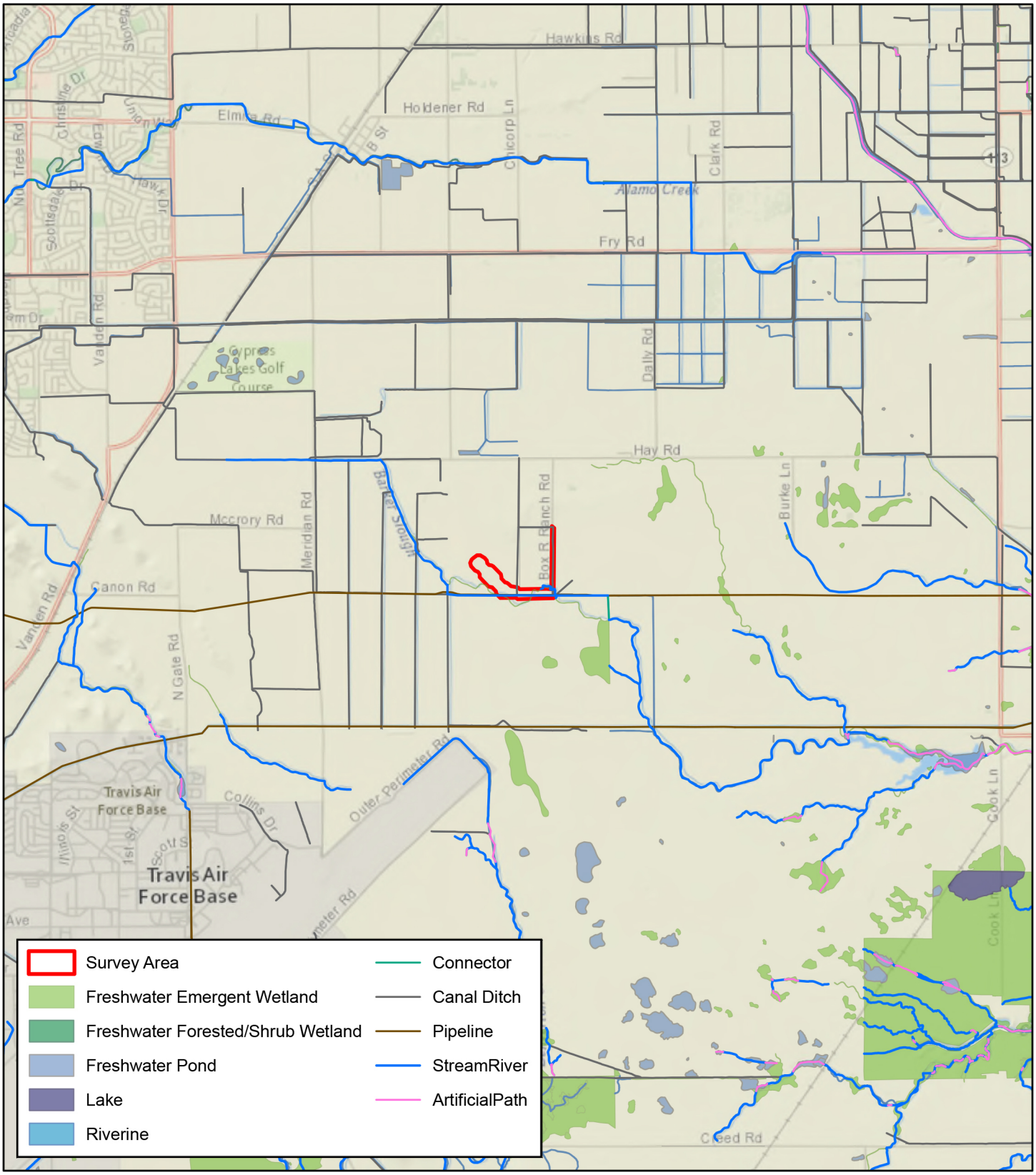
PG&E Contact: Ode Bernstein/415-404-1482
Prepared by: Kleinfelder/415-642-8969
Delineated by: Rob Witthaus
Delineation Survey Date: 12/10-11/2025 and 01/21, 27/2026
Drawn By: Joseph Hiatt

Created By: JHiatt Document Path: \\azrgisstorp03\GIS_Projects\Client\GANDA\PGE\20226076\20226076_002_76_Collinsville_Wet\Collinsville_Z10.aprx

Pacific Gas and Electric Company®

Appendix C

Hydrologic Connectivity



Source National Hydrography Dataset (NHD)

0 0.5 1 Miles

0 0.75 1.5 Kilometers

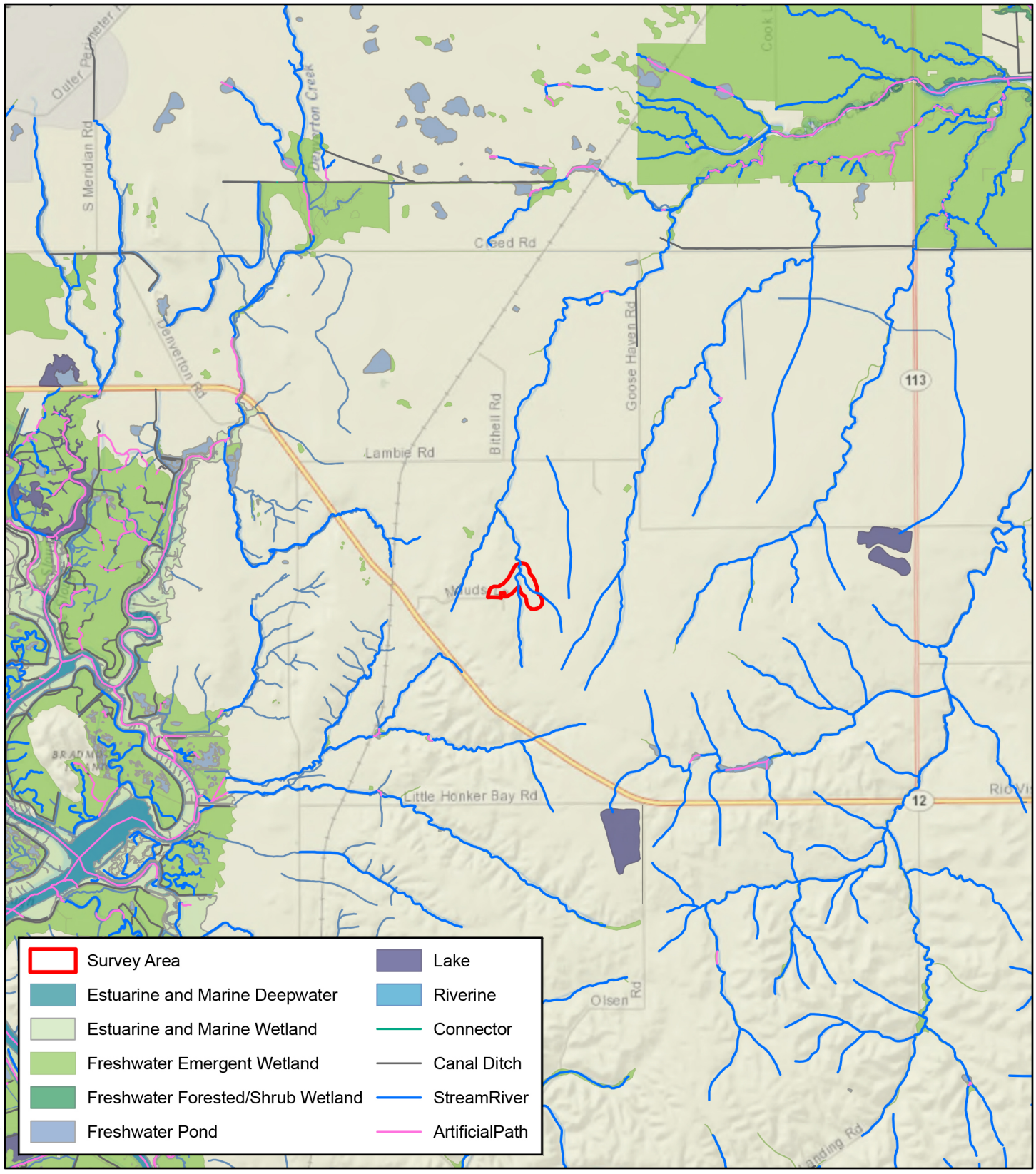
N

Scale 1:63,360
1 inch = 5,280 feet

North Site
Hydrologic Connectivity
Collinsville Substation
Vaca-Tesla 500kV Interconnection
Solano County, California

KLEINFELDER
Bright People. Right Solutions.

Created By: JHiatt Document Path: \\arrgis\storp03\GIS_Projects\Client\GANDA\PGE\20226076\20226076_002_76_Collinsville_Wet\Collinsville_210.aprx



Source National Hydrography Dataset (NHD)

0 0.5 1 Miles

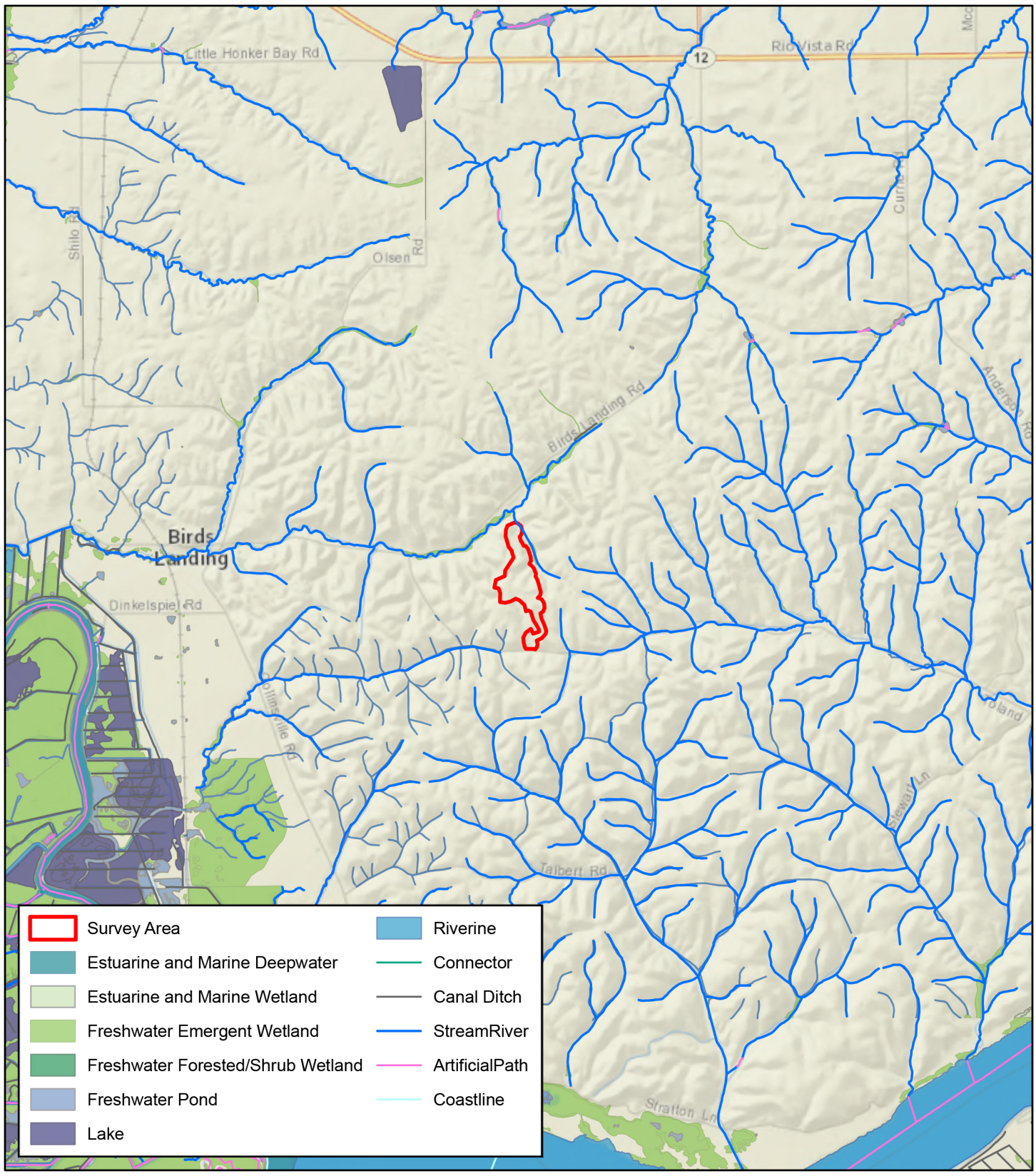
0 0.75 1.5 Kilometers

N

Scale 1:63,360
1 inch = 5,280 feet

Maud Site
Hydrologic Connectivity
Collinsville Substation
Vaca-Tesla 500kV Interconnection
Solano County, California

KLEINFELDER
Bright People. Right Solutions.



Source National Hydrography Dataset (NHD)

0 0.5 1 Miles

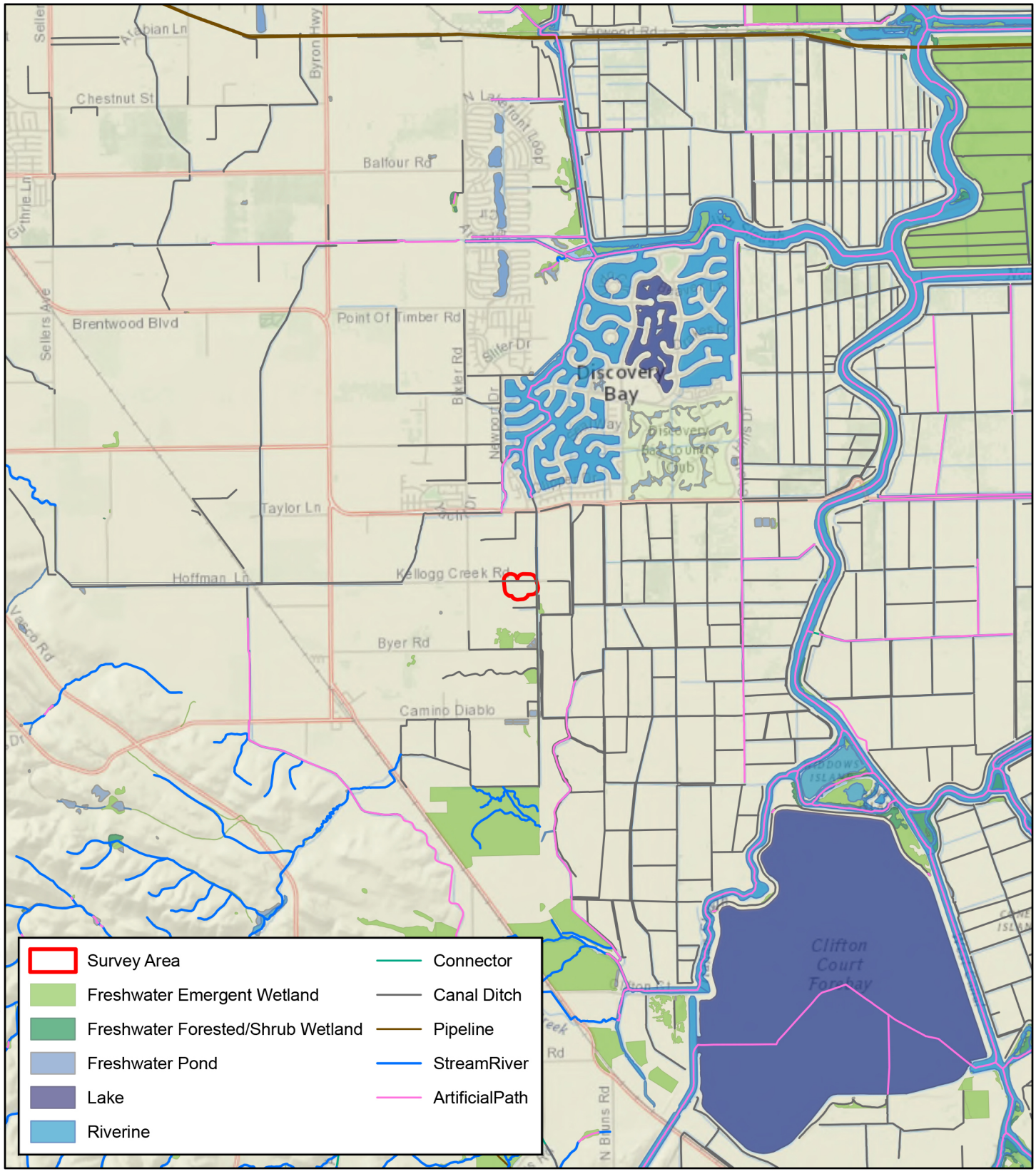
0 0.75 1.5 Kilometers

N

Scale 1:63,360
1 inch = 5,280 feet

Bird's Landing Site
Hydrologic Connectivity
Collinsville Substation
Vaca-Tesla 500kV Interconnection
Solano County, California

KLEINFELDER
Bright People. Right Solutions.



Source National Hydrography Dataset (NHD)

0 0.5 1 Miles

0 0.75 1.5 Kilometers

N

Scale 1:63,360
1 inch = 5,280 feet

Byron Site
Hydrologic Connectivity
Collinsville Substation
Vaca-Tesla 500kV Interconnection
Contra Costa County, California

KLEINFELDER
Bright People. Right Solutions.

Appendix D

Site Photographs

Photo 1 North Site – View looking west from Box R Ranch Road at DD-06; representative view of drainage ditch – 12/11/25

Photo 2 North Site – Representative view of cultivated, grazed uplands in the study area surrounding the transmission line – 12/11/25

Photo 3 **North Site - Looking east at base of electric transmission tower with *Rumex crispus* (FAC) and *Xanthium strumarium* (FAC) – 12/11/25**

Photo 4 **North Site – Facing southwest, looking at FSW-02 at base of transmission tower following rains in late December – 01/21/26**

Photo 5 North Site – Soil sample for Wetland Sampling Point 001 – 01/21/26

Photo 6 North Site – Soil sample for Upland Sampling Point 002 – 01/21/26

Photo 7 **Maud Site – Looking south showing representative view of grazed uplands in the study area – 12/10/25**

Photo 8 **Maud Site – Looking north at EW-02 showing south end of the segmented channel – 12/10/25**

Photo 9 **Maud Site - View looking north at EW-01 where the south end of the channel segment originates**

Photo 10 **Maud Site - Facing southwest, showing compound channel segments in EW-01 – 12/10/25**

Photo 11 **Maud Site - View looking northeast at EW-01 showing where livestock have created wallows along the channel separated by raised areas lacking a defined bed and bank with OHWM – 12/10/25**

Photo 12 **Maud Site – Facing northeast at compound channels in EW-01 where it runs south of the livestock wallows – 12/10/25**

Photo 13 Maud Site - EW-02 with surface water and Wetland Sampling Point 003 – 01/21/26

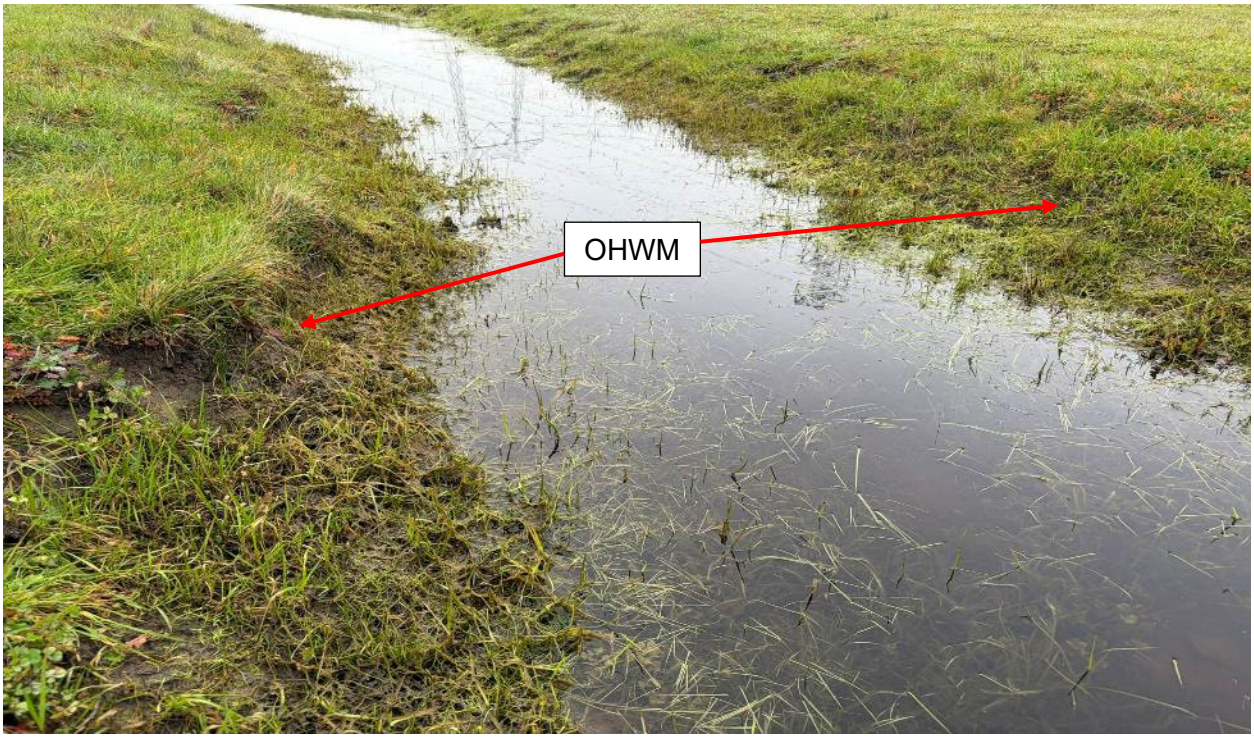


Photo 14 Maud Site – Looking north along EW-02; Line of erosion with water marks and sediment deposition indicating OHWM visible on the banks of the watercourse above the surface water – 01/21/26

Photo 15 **Maud Site - Looking south at EW-02; southern terminus of the channel visible in the upper left of the photograph – 01/21/26**

Photo 16 **Bird's Landing Site – Looking north along the east side of the substation at representative view of surrounding uplands – 12/10/25**

Photo 17 **Bird's Landing Site – Representative view of ephemeral watercourse (EW-03) running from the substation pad, with approximately 1-foot ordinary flow path within a broadly eroded channel**

Photo 18 **View looking west at the south end of EW-03 where it originates from erosion off the substation pad; view is representative of all ephemeral watercourses surrounding the site, where water flow from the substation pad has formed deeply eroded channels**

Photo 19 Bird's Landing Site – View looking west at EW-05 providing additional example of eroded channels extending from the substation pad – 12/10/25

Photo 20 Bird's Landing Site – Facing east showing rip-rap reinforced drainage ditch (RDD-01) extending from the substation – 12/10/25

Photo 21 Bird's Landing Site – Looking north at roadside drainage ditch (DD-07)

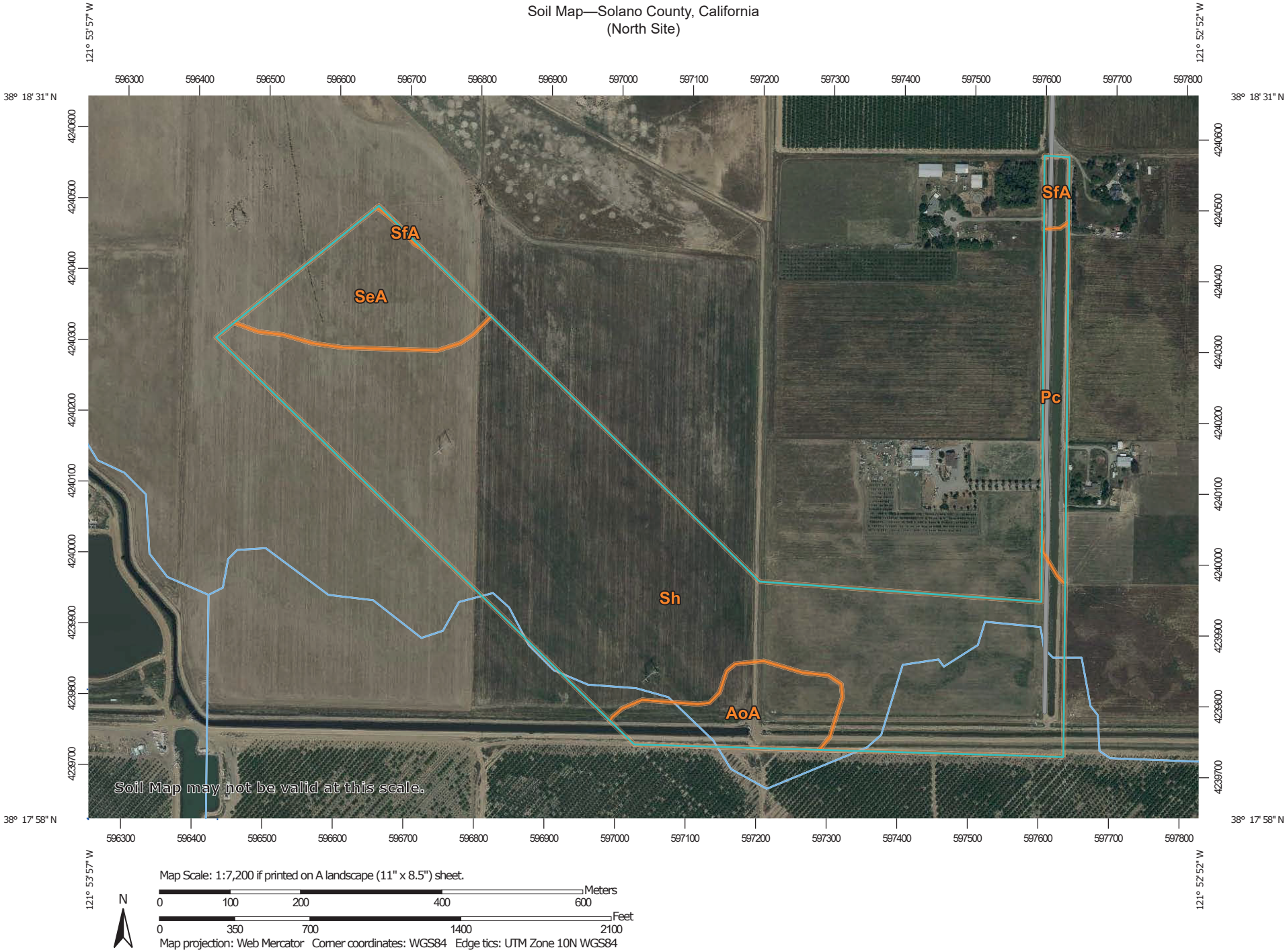
Photo 22 Byron Site – View looking south at DD-09 on the east side of the survey area

Photo 23 Byron Site – Roadside drainage ditch (DD-08) with *Allenrolfea occidentalis* (FACW) along the north side of Kellogg Creek Road; facing west – 01/27/26

Appendix E

Hydric Soils List and Soil Map

Soil Map—Solano County, California
(North Site)



Map Scale: 1:7,200 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 100 200 400 600

Feet
0 350 700 1400 2100

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Solano County, California
Survey Area Data: Version 20, Sep 3, 2025

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

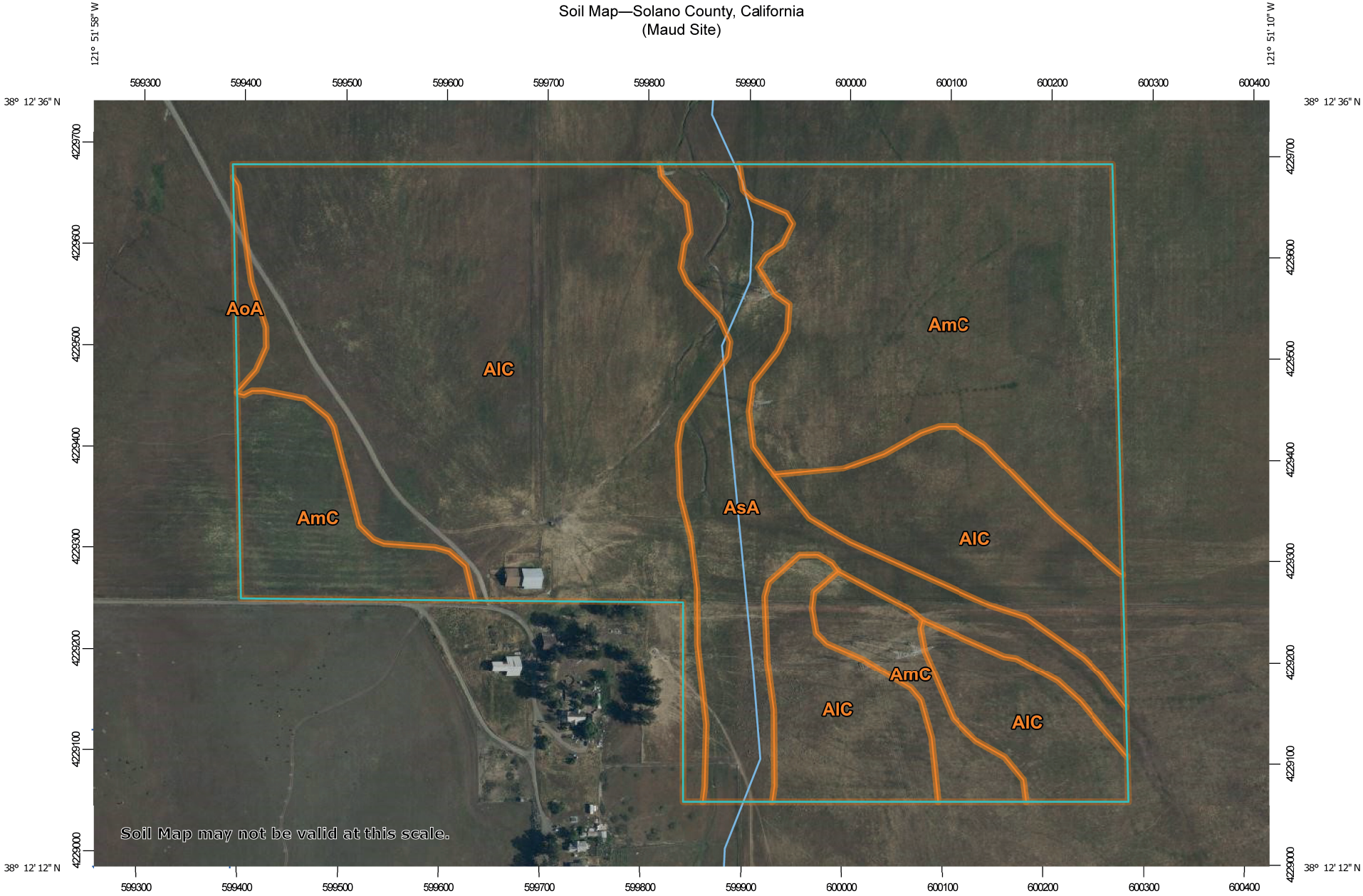
Date(s) aerial images were photographed: Apr 23, 2022—Apr 24, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AoA	Antioch-San Ysidro complex, 0 to 2 percent slopes	6.7	7.3%
Pc	Pescadero silty clay loam, 0 percent slopes, MLRA 17	4.1	4.5%
SeA	San Ysidro sandy loam, 0 to 2 percent slopes	10.0	10.9%
SfA	San Ysidro sandy loam, thick surface , 0 to 2 percent slopes	0.9	1.0%
Sh	Solano loam	70.2	76.4%
Totals for Area of Interest		**91.9**	**100.0%**

Soil Map—Solano County, California
(Maud Site)



Map Scale: 1:5,340 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 50 100 200 300

Feet
0 250 500 1000 1500

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Solano County, California
Survey Area Data: Version 20, Sep 3, 2025

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 23, 2022—Apr 24, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AlC	Altamont-San Ysidro-San Benito complex, 2 to 9 percent slopes	62.1	54.0%
AmC	Altamont-Diablo clays, 2 to 9 percent slopes	36.9	32.1%
AoA	Antioch-San Ysidro complex, 0 to 2 percent slopes	0.8	0.7%
AsA	Antioch-San Ysidro complex, thick surface, 0 to 2 perce nt slopes	15.2	13.2%
Totals for Area of Interest		**115.2**	**100.0%**

Soil Map—Solano County, California
(Bird's Landing Site)

Map Scale: 1:9,740 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 100 200 400 600

Feet
0 450 900 1800 2700

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Solano County, California
Survey Area Data: Version 20, Sep 3, 2025

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 23, 2022—Apr 24, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AmE2	Altamont-Diablo clays, 9 to 30 percent slopes	30.4	13.6%
DaC	Diablo-Ayar clays, 2 to 9 percent slopes	1.0	0.4%
DaE2	Diablo-Ayar clays, 9 to 30 percent slopes, eroded	183.7	82.0%
Om	Omni clay loam	8.9	4.0%
Totals for Area of Interest		**224.0**	**100.0%**

Soil Map—Contra Costa County, California
(Byron Sity)

Map Scale: 1:3,800 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 50 100 200 300

Feet
0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Contra Costa County, California
Survey Area Data: Version 22, Sep 2, 2025

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 9, 2022—Mar 11, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

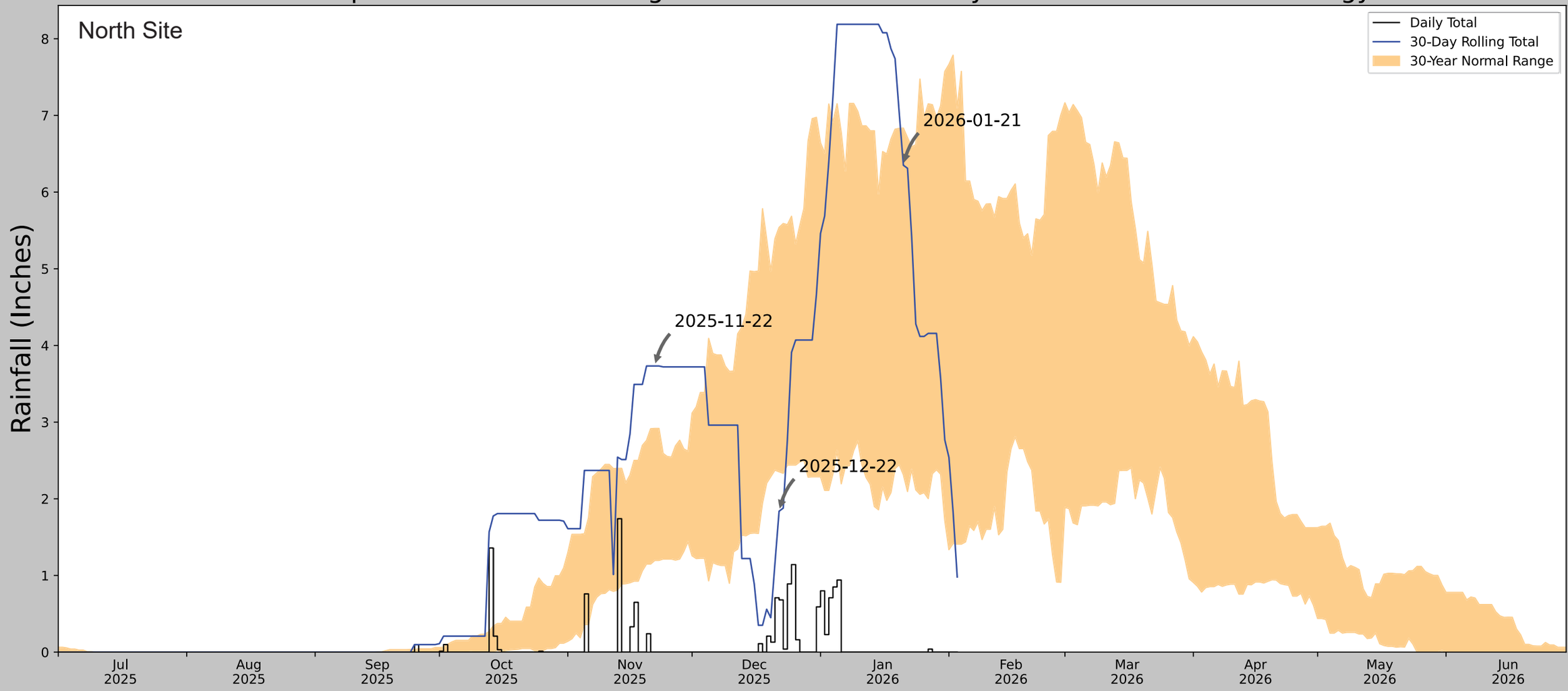
Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Bc	Brentwood clay loam, wet	0.5	1.0%
Mb	Marcuse clay, moderately saline, sodic, partially drained 0 to 2 percent slopes	22.3	43.0%
Mc	Marcuse clay, strongly saline, sodic, partially drained, 0 to 2 percent slopes	28.9	55.9%
Totals for Area of Interest		**51.7**	**100.0%**

Appendix F

Antecedent Precipitation Table

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	38.30138, -121.88993
Observation Date	2026-01-21
Elevation (ft)	49.856
Drought Index (PDSI)	Not available
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2026-01-21	2.315354	6.83504	6.350394	Normal	2	3	6
2025-12-22	2.352756	5.539764	1.838583	Dry	1	2	2
2025-11-22	1.196457	2.917323	3.732284	Wet	3	1	3
Result							Normal Conditions - 11

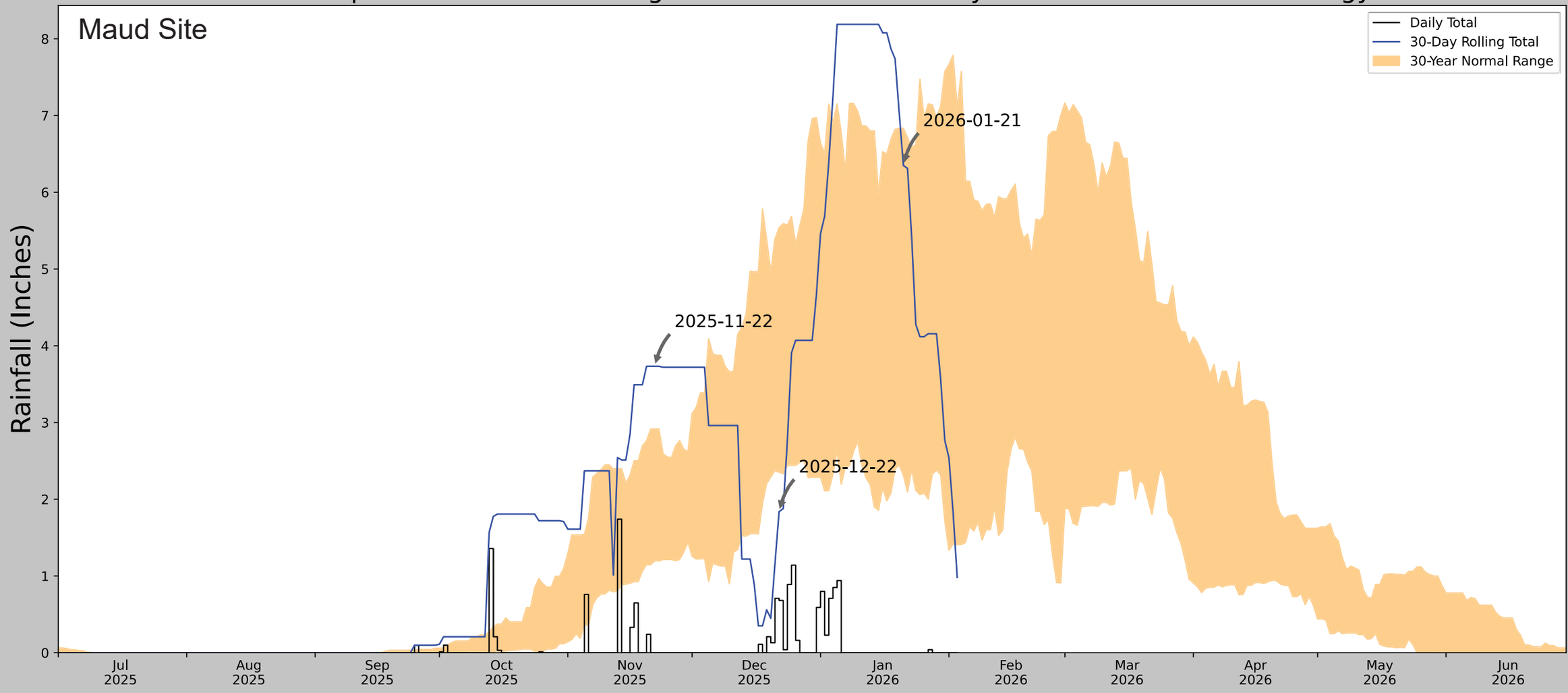
Figures and tables made by the Antecedent Precipitation Tool Version 3.0

US Army Corps of Engineers.
ERDC

Developed by:
U.S. Army Corps of Engineers and
U.S. Army Engineer Research and Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
VACAVILLE/NUT TREE AP ASOS	38.3775, -121.9586	104.003	6.443	54.147	3.248	9927	90
VACAVILLE	38.3956, -121.9608	109.908	1.256	5.905	0.573	1322	0
VACAVILLE 2.4 NW	38.3825, -122.0029	279.856	2.424	175.853	1.517	18	0
VACAVILLE 2.3 NW	38.3857, -121.9954	433.071	2.072	329.068	1.614	4	0
LAKE SOLANO	38.4919, -122.0039	187.008	8.276	83.005	4.411	82	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	38.2067, -121.85791
Observation Date	2026-01-21
Elevation (ft)	106.753
Drought Index (PDSI)	Not available
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2026-01-21	2.315354	6.83504	6.350394	Normal	2	3	6
2025-12-22	2.352756	5.539764	1.838583	Dry	1	2	2
2025-11-22	1.196457	2.917323	3.732284	Wet	3	1	3
Result							Normal Conditions - 11

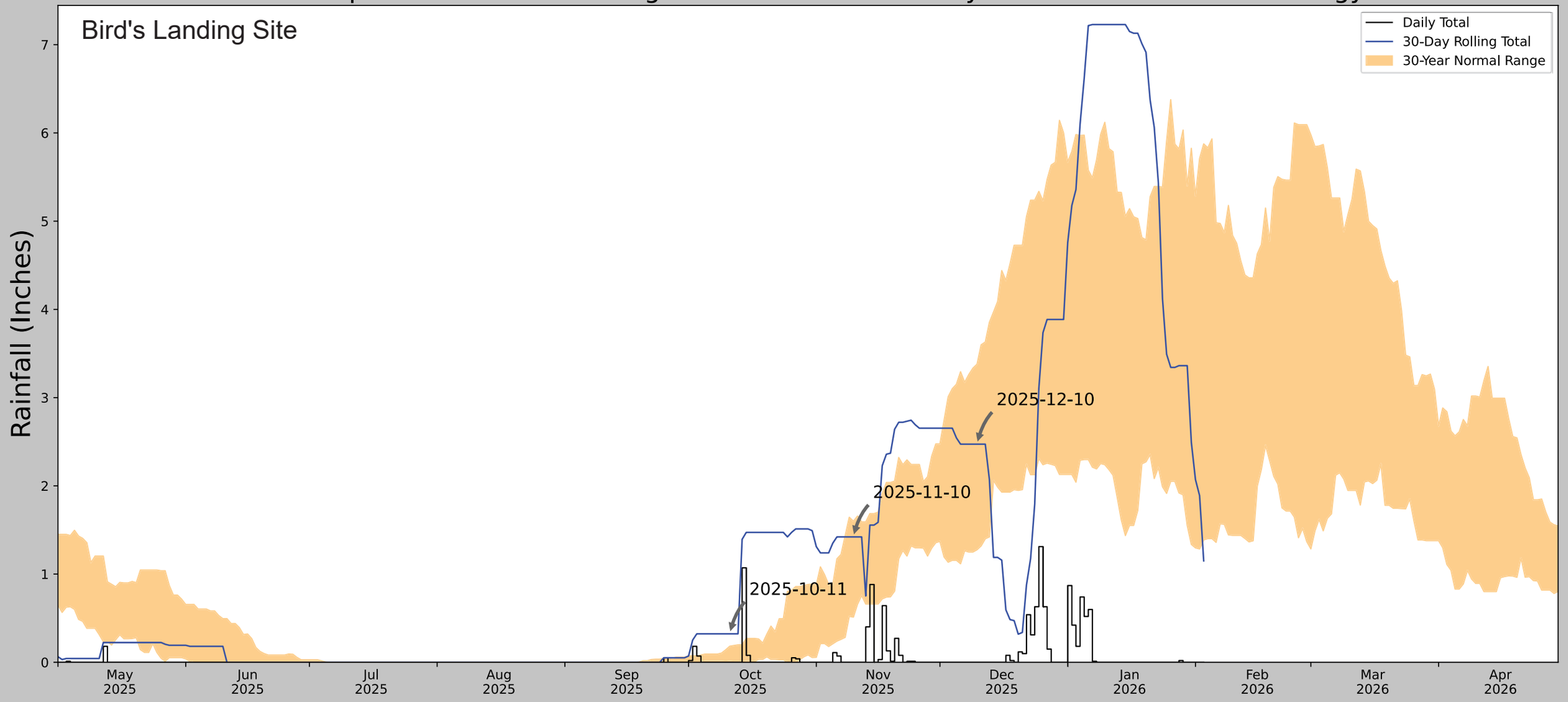
Figures and tables made by the Antecedent Precipitation Tool Version 3.0

US Army Corps of Engineers.
ERDC

Developed by:
U.S. Army Corps of Engineers and
U.S. Army Engineer Research and Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
VACAVILLE/NUT TREE AP ASOS	38.3775, -121.9586	104.003	13.003	2.75	5.887	9927	90
VACAVILLE	38.3956, -121.9608	109.908	1.256	5.905	0.573	1322	0
VACAVILLE 2.4 NW	38.3825, -122.0029	279.856	2.424	175.853	1.517	18	0
VACAVILLE 2.3 NW	38.3857, -121.9954	433.071	2.072	329.068	1.614	4	0
LAKE SOLANO	38.4919, -122.0039	187.008	8.276	83.005	4.411	82	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	38.1263, -121.82984
Observation Date	2025-12-10
Elevation (ft)	278.18
Drought Index (PDSI)	Incipient drought
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2025-12-10	1.275984	3.378347	2.472441	Normal	2	3	6
2025-11-10	0.512598	1.598819	1.42126	Normal	2	2	4
2025-10-11	0.011811	0.18189	0.322835	Wet	3	1	3
Result							Normal Conditions - 13

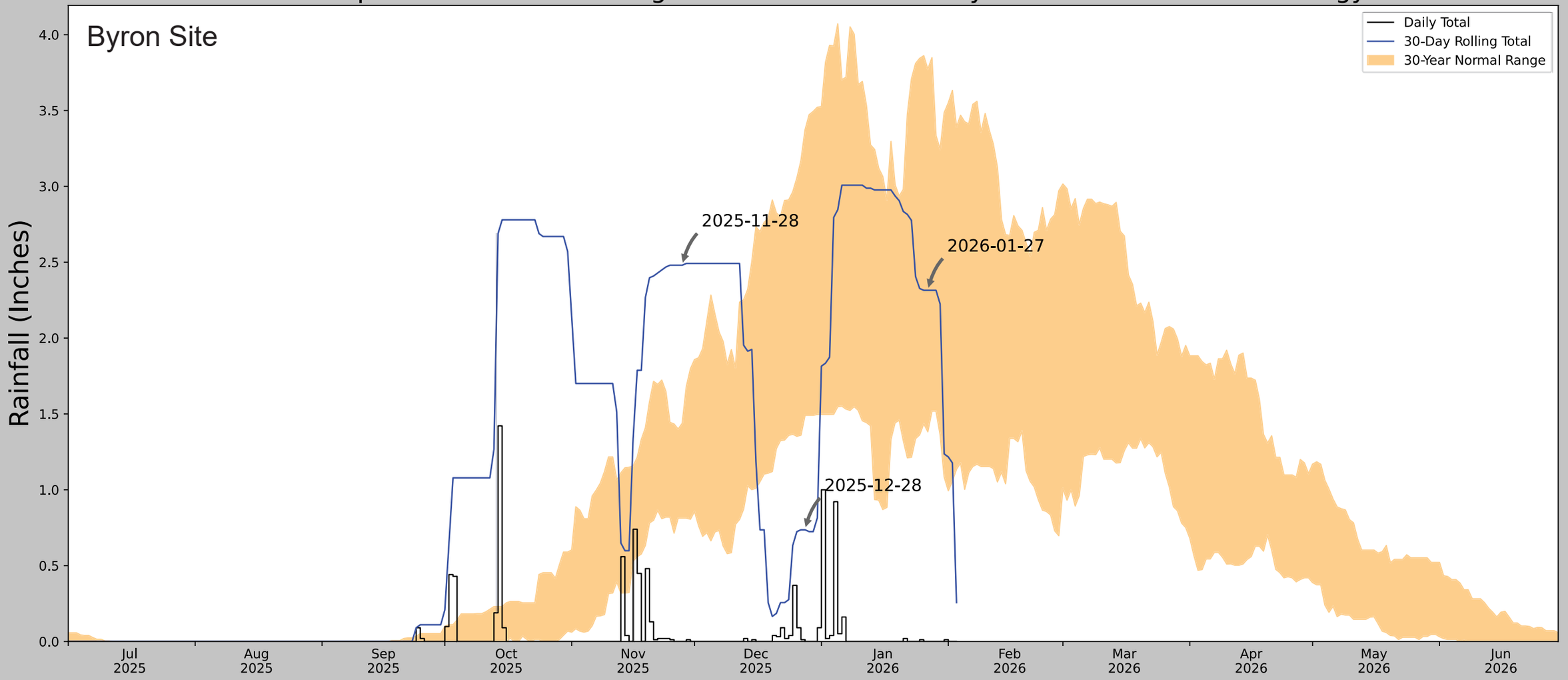
Figures and tables made by the
Antecedent Precipitation Tool
Version 3.0

US Army Corps of Engineers.
ERDC

Developed by:
U.S. Army Corps of Engineers and
U.S. Army Engineer Research and
Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
MARTINEZ 0.8 SSE	37.9898, -122.1085	251.969	17.854	26.211	8.502	6208	90
MARTINEZ WTP	38.0131, -122.1142	40.026	1.64	211.943	1.086	5145	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	37.88154, -121.61541
Observation Date	2026-01-27
Elevation (ft)	9.26
Drought Index (PDSI)	Not available
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2026-01-27	1.382677	3.771654	2.314961	Normal	2	3	6
2025-12-28	1.490945	3.372047	0.73622	Dry	1	2	2
2025-11-28	0.81378	1.438189	2.480315	Wet	3	1	3
Result							Normal Conditions - 11

Figures and tables made by the Antecedent Precipitation Tool Version 3.0

US Army Corps of Engineers.
ERDC

Developed by:
U.S. Army Corps of Engineers and
U.S. Army Engineer Research and Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
TRACY PUMPING PLT	37.7958, -121.5831	61.024	6.181	51.764	3.101	11313	86
TRACY 2.1 W	37.7353, -121.4699	51.837	7.463	9.187	3.427	6	0
TRACY 1.1 SSW	37.7232, -121.4403	78.084	9.274	17.06	4.332	24	4
ANTIOCH PUMPING PLT #3	37.9833, -121.7525	60.039	15.911	0.985	7.176	8	0
TRACY CARBONA	37.6819, -121.3467	134.843	15.125	73.819	7.923	1	0
STOCKTON 2.1 NW	37.9912, -121.3333	6.89	19.178	54.134	9.668	1	0

APPENDIX F.10

Breeding Season Burrowing Owl Survey Report

INSIGNIA ENVIRONMENTAL

LS POWER GRID CALIFORNIA, LLC

COLLINSVILLE 500/230 KILOVOLT SUBSTATION PROJECT

BREEDING SEASON BURROWING OWL SURVEY REPORT

OCTOBER 2025

PREPARED FOR:

LS Power

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Attachment B: Burrowing Owl Survey Results and Vegetation Communities Map
Attachment C: Photograph

1 – INTRODUCTION

LS Power Grid California, LLC (LSPGC) retained Insignia Environmental (Insignia) to conduct a habitat assessment and focused surveys for the western burrowing owl (*Athene cunicularia hypogea*) for the Collinsville 500/230 Kilovolt (kV) Substation Project (Proposed Project) in Contra Costa, Sacramento, and Solano counties in California. The Proposed Project would involve the construction of a new 500/230 kV substation (Collinsville Substation), the construction of two new 500 kV single-circuit transmission line segments that will loop Pacific Gas and Electric Company's (PG&E's) existing Vaca Dixon-Tesla 500 kV Transmission Line into the proposed LSPGC Collinsville Substation, and the construction of one new 230 kV double-circuit transmission line that would connect the proposed LSPGC Collinsville Substation to PG&E's existing Pittsburg Substation. The Proposed Project's general location is depicted in Figure 1: Project Overview Map, and the Proposed Project components are depicted in Figure 2: Project Components Map.

Insignia conducted a habitat assessment for the Proposed Project in 2023, as documented in Attachment A: Collinsville 500/230 Kilovolt Substation Project Burrowing Owl Habitat Assessment Memo. This report acts as an extension of the habitat assessment and documents the methodology and results of the breeding season survey conducted by Insignia between April 2025 and June 2025. Additionally, this report fulfills the reporting requirements outlined in the *Staff Report on Burrowing Owl Mitigation* (Survey Protocol) (California Department of Fish and Wildlife [CDFW] 2012).

1.0 PROJECT DESCRIPTION

1.0.0 Project Location

As depicted in Figure 1: Project Overview Map, the proposed LSPGC Collinsville Substation would be located near the unincorporated community of Collinsville in the southwestern portion of Solano County. The burrowing owl survey area is bordered on the south and southwest by the Sacramento River, where it debouches into Suisun Bay; on the west by the Montezuma Hills and Suisun Marsh; and to the north and east by agricultural lands. The Proposed Project would create a connection to PG&E's existing Pittsburg Substation, which is located in the city of Pittsburg in the northern portion of Contra Costa County. The Proposed Project is mapped on the Antioch North, California, United States (U.S.) Geological Survey (USGS) 7.5-minute series topographic quadrangles (USGS 2025).

1.0.1 Project Overview

The main components are depicted on Figure 2: Project Components Map and include the following:

- Constructing a new 500/230 kV substation (the proposed LSPGC Collinsville Substation).
- Constructing two new approximately 1.2-mile-long, single-circuit 500 kV transmission line segments extending to interconnect (or "loop") PG&E's existing Vaca Dixon-Tesla 500 kV Transmission Line into the proposed LSPGC Collinsville Substation.

- Constructing a new approximately 6-mile-long, double-circuit 230 kV transmission line to connect the proposed LSPGC Collinsville Substation to PG&E's existing Pittsburg Substation.

- Extending and connecting PG&E's existing 12 kV Peabody 2107 Circuit distribution line to the proposed LSPGC Collinsville Substation.

- Constructing two new telecommunications paths to the proposed LSPGC Collinsville Substation, including a new microwave tower that would be constructed and owned by PG&E at the proposed substation, as well as a new fiber optic path consisting of two fiber optic cables for redundancy that would be installed between existing fiber in the city of Pittsburg and the proposed substation.

- Constructing three new PG&E 500 kV transposition structures, removing two existing lattice steel poles (LSPs), and replacing two existing lattice steel towers with two new three-pole dead-end tubular steel poles along PG&E's existing Vaca Dixon-Tesla 500 kV Transmission Line.

1.1 BURROWING OWL NATURAL HISTORY

The burrowing owl is a small ground-dwelling owl. The owl is long-legged and short-tailed, with relatively long, narrow wings and a flat head with no ear tufts. Distinguishing markings on the burrowing owl include pale eyebrows, a white throat, and a spotted dark brown and buffy breast (Sibley 2000). Burrowing owls are comparatively easy to see because they are often active in daylight, and they are surprisingly bold and approachable. The females are usually darker than the males (The Institute for Bird Populations 2007).

The burrowing owl prefers annual and perennial grasslands, typically with sparse or nonexistent tree or shrub canopies (covering less than 30 percent of the ground surface), but it persists and even thrives in some landscapes that are highly altered by human activity. The overriding characteristic of suitable habitat appears to be burrows for roosting or nesting; in California, burrowing owls are found in close association with California ground squirrel (*Otospermophilus beecheyi*). Ground squirrels provide nesting and refuge burrows, and aid in the maintenance of short vegetation height, which provides foraging habitat and allows for visual detection of avian predators by burrowing owls. In the absence of ground squirrel populations, burrowing owls may use surrogate burrows (e.g., standpipes, debris piles, rock piles, and other man-made structures) for nesting (Shuford and Gardali 2008). Western burrowing owl was declared a candidate species for listing under the California Endangered Species Act by the CDFW on October 10, 2024.

Figure 1: Project Overview Map **Collinsville 500/230 Kilovolt Substation Project**

- Proposed LSPGC Collinsville Substation
- Existing PG&E Pittsburg Substation
- Proposed PG&E 500 kV Transposition Structure
- Proposed Project Transmission Lines
- Proposed PG&E 12 kV Distribution Line
- Proposed LSPGC Telecommunications Line
- Existing PG&E Vaca Dixon-Tesla Transmission Line
- Navigational Channel

1:250,000
0 2 4 Miles

LS Power INSIGNIA ENVIRONMENTAL

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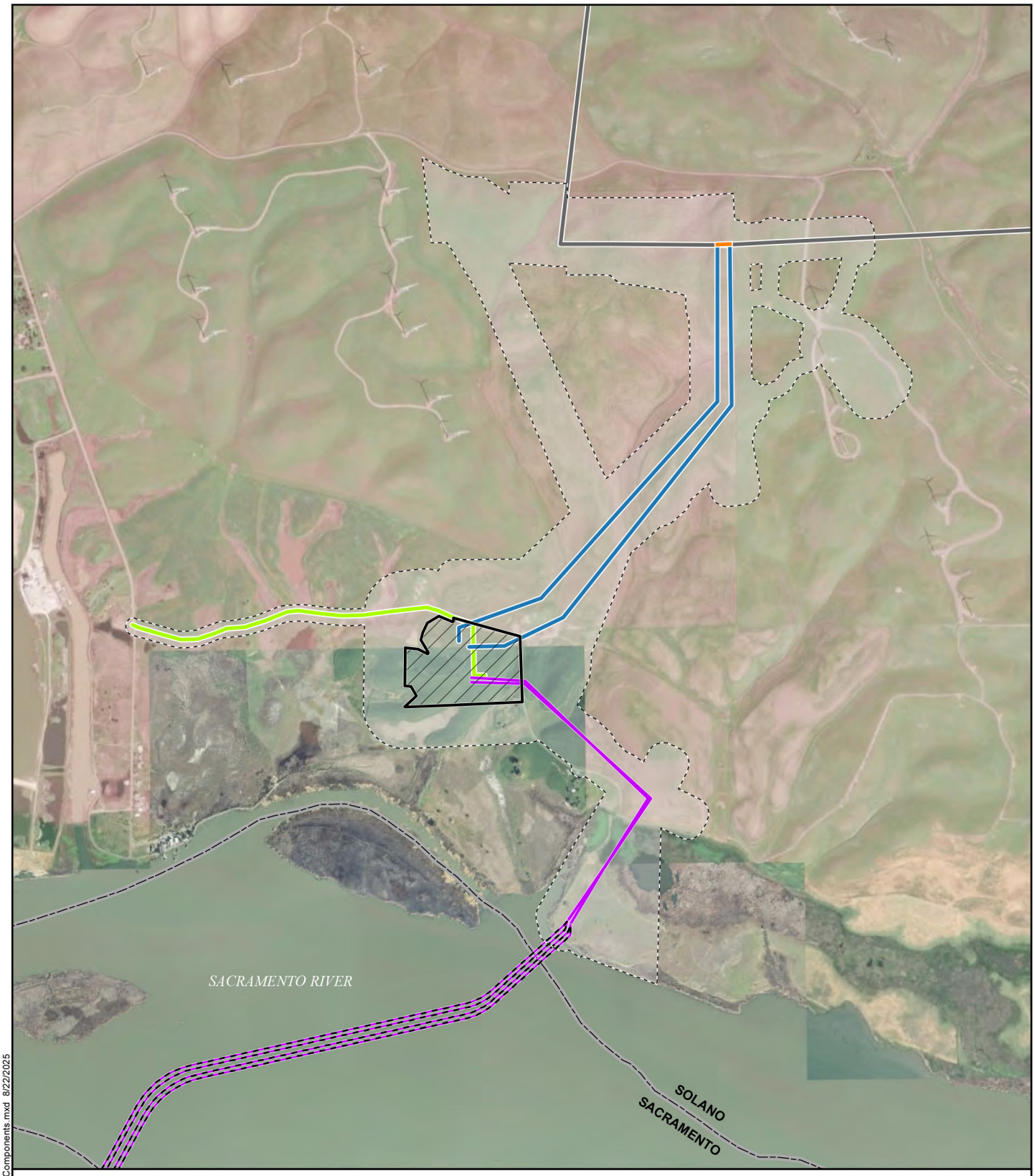

Figure 2: Project Components Map 1 of 2 **Collinsville 500/230 Kilovolt Substation Project**

- Existing PG&E 500 kV Overhead Transmission Line
- Proposed LSPGC 230 kV Overhead Segment
- Proposed LSPGC 230 kV Submarine Segment
- Proposed PG&E 12 kV Distribution Line
- Proposed PG&E 500 kV Interconnection
- Existing PG&E 500 kV Overhead Transmission Line to be Removed
- County Boundary
- Habitat Assessment Area
- Proposed Collinsville Substation

1:20,000
0 500 1,000 Feet

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Figure 2: Project Components Map 2 of 2 **Collinsville 500/230 Kilovolt Substation Project**

- Proposed LSPGC 230 kV Submarine Segment
- Proposed LSPGC 230 kV Underground Segment
- Proposed LSPGC Telecommunications Line
- Habitat Assessment Area
- Existing PG&E Pittsburg Substation
- Proposed Riser
- Proposed Utility Vault

N

1:8,000

0 500 1,000 Feet

LS Power INSIGNIA ENVIRONMENTAL

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2 – METHODS

Prior to initiating field surveys, a review of previous reports, electronic databases, and other sources was conducted to assess the history of burrowing owl presence, activity, and habitat suitability in the Proposed Project vicinity (i.e., within 5 miles of the Proposed Project). Sources reviewed included the following:

- Database searches of the California Natural Diversity Database (CDFW 2025),
- Burrowing Owl Survey Protocol and Mitigation Guidelines (California Burrowing Owl Consortium [CBOC] 1993),
- Survey Protocol (CDFW 2012),
- Soil Survey (U.S. Department of Agriculture [USDA] 2025), and
- Aerial photography.

2.0 SURVEY PROTOCOL

As documented in Attachment A: Collinsville 500/230 Kilovolt Substation Project Burrowing Owl Habitat Assessment Memo and in accordance with Appendix C of the Survey Protocol, a habitat assessment was conducted within the Proposed Project's Habitat Assessment Area[1] to determine whether the site contained habitat suitable for burrowing owls.

The assessment concluded that the Habitat Assessment Area provides only marginal habitat for burrowing owl occupation. Marginal habitat is present in nonnative annual grasslands located in the immediate uplands surrounding aquatic features, along fence lines, and adjacent to unpaved access roads. However, these areas lack suitable burrows or burrow surrogates, and the presence of fossorial mammals (which are essential for creating burrows) was limited. In addition, the soil types in grassland habitats surrounding aquatic features are poorly draining, further reducing suitability for burrowing owl habitation.

Although only marginal habitat was identified within the Habitat Assessment Area—not meeting the full definition of suitable habitat outlined in Appendix A of the Survey Protocol—the Proposed Project's Proponent's Environmental Assessment (Insignia 2024a) commits LSPGC to conducting up to four protocol-level surveys for burrowing owl, in accordance with the Survey Protocol, prior to the initiation of construction. Accordingly, Insignia staff conducted breeding season surveys in accordance with Appendix D of the Survey Protocol within all accessible portions of the Habitat Assessment Area. These surveys were designed to determine whether potential burrows or live owls were present within marginal burrowing owl habitat identified during the habitat assessment. For purposes of the Survey Protocol, potential burrows are defined

[1] As documented in Attachment A: Collinsville 500/230 Kilovolt Substation Project Burrowing Owl Habitat Assessment Memo, the Proposed Project-specific habitat assessment accounted for a majority of the potentially suitable habitat within 500 feet of the Proposed Project; substantial portions of the unassessed areas are developed or are open water and lack suitable habitat for the species. All areas north of the Sacramento-San Joaquin River Delta (Delta) were covered by a previous habitat assessment associated with the Solano Phase 4 Wind Project. Further, LSPGC does not have landowner permission to conduct any additional field surveys. Due to the consistent nature of the vegetation, soil types, and land use in the vicinity of the Proposed Project and ample previous studies in the area, the desktop analysis was sufficient to identify burrowing owl habitat within the Habitat Assessment Area.

as burrows showing burrowing owl sign (e.g., the presence of owls, pellets, prey remains, whitewash, or decoration).

Four survey visits were completed in accordance with the Survey Protocol between April and June 2025, as detailed in Table 1: Survey Data. One survey visit was conducted between February 15 and April 15, 2025, and three additional visits were conducted between April 15 and July 15, 2025; each visit was at least 3 weeks apart.

Insignia biologists walked transects spaced no more than 10 meters (approximately 100 feet) apart within marginal burrowing owl habitat to document potential burrows. The locations of potential burrows were recorded using a submeter-accurate Global Positioning System device. At the beginning of each transect, and at least every 100 meters, the entire visible Proposed Project area was scanned with binoculars. Bird vocalizations were also monitored while biologists walked transects.

Breeding season surveys were conducted during weather conditions conducive to observing owls outside their burrows and detecting burrowing owl sign, and in the morning during the optimal detectability window (i.e., between the 2 hours before sunrise and 1 hour after sunrise). Surveys were not conducted during rain; within 5 days of a rain event; or under high winds (i.e., winds greater than 20 miles per hour [mph]), dense fog, or temperatures exceeding 90 degrees Fahrenheit (°F). Although surveys frequently extended beyond the optimal detectability window for the species, all suitable burrowing owl habitat identified within the Habitat Assessment Area was evaluated during the optimal detectability window. The remainder of each survey day (i.e., the time outside the optimal detectability window) was used to evaluate suitable burrowing owl habitat within suitable landcover types where fossorial mammal activity had not previously been recorded. These land cover types were exclusively located north of the Delta.

Table 1: Survey Data

Date	Survey Time	Biologists	Temperature (°F)	Precipitation (inches)	Wind Speed (mph)	Cloud Cover (%)	Visibility (miles)
04/10/2025	0500-1300	Mark Oates and Joshua Rodriguez	51-79	0.0	0-9	0	10
05/01/2025	0500-1300	Mark Oates and Sidney Wells	51-79	0.0	0-10	0	10
05/22/2025	0500-1200	Mark Oates and Sidney Wells	62-79	0.0	6-12	0	10
06/16/2025	0500-1100	Mark Oates and Sidney Wells	51-86	0.0	13-20	0	10

All Insignia biologists who conducted surveys for this burrowing owl protocol-level survey fulfilled all the biologist qualifications outlined in the Survey Protocol, including:

- Familiarity with the species and its local ecology;
- Experience conducting habitat assessments and non-breeding and breeding season surveys or experience conducting them under the direction of an experienced surveyor;
- Familiarity with the appropriate state and federal statutes related to burrowing owl, scientific research, and conservation; and
- Experience with analyzing impacts of development on burrowing owls and their habitat, as detailed in Table 1: Survey Data.

3 – RESULTS

3.0 SURVEY

No burrowing owls or potential burrows were detected during breeding season surveys. The Habitat Assessment Area continues to provide only marginal habitat for the species. However, in one area just south of Talbert Lane, along a north-south fence line, ground squirrels were observed establishing burrows. This activity was not recorded during the 2023 habitat assessment, indicating that the area has only recently been colonized. These burrows would be suitable for burrowing owl occupation and are shown on pages 8 and 9 of Attachment B: Burrowing Owl Survey Results and Vegetation Communities Map. However, they are located along an electrified barbed-wire fence line and did not contain any burrowing owl sign. A representative photograph of this suitable habitat is provided in Attachment C: Photograph.

No other suitable burrowing owl habitat was observed within the Habitat Assessment Area, and no ground squirrels or other fossorial mammals were observed at any additional locations.

3.1 GENERAL WILDLIFE SPECIES

Other wildlife species observed during surveys include 11 species of birds and four species of mammals. The following species were identified:

- Black-tailed jackrabbit (*Lepus californicus*),
- Coyote (*Canis latrans*),
- Desert cottontail (*Sylvilagus audubonii*),
- Great egret (*Ardea alba*),
- House finch (*Haemorhous mexicanus*),
- Killdeer (*Charadrius vociferus*),
- Mallard (*Anas platyrhynchos*),
- Northern harrier (*Circus cyaneus*),
- Red-tailed hawk (*Buteo jamaicensis*),
- Red-winged blackbird (*Agelaius phoeniceus*),
- Ring-necked pheasant (*Phasianus colchicus*),
- River otter (*Lontra canadensis*),
- Turkey vulture (*Cathartes aura*),

- White-crowned sparrow (*Zonotrichia leucophrys*), and
- White pelican (*Pelecanus erythrorhynchos*).

Notably, coyotes and red-tailed hawks—both known burrowing owl predators—were observed within the Habitat Assessment Area during surveys. No evidence of burrowing owl predation was observed.

4 – CONCLUSIONS

Burrowing owls and burrowing owl sign were not detected during the surveys. The timing and weather conditions under which breeding season surveys were conducted met the requirements of the Survey Protocol: surveys occurred during the breeding season, they occurred between the 2 hours before sunrise and 1 hour after sunrise, and they were not conducted under adverse weather conditions (e.g., rain, within 5 days of a rain event, winds greater than 20 mph, dense fog, or temperatures exceeding 90°F). Therefore, if burrowing owls or their sign had been present on site, the probability of detection during the surveys would have been high.

As presented in Attachment A: Collinsville 500/230 Kilovolt Substation Project Burrowing Owl Habitat Assessment Memo, habitat suitable for nesting and overwintering is scarce; however, burrowing owls may still forage and disperse within the Habitat Assessment Area north of the Delta. Several records of overwintering owls occur within 5 miles of the Proposed Project, but no records have been documented within the Habitat Assessment Area itself. Further, breeding season records from the area north of the Delta—where soils and vegetation may otherwise be suitable—have either been potentially extirpated or show no evidence of breeding activity for nearly 25 years. In addition, the presence of predators such as coyotes and red-tailed hawks, both known burrowing owl predators, further reduces the suitability of the area for burrowing owl occupation. Suitable burrow habitat established by ground squirrels in the northern portion of the Habitat Assessment Area may provide overwintering habitat or stopovers for dispersing owls. However, the presence of an electrified fence immediately adjacent to these burrows may limit their suitability.

In summary, breeding season surveys indicate that no habitat within the Habitat Assessment Area is currently being used by breeding burrowing owls.

5 – REFERENCES

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ATTACHMENT A: COLLINSVILLE 500/230 KILOVOLT SUBSTATION PROJECT BURROWING OWL HABITAT ASSESSMENT MEMO

MEMO

Collinsville 500/230 Kilovolt Substation Project Burrowing Owl Habitat Assessment Memo

To: Dustin Joseph, LS Power Grid California (LSPGC)

From: Mark Oates, Insignia Environmental (Insignia)

Date: December 4, 2024

INTRODUCTION

LSPGC retained Insignia to conduct a habitat assessment for the western burrowing owl (*Athene cunicularia hypogea*) for the Collinsville 500/230 Kilovolt (kV) Substation Project (Proposed Project). The Proposed Project's general location and the Proposed Project components are depicted in Attachment A: Project Overview Map. The Proposed Project involves the construction of a new 500/230 kV substation (Collinsville Substation), the construction of two new 500 kV single-circuit transmission line segments that would interconnect Pacific Gas and Electric Company's (PG&E's) existing Vaca Dixon-Tesla 500 kV Transmission Line into the proposed Collinsville Substation, and the construction of one new 230 kV double-circuit transmission line that would connect the proposed Collinsville Substation to PG&E's existing Pittsburg Substation. The Proposed Project has been designed to address overloads on the existing Contra Costa-Newark 230 kV corridor and provide an additional supply into the northern greater San Francisco Bay Area to increase reliability to the area and advance additional renewable generation.

This Burrowing Owl Habitat Assessment Memo was prepared to evaluate the likelihood that the Proposed Project and its associated habitat assessment area support burrowing owl individuals or suitable habitat for the species, in accordance with the habitat assessment recommendations outlined in *Appendix C, Habitat Assessment and Reporting Details* of the *Staff Report on Burrowing Owl Mitigation* (Protocol) (California Department of Fish and Wildlife [CDFW] 2012). A habitat assessment is the first step in evaluating the potential impacts of the Proposed Project on the species and will inform whether focused surveys for the species are necessary.

PROJECT COMPONENTS

The main components of the Proposed Project are depicted in Attachment A: Project Overview Map and include the following:

- A new approximately 11-acre 500/230 kV substation near the unincorporated community of Collinsville in Solano County (Proposed LSPGC Collinsville Substation);
- Two new approximately 1.5-mile-long single-circuit 500 kV onshore transmission line segments (Proposed PG&E 500 kV Interconnection) that would interconnect PG&E's

existing Vaca Dixon-Tesla 500 kV Transmission Line into the proposed Collinsville Substation;[1]

- A new approximately 6-mile-long double-circuit 230 kV transmission line that would connect the proposed Collinsville Substation to PG&E's existing Pittsburg Substation, including the following components:

    - An approximately 1-mile-long overhead transmission line segment that would connect the proposed Collinsville Substation to transition structures on the north side of the Sacramento-San Joaquin River Delta (Delta) waterways (Proposed LSPGC 230 kV Overhead Segment),

    - Four approximately 4.5-mile-long submarine cables installed 6 to 15 feet below the sediment surface (Proposed LSPGC 230 kV Submarine Segment), and

    - An onshore underground utility vault near PG&E's existing Pittsburg Substation that would transition the submarine cables to underground cables that would terminate at approximately two new riser poles adjacent to PG&E's existing Pittsburg Substation (Proposed LSPGC 230 kV Underground Segment), where the conductors would transition from underground cables to overhead lines; and

- Two new telecommunications paths to the proposed Collinsville Substation (a new microwave tower that would be constructed at the substation and a new fiber optic path that would be installed between existing fiber in the City of Pittsburg and the proposed Collinsville Substation (Proposed LSPGC Telecommunications Extension).

METHODS

Desktop Review

Ahead of all field surveys, a review of previous reports, electronic databases, and other sources was conducted to assess the history of burrowing owl presence, activity, and habitat suitability in the Proposed Project vicinity (up to 5 miles). Sources reviewed included the following:

- Aerial photography (Google Earth 2024),
- Database searches of the California Natural Diversity Database (CNDDB) (CDFW 2024a),[2]
- California Wildlife Habitat Relationships (CWHR) species range maps (CDFW 2024b),
- Web Soil Survey (Natural Resources Conservation Service [NRCS] 2024),
- Sacramento Municipal Utility District Solano 4 Wind Project (Solano 4), Burrowing Owl Habitat Assessment (AECOM 2018), and
- The Solano County General Plan Land Use Element (Solano County 2008).

[1] PG&E would be responsible for the final configuration of the northern tie-in of the 500 kV loop-in between the proposed Collinsville Substation and the existing Vaca Dixon-Tesla 500 kV Transmission Line. LSPGC would be responsible for the installation of dead-end structures near the proposed Collinsville Substation to facilitate looping in the 500 kV lines.

[2] The CNDDB search included a 5-mile buffer around the Proposed Project footprint.

Field Survey Method

The geographical boundaries of the Proposed Project components were provided by LSPGC in the form of Geographic Information System shapefiles. As outlined in Attachment B: Biological Resources Map, a habitat assessment area was established to include all terrestrial areas within 100 to 500 feet of Proposed Project components.

On the dates of May 23 to 26, 30, and 31; June 9; July 10, 11, and 12; September 21 and 22; and December 19, 2023, Insignia biologists conducted habitat assessments to characterize the existing conditions within the habitat assessment area and identify potential biological resources, including habitat for burrowing owl, that may occur. Approximately 569.7 acres of terrestrial habitat and land cover were surveyed.

Insignia biologists searched for areas of potential burrowing owl habitat by walking meandering transects that covered 100 percent of the habitat assessment area that was accessible. Areas that were inaccessible due to tall, non-transparent fencing and/or lack of landowner permission were observed to the greatest extent feasible from adjacent and accessible properties. Biologists noted the presence or absence of burrows and conducted an inspection of burrows for burrowing owl sign as defined by the Protocol, including tracks, molted feathers, cast pellets, prey remains, eggshell fragments, owl whitewash, nest burrow decoration materials, possible owl perches, and other relevant indicators.

As part of the habitat assessment, natural communities were mapped; other non-vegetative land covers were documented as well. The biologists identified dominant species and mapped the natural community and land cover boundaries using a submeter-accurate Global Positioning System unit.

Surveys were conducted during daylight hours with clear to partly cloudy skies and did not occur in inclement weather conditions or fog cover. Temperatures ranged from 65 to 91 degrees Fahrenheit with wind speeds between 5 and 20 miles per hour.

RESULTS

Desktop Review

Range and Occurrence Data

As shown in Attachment C: Burrowing Owl Range and Occurrence Data, CWHR maps indicate that the entire habitat assessment area occurs within the recognized year-round range of burrowing owl (CDFW 2024a). Further, as shown in Attachment C: Burrowing Owl Range and Occurrence Data, there are 17 CNDDB records of burrowing owls within 5 miles of the Proposed Project. The closest burrowing owl observation was recorded in 2010, approximately 0.3 mile from the Proposed Project, in the Collinsville-Montezuma Hills Wind Resource Area with a record accuracy of 80 meters (CDFW 2024a). The closest CNDDB record of a breeding pair of burrowing owls is an observation from 2000 in the Montezuma Wetlands, approximately 1.2 miles from the Proposed Project. However, the last observation of owls at this location occurred during protocol-level burrowing owl surveys conducted in accordance with the *Burrowing Owl Survey Protocol and Mitigation Guidelines* (California Burrowing Owl Consortium 1993) in 2007, in association with Phase 1 of the Montezuma Wetlands Restoration Project. Subsequent protocol-level surveys conducted for this project in 2010 and 2011 did not detect any burrowing owls. The next-closest CNDDB record of a breeding pair is 1.6 miles from the Proposed Project, also in the Montezuma Wetlands, and is potentially extirpated. No other CNDDB records of breeding pairs of burrowing owls occur within 5 miles of the Proposed

Project north of the Delta. A 2007 CNDDB record of a nesting pair was recorded within 2.6 miles of the Proposed Project south of the Delta.

Prior Assessments

The most recent burrowing owl habitat assessment was conducted in a location that fully overlaps the Proposed Project habitat assessment area (AECOM 2018) in support of the Solano 4 Environmental Impact Report (EIR). That assessment determined that suitable habitat for burrowing owl nesting and wintering sites may occur within isolated and limited patches of habitat or under specific conditions within the Proposed Project's habitat assessment area. These areas include annual grassland habitat with sparse vegetation, undisked agricultural lands, and unvegetated areas near fence lines and buildings, or where erosion exposes soil. No evidence of burrowing owl occupancy was detected during this habitat assessment. Focused surveys and take avoidance surveys for the species, in accordance with the Protocol, were proposed as a mitigation measure in the Solano 4 EIR; however, focused surveys were not conducted prior to the drafting and submittal of the Solano 4 EIR.

Soils

As depicted in Attachment D: Soils Crossed by the Proposed Project, the Proposed Project would be constructed on the following soil types:

- Clear Lake clay (Cc),
- Diablo-Ayar clays (DaC),
- Diablo-Ayar clays eroded (DaE2),
- Omni silt clay (Ob),
- Rincon clay loam (RbC),
- Tamba mucky clay (Ta),
- Valdez silty clay loam (Vd), and
- Valdez silt loam (Va).

DaE2, DaC, and RbC soil types are well-draining and would be suitable for burrowing owl occupancy. These soil types are present at the Proposed PG&E 500 kV Interconnection and portions of the Proposed LSPGC 230 kV Overhead Segment, Proposed PG&E 12 kV Distribution Line, and Proposed LSPGC Telecommunications Line.

Land Use

The Proposed PG&E 500 kV Interconnection, Proposed LSPGC Collinsville Substation, Proposed LSPGC 230 kV Overhead Segment, and Proposed PG&E 12 kV Distribution Line would be located on lands designated as Agriculture by the Solano County General Plan Land Use Element and within the Solano County-identified Montezuma Hills agricultural region (Solano County 2008). Management practices include:

- Disking;
- Periodic agricultural burning;
- Grazing;
- Management for fire control; and
- Crop planting, growth, and harvest within a 3-year period.

The areas adjacent to the proposed PG&E 500 kV Interconnection, LSPGC Collinsville Substation, LSPGC 230 kV Overhead Segment have been developed and are in use as an

active windfarm. The Proposed LSPGC 230 kV Underground Segment and Proposed LSPGC Telecommunications Line would be located in industrial and residential areas within the city of Pittsburg.

Field Survey

Biological Setting

The habitat assessment area north of the Delta (Sections 22, 23, and 26; Township 3 North; Range 1 East; Mount Diablo Principal Meridian) consists of a series of gently rolling hills that transition to low-lying wetlands as they approach the Delta, while the habitat assessment area south of the Delta (Section 00; Township 2 North; Range 1 East; Mount Diablo Principal Meridian) is relatively flat and developed.

Vegetation

Vegetation within the habitat assessment area consists primarily of nonnative annual grasslands, particularly in the area north of the Delta. Portions of these areas were undergoing harvest at the time of the survey. In areas where agricultural harvest was not underway, evidence of livestock grazing and disking was observed, including extensive hoofprints and furrowing along hillsides that is indicative of prior disking. Vegetation varied in height, ranging from 1 to 6 feet in stands of black mustard (*Brassica nigra*), but was uniformly dense throughout; exposed soils were scarce and were primarily found along the edges of aquatic features. Freshwater and brackish wetland vegetation is found in the southern portion of the habitat assessment area north of the Delta, along with scattered shrubland and willow communities. Disturbed and developed land covers constitute the majority of the habitat assessment area south of the Delta where vegetation is ruderal, ornamental, or entirely absent.

Prey Availability

Multiple avian prey species for the burrowing owl were observed throughout the habitat assessment area north of the Delta and found to be abundant, including songbirds such as the house finch (*Haemorhous mexicanus*) and song sparrow *(Melospiza melodia*). Reptilian and amphibian prey species were not observed in the habitat assessment area, and suitable mammalian prey species, including California ground squirrel (*Otospermophilus beecheyi*), were found to be scarce throughout the area.

Burrows and Burrow Surrogates

Throughout the habitat assessment area, fossorial mammal activity was rare, and no small mammal burrows suitable for burrowing owl occupation (i.e., with burrow entrance diameters measuring 3 to 5 inches) were observed. Further, burrow surrogates (e.g., culverts, piles of concrete rubble, piles of soil, burrows created along soft banks of ditches and canals, pipes, and similar structures that could offer suitable alternative nesting and roosting habitat for the species) were not observed within the habitat assessment area. No evidence of burrowing owl presence nor their sign was observed.

CONCLUSION

The habitat assessment area provides limited suitable habitat for burrowing owl occupation. Marginal habitat is present in nonnative annual grasslands located in the immediate uplands surrounding aquatic features, along fence lines, and adjacent to unpaved access roads. However, these areas lack suitable burrows and burrow surrogates; in addition, the presence of fossorial mammals, which are essential for creating burrows, was limited. Further, in grassland

habitats surrounding aquatic features, the soil types are not well-draining (e.g., TA and VA), making them unsuitable for burrowing owl habitation.

Land use practices north of the Delta further reduce habitat suitability and limit the availability of habitat for burrowing owls and the fossorial mammals on which they depend for food and burrows. In fields surrounding the Proposed LSPGC 230 kV Overhead Segment and the Proposed PG&E 12 kV Distribution Line, fossorial mammals are scarce, but may reoccupy grassland habitats if these fields are left fallow, potentially creating suitable nesting and overwintering habitat, as well as additional foraging opportunities for burrowing owls. South of the Delta, existing development limits the availability of suitable habitat for the species.

Although habitat for nesting and overwintering is scarce, burrowing owls may still forage and disperse within the habitat assessment area north of the Delta. There are several records of overwintering owls within 5 miles of the Proposed Project, but no records have been documented within the habitat assessment area itself. Further, records documented during the breeding season in the area north of the Delta, where soils and vegetation may be suitable for the species, have either been potentially extirpated or show no recorded breeding activity in nearly 25 years. Nevertheless, the proximity of the habitat assessment area to recent records and the presence of suitable prey species within the area provide suitable foraging habitat for the species and potential dispersal habitat between breeding and overwintering sites. Therefore, while there is a low potential for burrowing owls to nest or overwinter within the habitat assessment area, there is a moderate potential for the species to use the site for foraging or dispersal.

As depicted in Attachment E: Habitat Assessment Area Comparison, the Proposed Project-specific habitat assessment accounted for a majority of the potentially suitable habitat within 500 feet of the Proposed Project (substantial portions of the unassessed areas are developed or are open water and lack suitable habitat for the species). All areas north of the Delta were covered by the previous habitat assessment associated with the Solano 4 project. Further, LSPGC does not have landowner permission to conduct any additional field surveys. Due to the consistent nature of the vegetation, soil types, and land use in the vicinity of the Proposed Project and ample previous studies in the area, no additional habitat assessment surveys are warranted.

As presented in the Proposed Project's Proponent's Environmental Assessment (Insignia 2024), LSPGC has committed to conducting up to four protocol-level surveys for burrowing owl, in accordance with the CDFW's staff report, within suitable grassland habitat prior to the initiation of construction. Take avoidance surveys for any active burrows would also be conducted prior to the start of construction.

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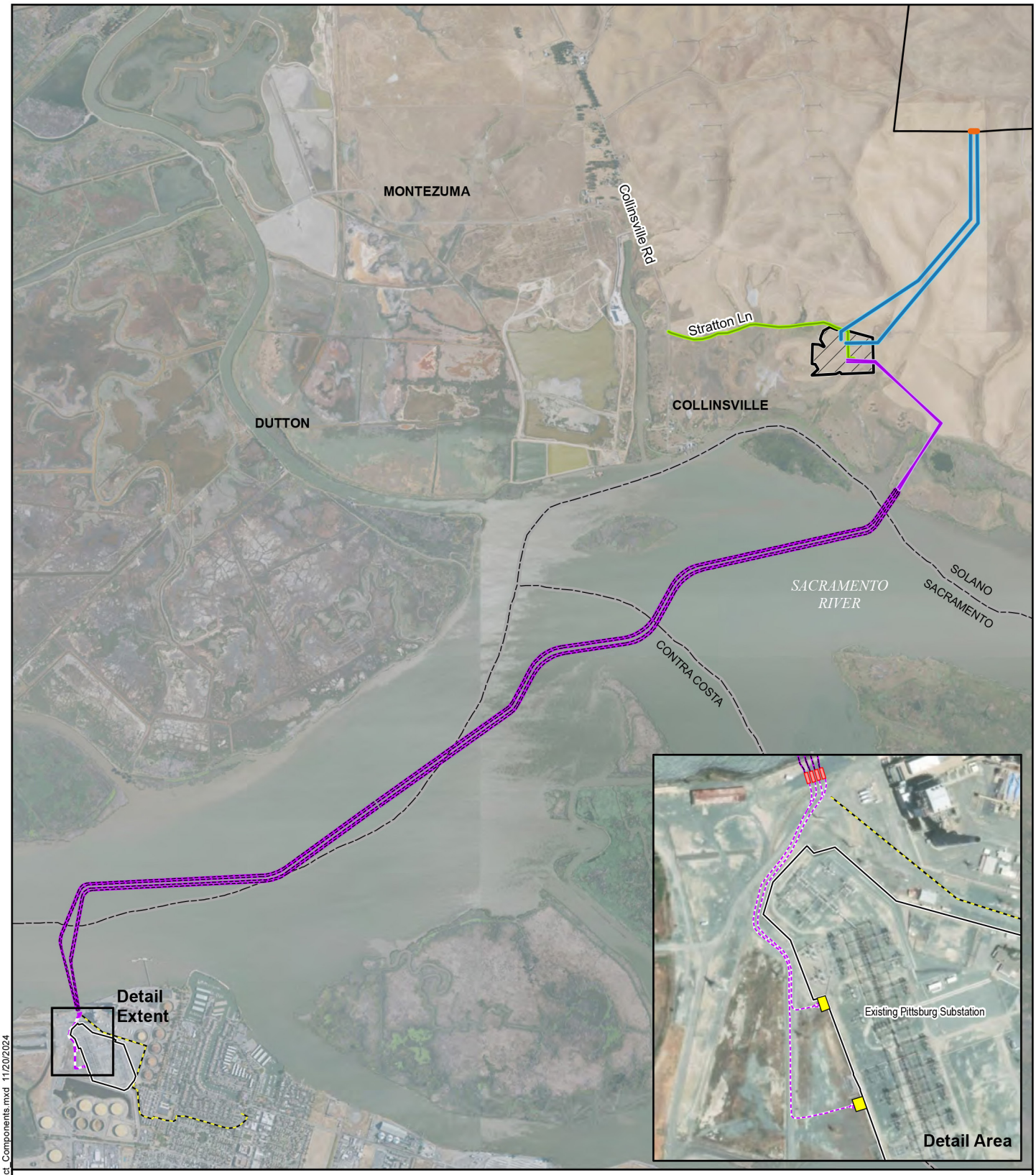
ATTACHMENT A: PROJECT OVERVIEW MAP



Attachment A: Project Overview Map

Collinsville 500/230 Kilovolt Substation Project

- Proposed LSPGC 230 kV Overhead Segment
- Proposed LSPGC 230 kV Submarine Segment
- Proposed LSPGC 230 kV Underground Segment
- Proposed PG&E 500 kV Interconnection
- Proposed PG&E 12 kV Distribution Line
- Existing PG&E 500 kV Transmission Line to be Removed
- County Boundary
- Existing PG&E Vaca Dixon-Tesla Transmission Line
- Existing Pittsburg Substation
- Proposed LSPGC Collinsville Substation Site
- Proposed LSPGC Telecommunications Line
- Proposed Riser
- Proposed Utility Vault

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ATTACHMENT B: BIOLOGICAL RESOURCES MAP

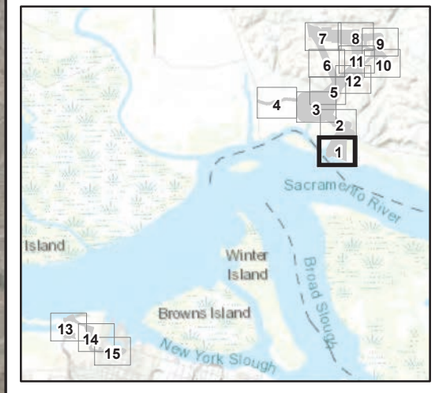
Attachment B:
Biological Resources Map
Map 1 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed LSPGC 230 kV Overhead Segment
- Proposed LSPGC 230 kV Submarine Segment
- Survey Area

Vegetation Community and Land Covers

- *Distichlis spicata* Herbaceous Alliance
- *Frankenia salina* Herbaceous Alliance
- *Juncus arcticus (var. balticus, mexicanus)* Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Rosa californica* Shrubland Alliance
- *Salix exigua* Shrubland Alliance
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- *Schoenoplectus acutus/rosa californica* Association
- Road/Bare Ground
- Open Water



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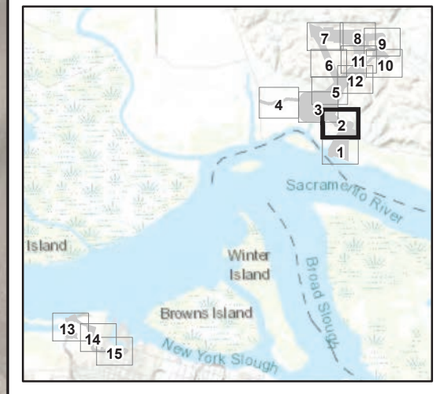
Attachment B:
Biological Resources Map
Map 2 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed LSPGC 230 kV Overhead Segment
- Proposed PG&E 12 kV Distribution Line
- Proposed LSPGC Collinsville Substation Site
- Survey Area

Vegetation Community and Land Covers

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Distichlis spicata* Herbaceous Alliance
- *Frankenia salina* Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Polygonum lapathifolium - Xanthium strumarium* Herbaceous Alliance
- *Rosa californica* Shrubland Alliance
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- Road/Bare Ground
- Open Water



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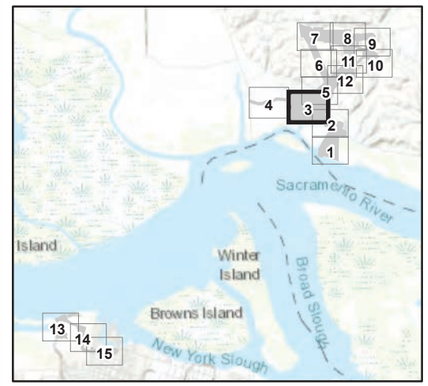
Attachment B:
Biological Resources Map
Map 3 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed LSPGC 230 kV Overhead Segment
- Proposed PG&E 500 kV Interconnection
- Proposed PG&E 12 kV Distribution Line
- Proposed LSPGC Collinsville Substation Site
- Survey Area

Vegetation Community and Land Covers

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Distichlis spicata* Herbaceous Alliance
- *Frankenia salina* Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Polygonum lapathifolium - Xanthium strumarium* Herbaceous Alliance
- *Sarcocornia pacifica* Herbaceous Alliance
- *Rosa californica* Shrubland Alliance
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- *Schoenoplectus americanus* Herbaceous Alliance
- *Typha (angustifolia, domingensis, latifolia)* Herbaceous Alliance
- Road/Bare Ground



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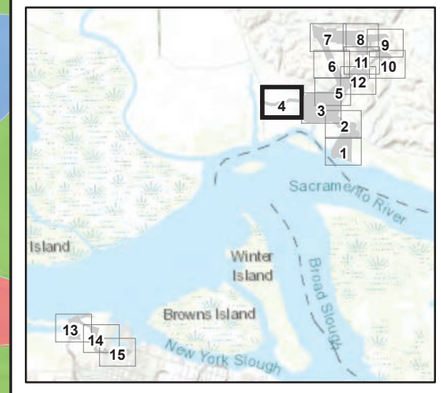
Attachment B:
Biological Resources Map
Map 4 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed PG&E 12 kV Distribution Line
- Survey Area

Vegetation Community and Land Covers

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Distichlis spicata* Herbaceous Alliance
- *Frankenia salina* Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Sarcocornia pacifica* Herbaceous Alliance
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- Road/Bare Ground
- Developed



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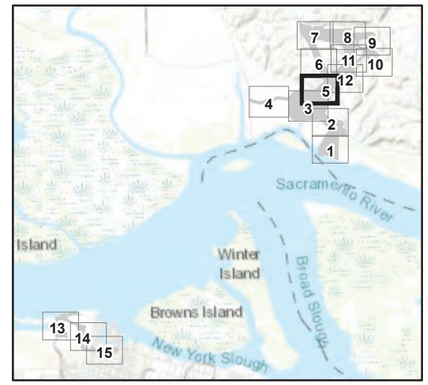
Attachment B:
Biological Resources Map
Map 5 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed PG&E 500 kV Interconnection
- Proposed PG&E 12 kV Distribution Line
- Proposed LSPGC Collinsville Substation Site
- Survey Area

Vegetation Community and Land Covers

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Distichlis spicata* Herbaceous Alliance
- *Frankenia salina* Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Typha (angustifolia, domingensis, latifolia)* Herbaceous Alliance
- Road/Bare Ground



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Attachment B:
Biological Resources Map
Map 6 of 15

Collinsville 500/230 Kilovolt Substation Project

Proposed PG&E 500 kV Interconnection

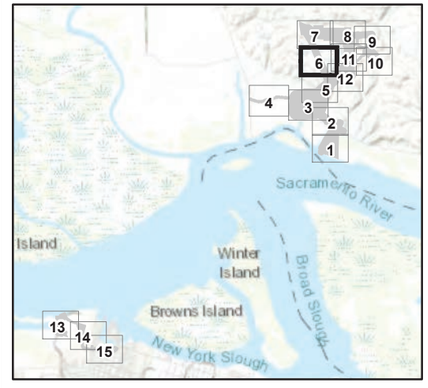
Survey Area

Vegetation Community and Land Covers

Brassica nigra - Centaurea (solstitialis, melitensis) Herbaceous Semi-Natural Alliance

Lolium perenne Herbaceous Semi-Natural Alliance

Road/Bare Ground



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Attachment B:
Biological Resources Map
Map 7 of 15

Collinsville 500/230 Kilovolt Substation Project

Existing PG&E Vaca Dixon-Tesla Transmission Line

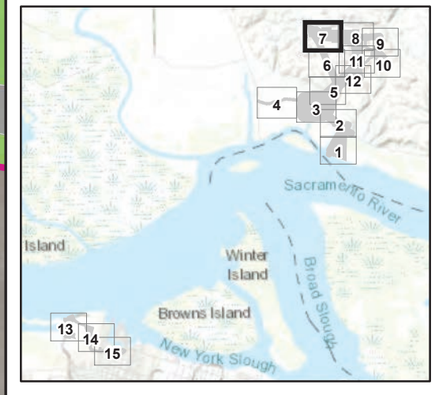
Survey Area

Vegetation Community and Land Covers

Brassica nigra - Centaurea (solstitialis, melitensis) Herbaceous Semi-Natural Alliance

Lolium perenne Herbaceous Semi-Natural Alliance

Road/Bare Ground



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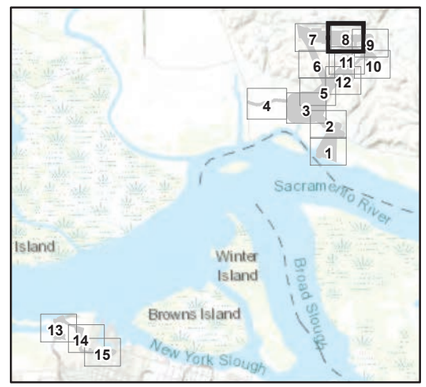
Attachment B:
Biological Resources Map
Map 8 of 15

Collinsville 500/230 Kilovolt Substation Project

- Existing PG&E 500 kV Transmission Line to be Removed
- Proposed PG&E 500 kV Interconnection
- Existing PG&E Vaca Dixon-Tesla Transmission Line
- Survey Area

Vegetation Community and Land Covers

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- Road/Bare Ground



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LSPOWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

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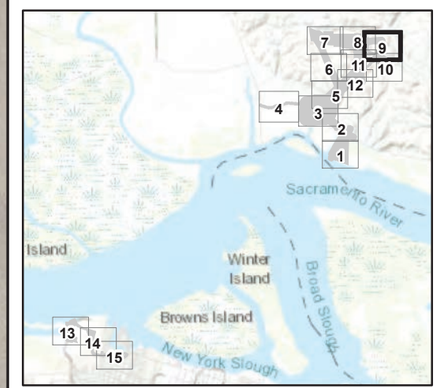
Attachment B:
Biological Resources Map
Map 9 of 15

Collinsville 500/230 Kilovolt Substation Project

- Existing PG&E Vaca Dixon-Tesla Transmission Line
- Survey Area

Vegetation Community and Land Covers

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- Road/Bare Ground



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LSPOWER GRID CALIFORNIA

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Attachment B:
Biological Resources Map
Map 10 of 15

Collinsville 500/230 Kilovolt Substation Project

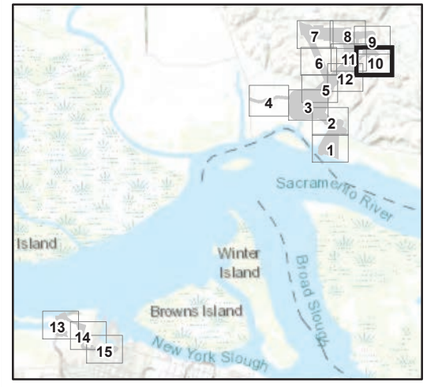
Survey Area

Vegetation Community and Land Covers

Brassica nigra - Centaurea (solstitialis, melitensis) Herbaceous Semi-Natural Alliance

Lolium perenne Herbaceous Semi-Natural Alliance

Road/Bare Ground



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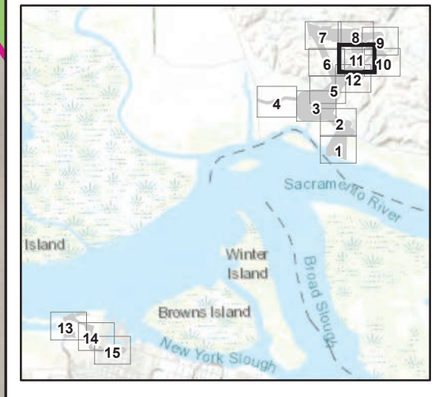
Attachment B:
Biological Resources Map
Map 11 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed PG&E 500 kV Interconnection
- Survey Area

Vegetation Community and Land Covers

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- Road/Bare Ground



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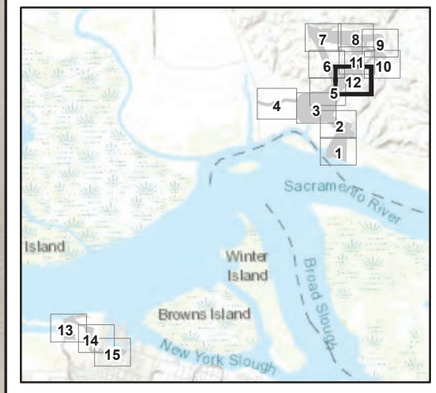
Attachment B:
Biological Resources Map
Map 12 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed PG&E 500 kV Interconnection
- Survey Area

Vegetation Community and Land Covers

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- Road/Bare Ground



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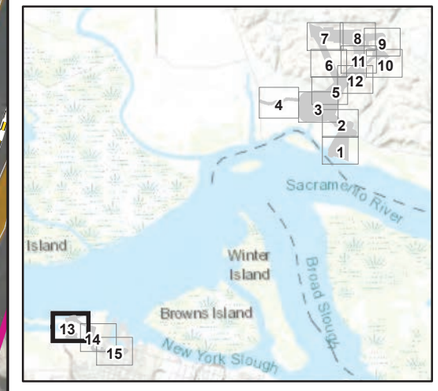
Attachment B:
Biological Resources Map
Map 13 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed LSPGC 230 kV Submarine Segment
- Proposed LSPGC 230 kV Underground Segment
- Proposed Underground Telecommunication Cable Route
- Vault
- Existing PG&E Pittsburg Substation
- Survey Area

Vegetation Community and Land Covers

- *Lepidium latifolium – Lactuca serriola* Herbaceous Alliance
- Ornamental Vegetation
- *Juncus arcticus (var. balticus, mexicanus)* Herbaceous Alliance
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- *Baccharis pilularis* Shrubland Alliance
- Disturbed
- Road/Bare Ground
- Rip Rap
- Open Water
- Developed
- Not Surveyed



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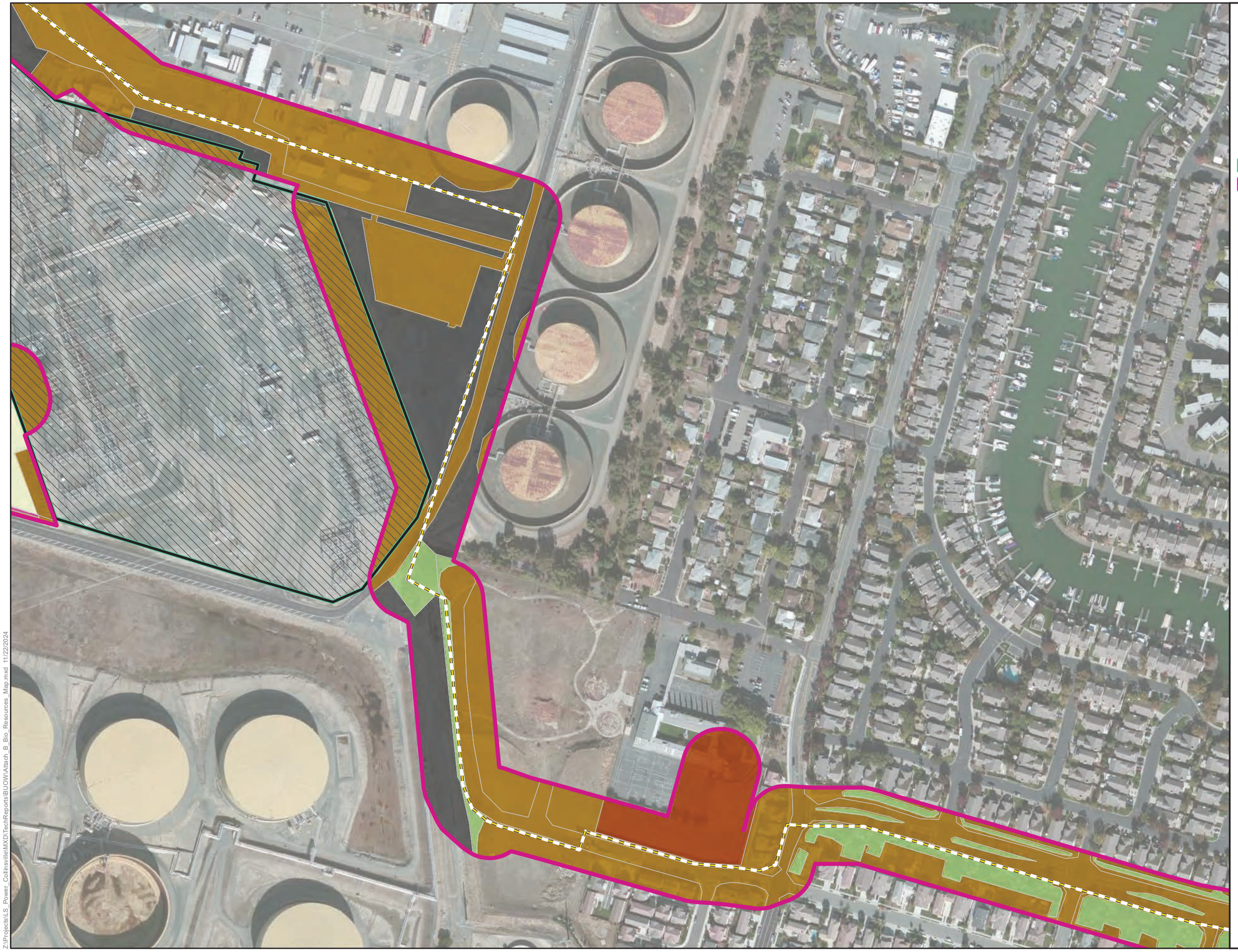


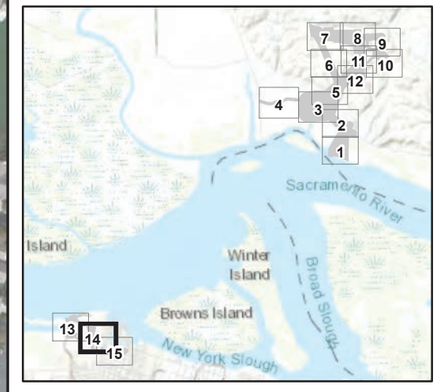
Attachment B:
Biological Resources Map
Map 14 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed Underground Telecommunication Cable Route
- Existing PG&E Pittsburg Substation
- Survey Area

Vegetation Community and Land Covers

- *Lepidium latifolium – Lactuca serriola* Herbaceous Alliance
- Ornamental Vegetation
- *Baccharis pilularis* Shrubland Alliance
- Disturbed
- Developed
- Not Surveyed



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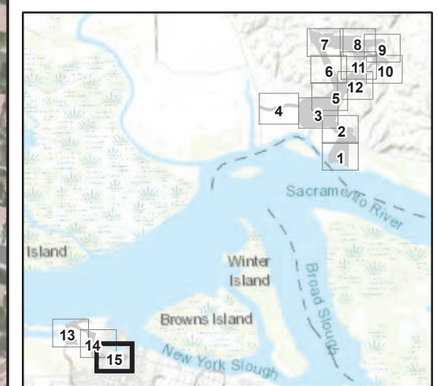
Attachment B:
Biological Resources Map
Map 15 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed Underground Telecommunication Cable Route
- Survey Area

Vegetation Community and Land Covers

- Ornamental Vegetation
- Disturbed
- Developed
- Not Surveyed



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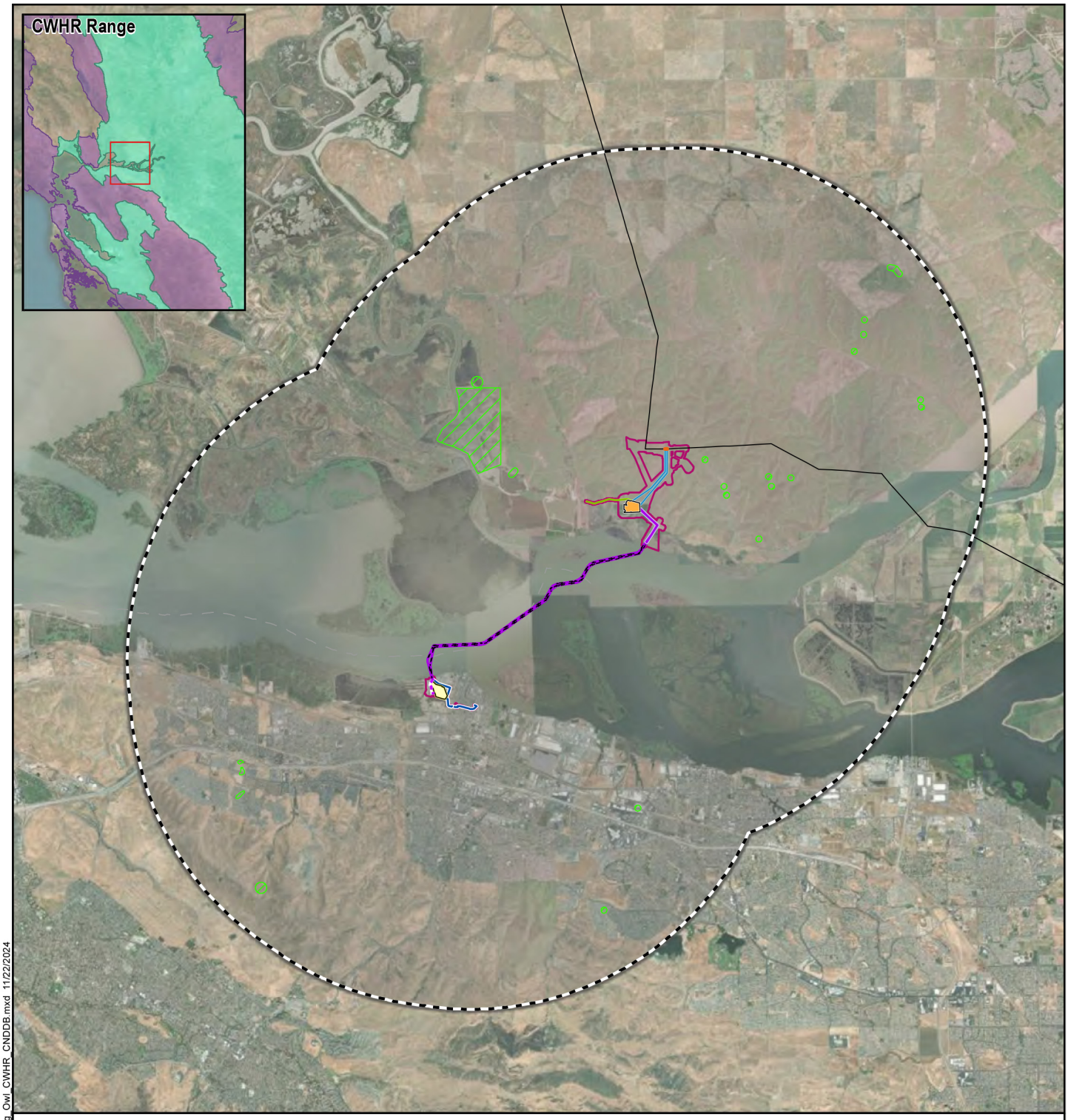
ATTACHMENT C: BURROWING OWL RANGE AND OCCURRENCE DATA



Attachment C: Burrowing Owl Range and Occurrence Data

Collinsville 500/230 Kilovolt Substation Project

- Existing PG&E Vaca Dixon-Tesla Transmission Line
- Existing PG&E 500 kV Transmission Line to be Removed
- Proposed LSPGC 230 kV Overhead Segment
- Proposed LSPGC 230 kV Submarine Segment
- Proposed LSPGC 230 kV Underground Segment
- Proposed PG&E 500 kV Interconnection
- Proposed PG&E 12 kV Distribution Line
- Proposed LSPGC Telecommunications Line
- Proposed LSPGC Collinsville Substation Site
- Existing PG&E Pittsburg Substation
- 5-Mile Buffer
- Survey Area
- California Natural Diversity Database Burrowing Owl (*Athene cunicularia hypugaea*) Occurrence
- California Wildlife Habitat Relationships Winter Range (Inset)
- California Wildlife Habitat Relationships Yearly Range (Inset)

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0 2 4 Miles

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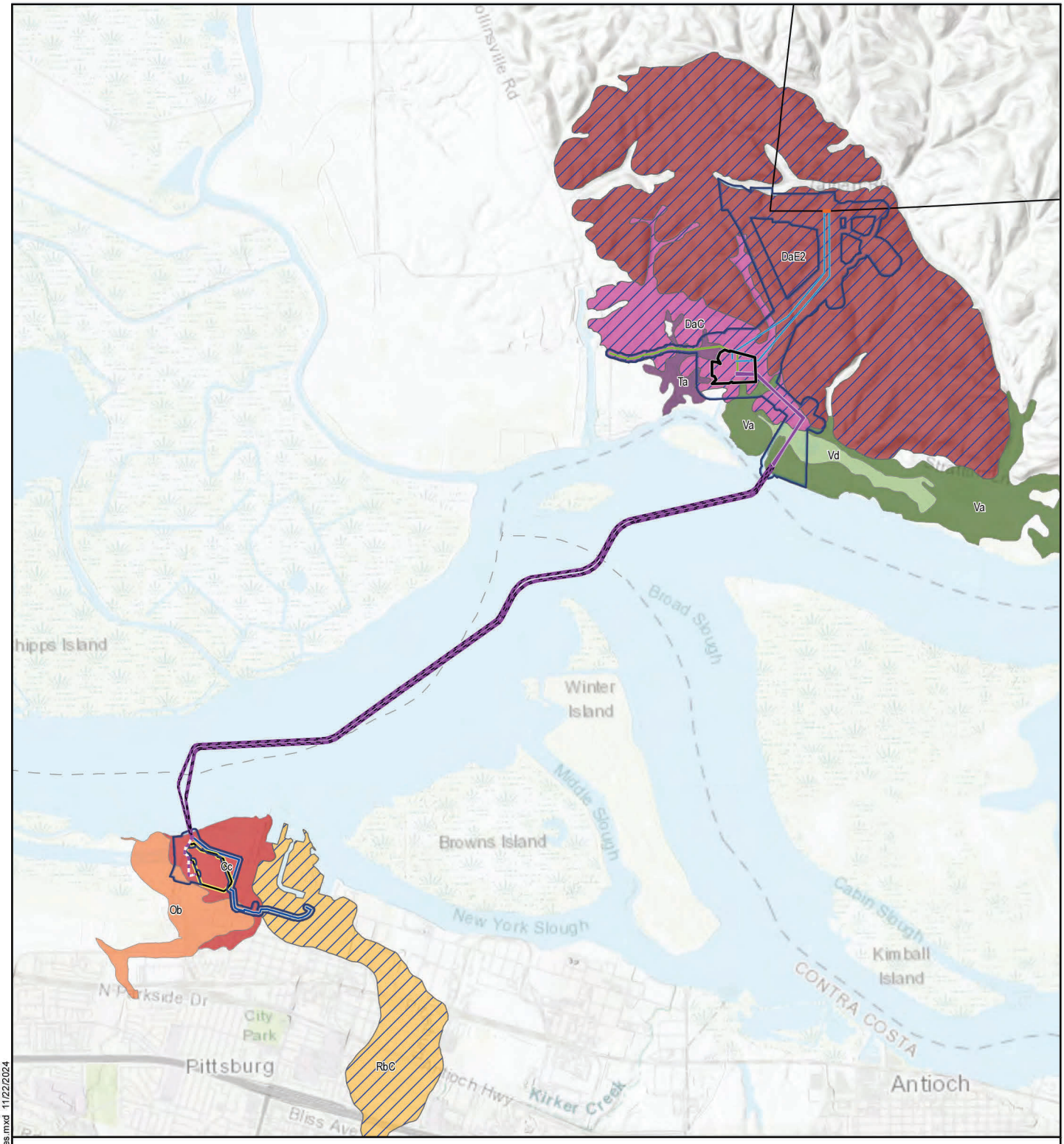
ATTACHMENT D: SOILS CROSSED BY THE PROPOSED PROJECT



Attachment D: Soils Crossed by the Proposed Project

Collinsville 500/230 Kilovolt Substation Project

- Ta
- Vd
- Cc
- Ob
- RbC
- Va
- DaE2
- DaC

- Existing PG&E Vaca Dixon-Tesla Transmission Line
- Existing PG&E 500 kV Transmission Line to be Removed
- Proposed LSPGC 230 kV Overhead Segment
- Proposed LSPGC 230 kV Submarine Segment
- Proposed LSPGC 230 kV Underground Segment
- Proposed PG&E 500 kV Interconnection
- Proposed PG&E 12 kV Distribution Line
- Proposed LSPGC Telecommunications Line

- Proposed LSPGC Collinsville Substation Site
- Existing PG&E Pittsburg Substation
- Well-Draining Soils
- Habitat Assessment Area

N

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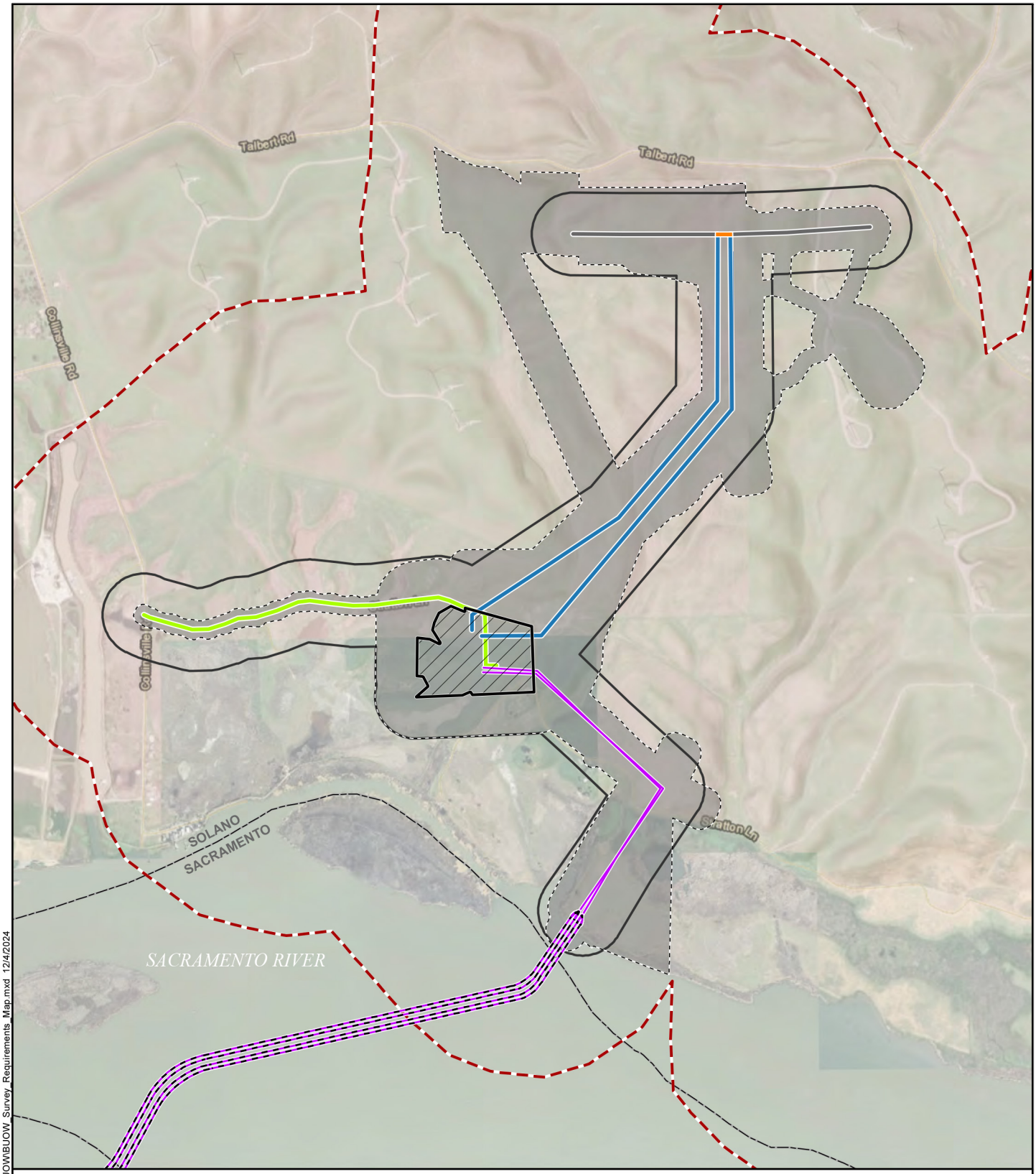
ATTACHMENT E: HABITAT ASSESSMENT AREA COMPARISON



Attachment E: Habitat Assessment Area Comparison

Collinsville 500/230 Kilovolt Substation Project

- Existing PG&E 500 kV Overhead Transmission Line
- Existing PG&E 500 kV Overhead Transmission Line to be Removed
- Proposed LSPGC 230 kV Overhead Segment
- Proposed LSPGC 230 kV Submarine Segment
- Proposed PG&E 12 kV Distribution Line
- Proposed PG&E 500 kV Interconnection
- County Boundary
- 500-Foot Buffer
- Completed BUOW Habitat Assessment Area
- Solano 4 Habitat Assessment Area
- Proposed Collinsville Substation

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0 800 1,600 Feet

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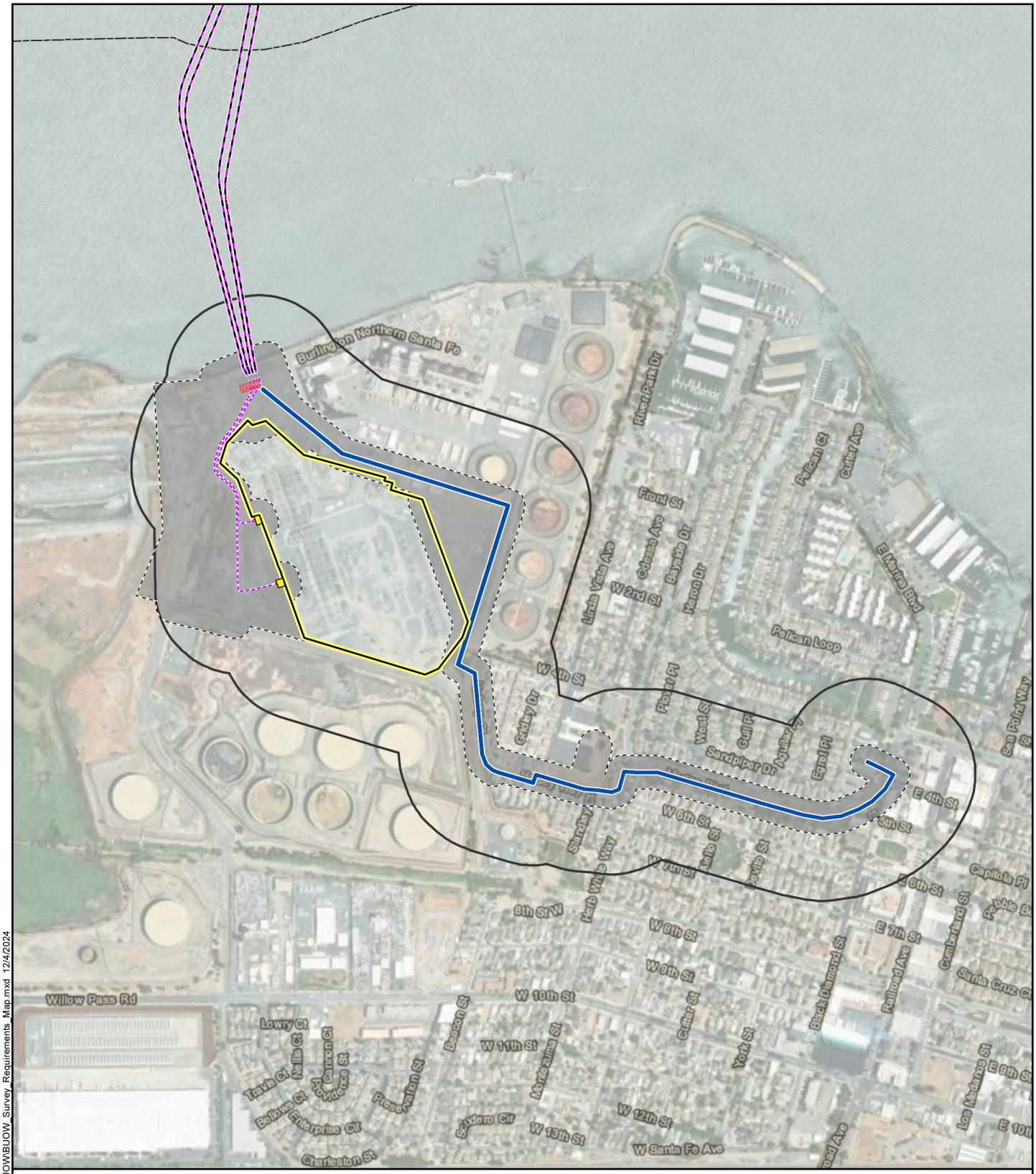

Attachment E: Habitat Assessment Area Comparison

Collinsville 500/230 Kilovolt Substation Project

- Proposed LSPGC 230 kV Submarine Segment
- Proposed LSPGC 230 kV Underground Segment
- Proposed LSPGC Telecommunications Line
- County Boundary
- Existing PG&E Pittsburg Substation
- Proposed Riser
- Proposed Utility Vault
- 500-Foot Buffer
- Completed BUOW Habitat Assessment Area

1:10,000

0 800 1,600 Feet

LS POWER GRID CALIFORNIA

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ATTACHMENT B: BURROWING OWL SURVEY RESULTS AND VEGETATION COMMUNITIES MAP

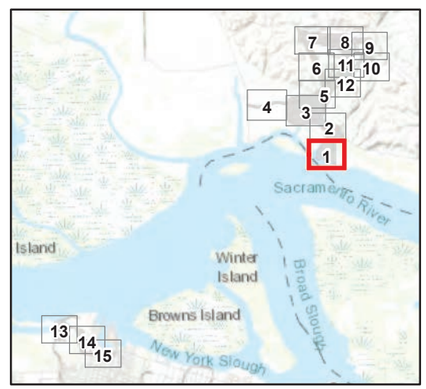
Attachment B:
Burrowing Owl Survey Results and Vegetation Communities
Map 1 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed LSPGC 230 kV Overhead Segment
- Proposed LSPGC 230 kV Submarine Segment
- Habitat Assessment
- Permanent Impact
- Temporary Impact

Vegetation Community

- *Distichlis spicata* Herbaceous Alliance
- *Frankenia salina* Herbaceous Alliance
- *Juncus arcticus (var. balticus, mexicanus)* Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Rosa californica* Shrubland Alliance
- *Salix exigua* Shrubland Alliance
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- *Schoenoplectus acutus/rosa californica* Association
- Road/Bare Ground
- Open Water



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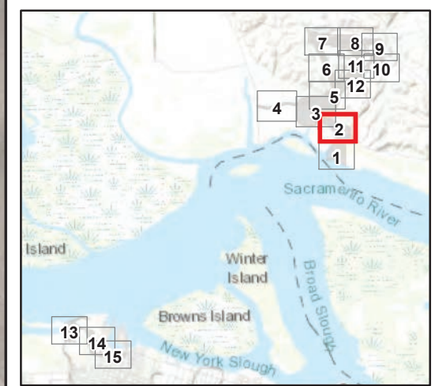
Attachment B:
Burrowing Owl Survey Results and Vegetation Communities
Map 2 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed LSPGC 230 kV Overhead Segment
- Proposed PG&E 12 kV Distribution Line
- Habitat Assessment
- Permanent Impact
- Temporary Impact

Vegetation Community

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Distichlis spicata* Herbaceous Alliance
- *Frankenia salina* Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Polygonum lapathifolium - Xanthium strumarium* Herbaceous Alliance
- *Rosa californica* Shrubland Alliance
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- Road/Bare Ground
- Open Water



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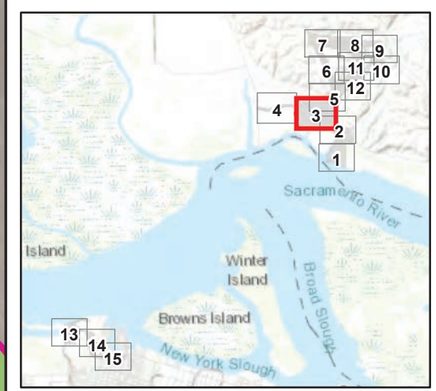
Attachment B:
Burrowing Owl Survey Results and Vegetation Communities
Map 3 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed LSPGC 230 kV Overhead Segment
- Proposed PG&E 12 kV Distribution Line
- Proposed PG&E 500 kV Overhead Interconnection
- Habitat Assessment
- Permanent Impact
- Temporary Impact

Vegetation Community

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Distichlis spicata* Herbaceous Alliance
- *Frankenia salina* Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Polygonum lapathifolium - Xanthium strumarium* Herbaceous Alliance
- *Sarcocornia pacifica* Herbaceous Alliance
- *Rosa californica* Shrubland Alliance
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- *Schoenoplectus americanus* Herbaceous Alliance
- *Typha (angustifolia, domingensis, latifolia)* Herbaceous Alliance
- Road/Bare Ground



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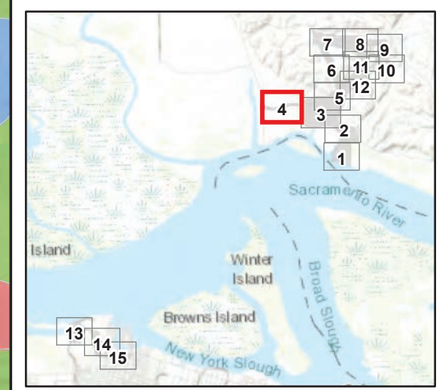
Attachment B:
Burrowing Owl Survey Results and Vegetation Communities
Map 4 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed PG&E 12 kV Distribution Line
- Habitat Assessment
- Permanent Impact
- Temporary Impact

Vegetation Community

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Distichlis spicata* Herbaceous Alliance
- *Frankenia salina* Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Sarcocornia pacifica* Herbaceous Alliance
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- Road/Bare Ground
- Developed



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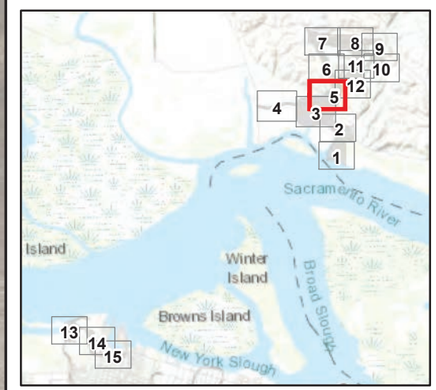
Attachment B:
Burrowing Owl Survey Results and Vegetation Communities
Map 5 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed PG&E 12 kV Distribution Line
- Proposed PG&E 500 kV Overhead Interconnection
- Habitat Assessment
- Permanent Impact
- Temporary Impact

Vegetation Community

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Distichlis spicata* Herbaceous Alliance
- *Frankenia salina* Herbaceous Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- *Typha (angustifolia, domingensis, latifolia)* Herbaceous Alliance
- Road/Bare Ground



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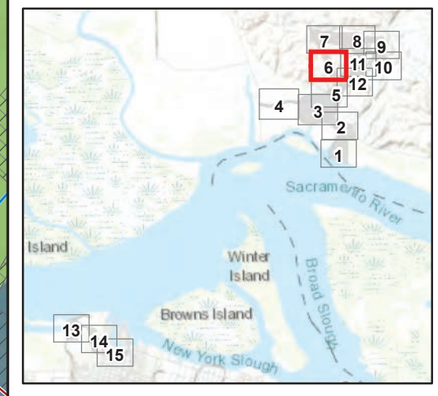
Attachment B:
Burrowing Owl Survey Results and Vegetation Communities
Map 6 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed PG&E 500 kV Overhead Interconnection
- Habitat Assessment
- Permanent Impact
- Temporary Impact

Vegetation Community

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- Road/Bare Ground



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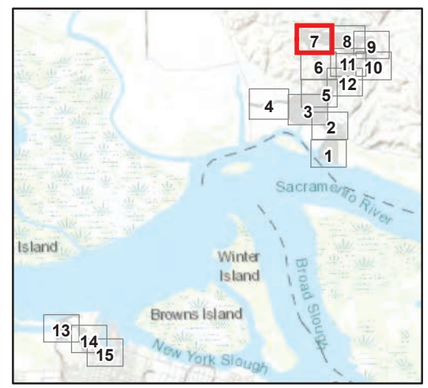
Attachment B:
Burrowing Owl Survey Results and Vegetation Communities
Map 7 of 15

Collinsville 500/230 Kilovolt Substation Project

- Existing PG&E Vaca Dixon-Tesla Transmission Line
- Habitat Assessment
- Temporary Impact

Vegetation Community

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- Road/Bare Ground



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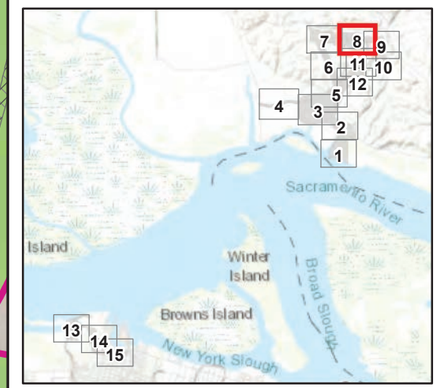
Attachment B:
Burrowing Owl Survey Results and Vegetation Communities Map
Map 8 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed PG&E 500 kV Overhead Interconnection
- Existing PG&E 500 kV Overhead Transmission Line to be Removed
- Existing PG&E Vaca Dixon-Tesla Transmission Line
- Suitable burrowing owl habitat
- Habitat Assessment
- Permanent Impact
- Temporary Impact

Vegetation Community

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- Road/Bare Ground



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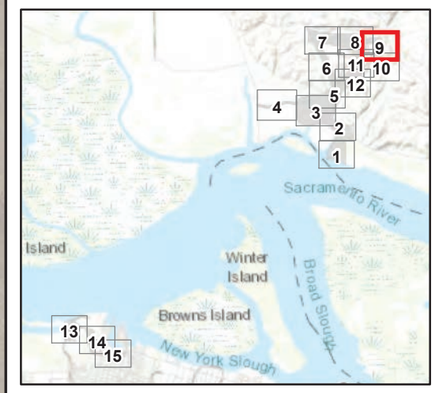
Attachment B:
Burrowing Owl Survey Results and Vegetation Communities
Map 9 of 15

Collinsville 500/230 Kilovolt Substation Project

- Suitable burrowing owl habitat
- Proposed PG&E 500 kV Overhead Interconnection
- Existing PG&E 500 kV Overhead Transmission Line to be Removed
- Existing PG&E Vaca Dixon-Tesla Transmission Line
- Habitat Assessment
- Permanent Impact
- Temporary Impact

Vegetation Community

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- Road/Bare Ground



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LS Power

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Attachment B:
Burrowing Owl Survey Results and Vegetation Communities
Map 10 of 15

Collinsville 500/230 Kilovolt Substation Project

Habitat Assessment

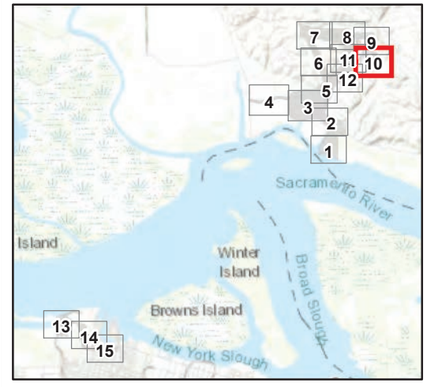
Temporary Impact

Vegetation Community

Brassica nigra - Centaurea (solstitialis, melitensis) Herbaceous Semi-Natural Alliance

Lolium perenne Herbaceous Semi-Natural Alliance

Road/Bare Ground



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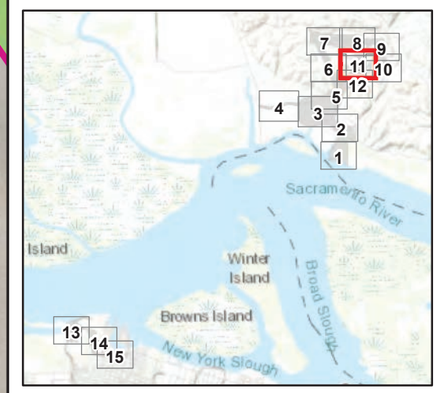
Attachment B:
Burrowing Owl Survey Results and Vegetation Communities
Map 11 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed PG&E 500 kV Overhead Interconnection
- Habitat Assessment
- Permanent Impact
- Temporary Impact

Vegetation Community

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- Road/Bare Ground



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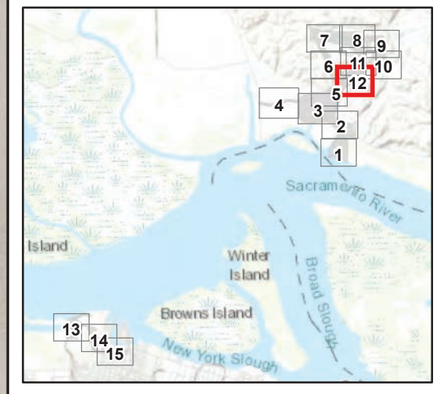
Attachment B:
Burrowing Owl Survey Results and Vegetation Communities
Map 12 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed PG&E 500 kV Overhead Interconnection
- Habitat Assessment
- Permanent Impact
- Temporary Impact

Vegetation Community

- *Brassica nigra - Centaurea (solstitialis, melitensis)* Herbaceous Semi-Natural Alliance
- *Lolium perenne* Herbaceous Semi-Natural Alliance
- Road/Bare Ground



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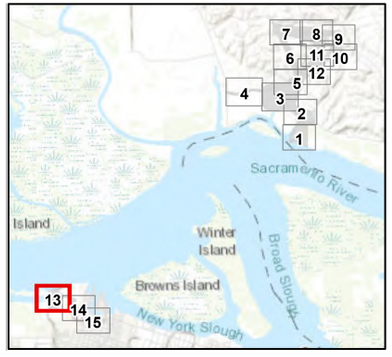
Attachment B:
Burrowing Owl Survey Results and Vegetation Communities
Map 13 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed LSPGC 230 kV Submarine Segment
- Proposed LSPGC 230 kV Underground Segment
- Proposed LSPGC Telecommunications Line
- Habitat Assessment
- Permanent Impact
- Temporary Impact

Vegetation Community

- *Lepidium latifolium – Lactuca serriola* Herbaceous Alliance
- Ornamental Vegetation
- *Juncus arcticus (var. balticus, mexicanus)* Herbaceous Alliance
- *Schoenoplectus (acutus, californicus)* Herbaceous Alliance
- *Baccharis pilularis* Shrubland Alliance
- Disturbed
- Road/Bare Ground
- Rip Rap
- Open Water
- Developed
- Not Surveyed



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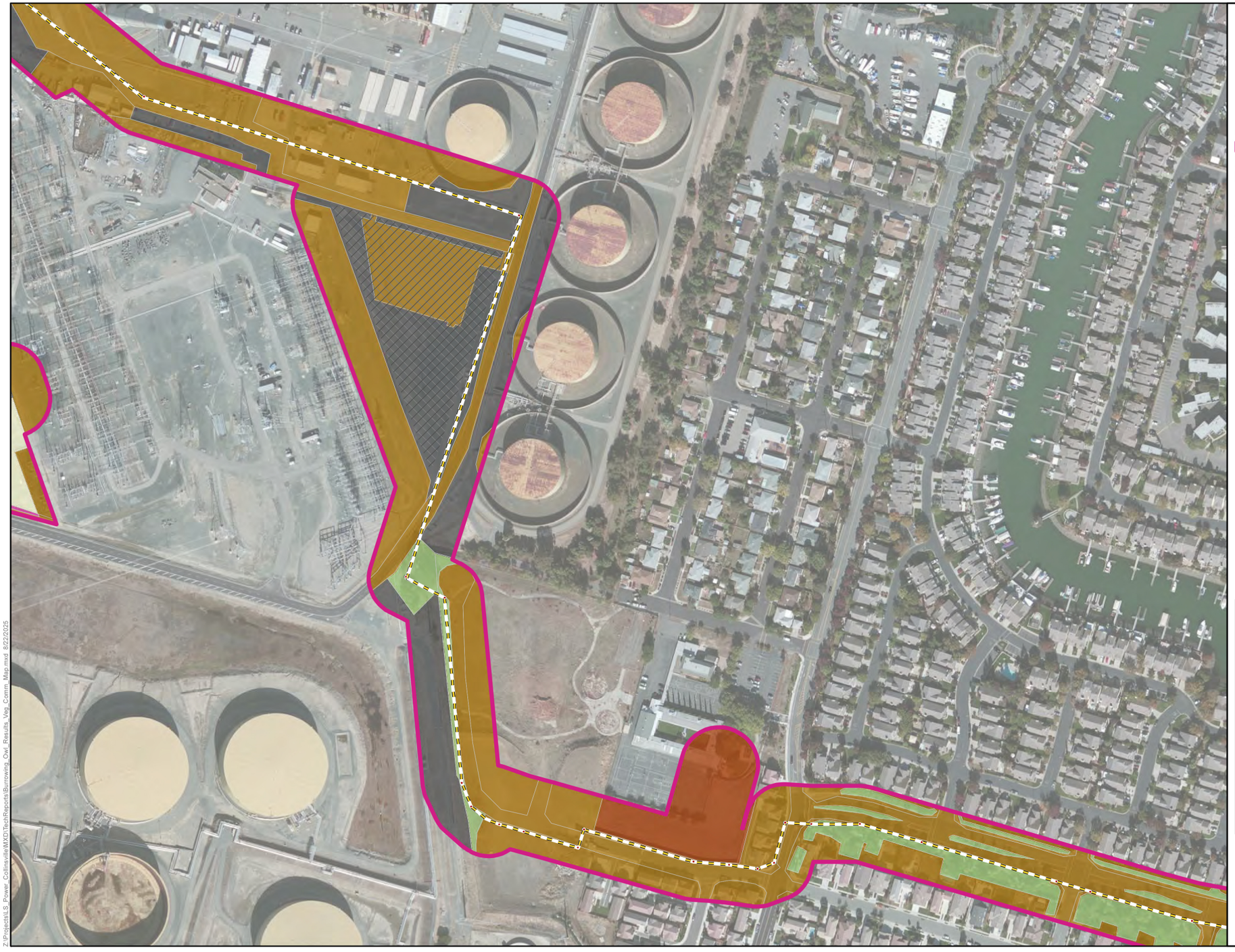


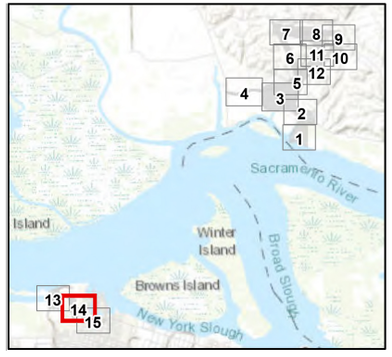
Attachment B:
Burrowing Owl Survey Results and Vegetation Communities
Map 14 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed LSPGC Telecommunications Line
- Habitat Assessment
- Permanent Impact
- Temporary Impact

Vegetation Community

- *Lepidium latifolium – Lactuca serriola* Herbaceous Alliance
- Ornamental Vegetation
- *Baccharis pilularis* Shrubland Alliance
- Disturbed
- Developed
- Not Surveyed



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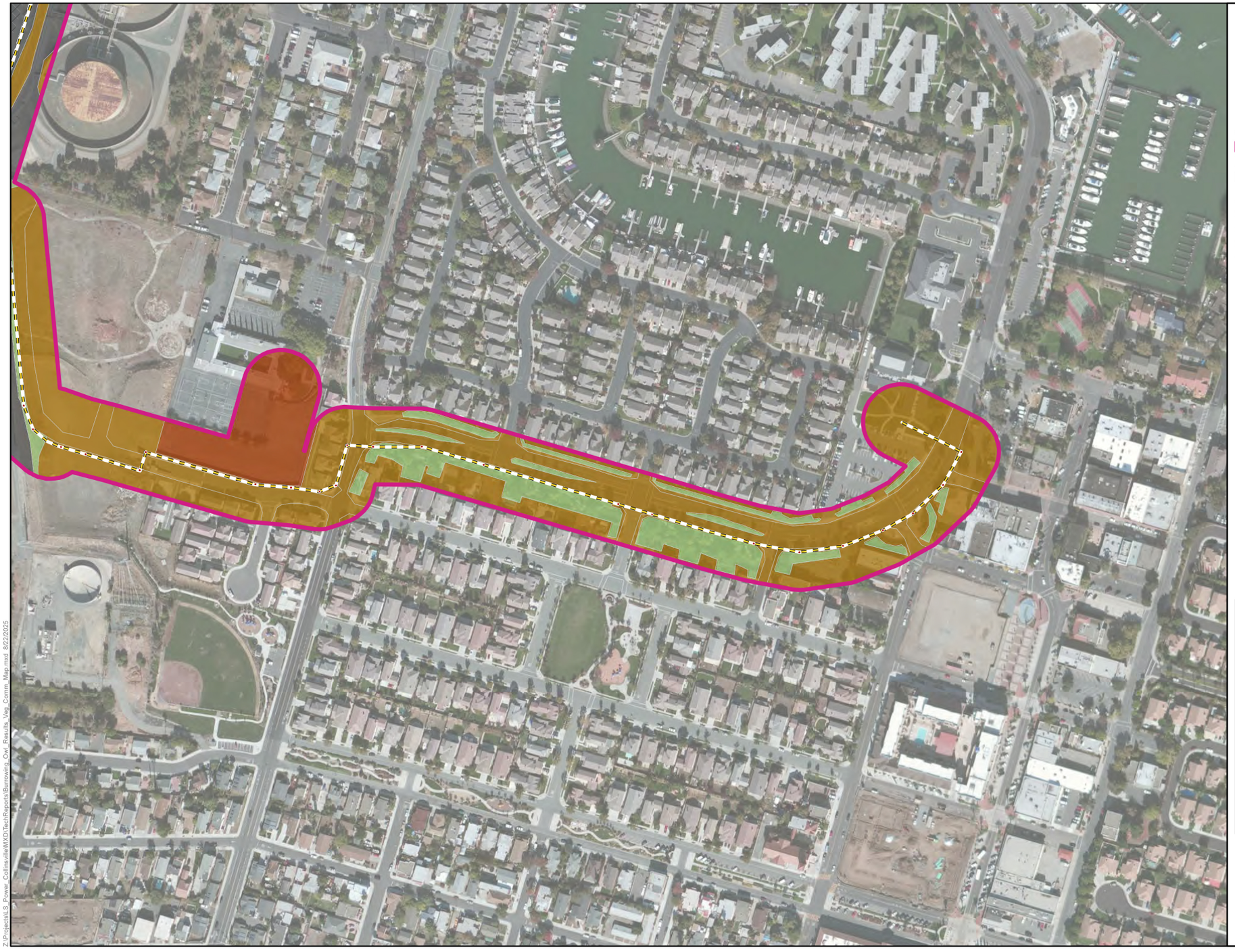


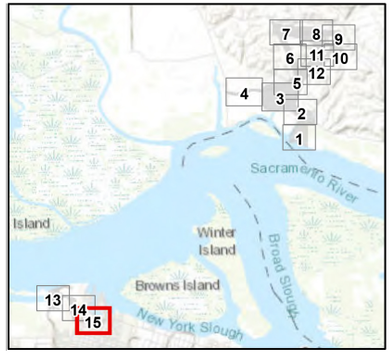
Attachment B:
Burrowing Owl Survey Results and Vegetation Communities
Map 15 of 15

Collinsville 500/230 Kilovolt Substation Project

- Proposed LSPGC Telecommunications Line
- Habitat Assessment
- Permanent Impact
- Temporary Impact

Vegetation Community

- Ornamental Vegetation
- Disturbed
- Developed
- Not Surveyed



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LS Power

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ATTACHMENT C: PHOTOGRAPH

ATTACHMENT C: PHOTOGRAPH

Photograph 1: Northwest-facing view of suitable western burrowing owl (*Athene cunicularia hypogea*) burrows located within the Habitat Assessment Area on June 16, 2025.

APPENDIX F.11

PG&E Preliminary Delineation of Aquatic Resources

PRELIMINARY DELINEATION OF AQUATIC RESOURCES, FOR THE

COLLINSVILLE SUBSTATION VACA-TESLA 500KV INTERCONNECTION PROJECT

CONTRA COSTA AND SOLANO COUNTIES, CALIFORNIA

PREPARED FOR:

Pacific Gas and Electric Company
300 Lakeside Drive
Oakland, CA 94612
Contact: Ode Bernstein
(415) 404-1482

PREPARED BY:

Kleinfelder
3130 Kilgore Road, Ste 200
Rancho Cordova, CA 95670
Contact: Rob Witthaus
(408) 621-8531

February 2026

Pacific Gas and Electric Company. 2026. *Preliminary Delineation of Aquatic Resources, for the Collinsville Substation Vaca-Tesla 500kV Interconnection Project*, Contra Costa and Solano Counties, CA. February. Prepared by Kleinfelder, Rancho Cordova, CA.

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Contact Information 2
Site Description and Location 2
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Precipitation and Growing Season 9
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Appendix A Routine Wetland Delineation Data Forms
Appendix B Aquatic Resources Map
Appendix C Hydrologic Connectivity
Appendix D Site Photographs
Appendix E Hydric Soils List and Soil Map
Appendix F Antecedent Precipitation Table

Acronyms and Abbreviations

CWA	Clean Water Act
FAC	Facultative
FACU	Facultative Upland
FACW	Facultative Wetland
GPS	Global Positioning System
KLF	Kleinfelder
NRCS	Natural Resources Conservation Service
OBL	Obligate Wetland
OHWM	Ordinary High Water Mark
PG&E	Pacific Gas and Electric Company
UPL	Obligate Upland
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture

Collinsville Substation
Vaca-Tesla 500kV Interconnection Project
Preliminary Delineation of Aquatic Resources

Summary

The Pacific Gas & Electric Company (PG&E) owns and operates the Vaca-Tesla 500kV electric transmission line for energy transmission between the Vaca-Dixon and Tesla Substations as part of the statewide electric transmission system. LS Power is planning to construct a new 500kV substation near Collinsville in Solano County, CA that requires PG&E to design, construct, own, and operate a 500kV interconnection (loop) from PG&E's existing Vaca-Tesla 500kV Line to the new substation. Kleinfelder (KLF) conducted a preliminary delineation of aquatic resources at four sites – North, Maud, Bird's Landing, and Byron - along the transmission line to map aquatic resources associated with PG&E's Collinsville Substation Vaca-Tesla 500kV Interconnection Project (Project) in Solano and Contra Costa Counties, California. This report documents the location and extent of 5.238 acres of drainage ditches, 0.195 acre of ephemeral watercourses, and 0.085 acre of freshwater seasonal wetland within the 196.485-acre survey area encompassing the Project sites, which may meet the definition of waters of the U.S. as defined by the Clean Water Act (CWA). Agricultural drainage ditches and an ephemeral watercourse have relatively permanent flow with continuous surface hydrologic connection via culverts to Lindsay Slough, which is tributary to the Sacramento River, a traditional navigable watercourse (TNW). One additional drainage ditch with relatively permanent flow in the survey area has continuous surface hydrologic connection with the TNW at Discovery Bay.

This investigation followed the on-site routine wetland delineation methods described in the *Corps of Engineers Wetlands Delineation Manual* (USACE 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2008), and the *Corps Regulatory Guidance Letter No. 05-05 Ordinary High Water Mark Identification* (USACE 2005).

This report provides the aquatic resources information to support a U.S. Army Corps of Engineers (USACE) jurisdictional determination in accordance with Section 404 of the CWA. Supporting documentation includes routine wetland delineation data forms in Appendix A, maps of the locations and extent of aquatic resources in Appendix B, hydrology of the survey areas in Appendix C, site photographs in Appendix D, hydric soils lists and soil maps in Appendix E, and Antecedent Precipitation Tables in Appendix F. This report does not assess potential impacts to aquatic resources.

Introduction

This investigation considers the 196.485-acre area (survey area) that may be affected by the Project. The following describes the Project site and its location and provides directions to the site.

Contact Information

Project Applicant
Pacific Gas and Electric Company
300 Lakeside Drive
Oakland, CA 94612
Contact: Ode Bernstein
OMB3@pge.com
(415) 404-1482

Delineation Preparer
Kleinfelder
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Rancho Cordova, CA 95670
Contact: Rob Witthaus
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Site Description and Location

All four Project sites are set in grazed annual grasslands.

North Site. The North Site is in a field furrowed and cultivated for production of forage for cattle grazing (Photo 2, Appendix D). Lands surrounding the project location area used for crop production, orchards, and grazing, approximately 2.5 miles southeast from the urban boundary of the city of Vacaville, Solano County. The survey area is located in the southwest corner of Section 5, Township 5 North, Range 1 East on the Elmira U.S. Geological Survey 7.5-minute topographic quadrangle map. The terrain within and surrounding the survey area is nearly flat, with a grid-network of irrigation and drainage ditches lining the various pastures.

Maud Site. Similar as the North Site, the Maud Site is in a grazed pasture surrounded by grazed grasslands (Photo 7, Appendix D). The site is approximately 0.5 mile due east from Rio Vista Junction, along Highway 12 in Solano County, California. This survey area is in the northwest and northeast corners of Sections 9 and 10, respectively, at Township 4 North, Range 1 East on the Bird's Landing U.S. Geological Survey 7.5-minute topographic quadrangle map. The landscape in the survey area has a slight northeast gradient within a surrounding landscape characterized by gently rolling terrain with scattered drainages and depressions.

Bird's Landing Site. The Bird's Landing Site includes the developed Bird's Landing Substation and immediately adjacent lands, set on a hilltop within the Montezuma Hills approximately two (2) miles east of the unincorporated community of Bird's Landing, Solano County, California. The survey area and surrounding lands supporting sheep and cattle grazing amongst wind turbines operated for energy generation. The survey area is in the north of Section 11 and south of Section 2, Township 3 North, Range 1 East on the Bird's Landing and Antioch North U.S. Geological Survey 7.5-minute topographic quadrangle map.

Byron Site. The Byron Site is also on property utilized for agricultural production and surrounded by properties variably used for crop production and grazing. The survey area is approximately 0.5 mile south of the southwest corner of the unincorporated community of Discovery Bay, Contra Costa County, California. The survey area is within the southern and northern portions of Sections 35 and

2, respectively, Township 1 South, Range 3 East on the Woodward Island U.S. Geological Survey 7.5-minute topographic quadrangle map. The property where the survey area is situated is bounded to the south and east by large drainage ditches which are part of a network of ditches which drain the region for agricultural production.

Driving Directions

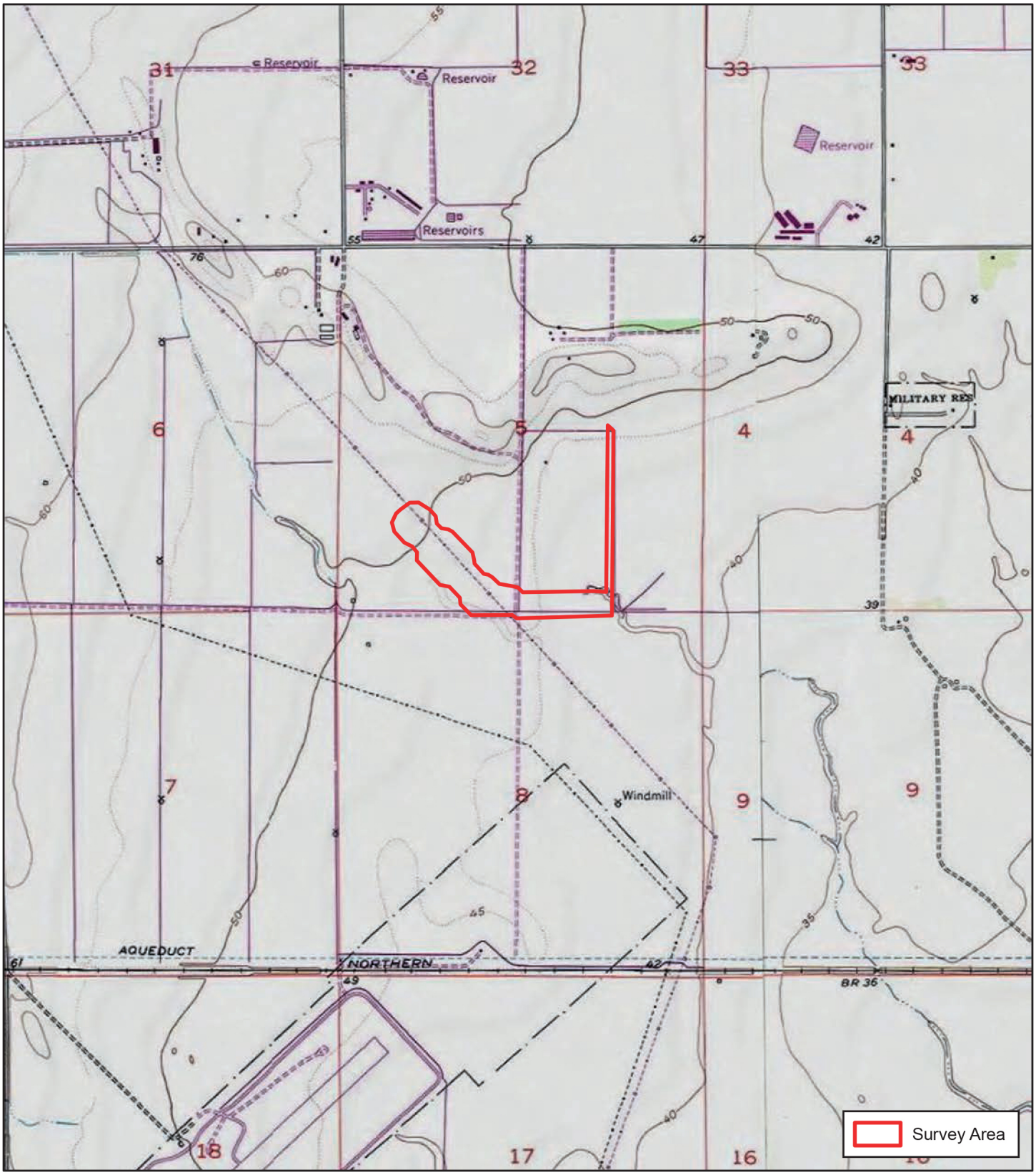
Figures 1a through 1d identify the Project locations in agricultural lands of Solano and Contra Costa Counties, California. To access all four Project sites from Sacramento, travel west on Highway 80.

North Site. Exit Highway 80 on Leisure Town Road in the city of Vacaville. Proceed south on Leisure Town Road for approximately 3.5 miles to the intersection with Fry Road. Turn left (east) onto Fry Road and drive approximately 2.0 miles to the intersection with Lewis Road. Turn right (south) onto Lewis Road. Drive south on Lewis Road for approximately 1.5 miles to the intersection with Hay Road and turn left (east). After approximately 0.75 mile on Hay Road, turn right (south) onto Box R Ranch Road. The survey area for the North Site starts approximately 0.5 mile down Box R Ranch Road. Continue another 0.5 mile along Box R Ranch Road to its terminus, where the remainder of the North Site survey area extends to the west.

Maud Site. Exit Highway 80 onto Highway 113 South in the town of Dixon. Follow Highway 113 south for approximately 7.0 miles to Highway 12 and follow the roundabout onto Highway 12 west toward Suisun City/Vacaville. Drive west on Highway 12 approximately 4.25 miles to Rio Vista Junction and turn right (east) onto Mauds Lane. Follow Mauds Lane approximately 0.65 mile east to the Maud Site survey area.

Bird's Landing Site. Exit Highway 80 onto Highway 113 South in the town of Dixon. Follow Highway 113 south for approximately 7.0 miles to the roundabout at Highway 12. Proceed around the roundabout and continue driving south on Bird's Landing Road. Drive nearly 4.75 miles on Bird's Landing Road to the intersection with Montezuma Hills Road and turn left (south). Proceed approximately 1.30 mile on Montezuma Hills Road to the survey area at the driveway to the Bird's Landing Substation on the left (north) side of the road.

Byron Site. Exit Highway 80 onto Highway 113 South in the town of Dixon. Follow Highway 113 south for approximately 7.0 miles to the roundabout at Highway 12. Continue east on Highway 12 for approximately 7.8 miles through the town of Rio Vista and turn right (south) onto Highway 160 after crossing the Sacramento River. Follow Highway 160 for approximately 13 miles to Highway 4 in the city of Antioch. Transition onto Highway 4 south toward the city of Brentwood. Remain on Highway 4 toward Discovery Bay for almost 26 miles. Turn right (south) onto Bixler Road. Drive south on Bixler Road for approximately 0.5 mile to the intersection with Kellogg Creek Road and turn left (east). Follow Kellogg Creek Road approximately 0.25 mile to the survey area.



USGS 7.5' Quad: ELMIRA (1980)
Legal Description: T05N, R01E, SEC 5, 8
NAD 1983 UTM Zone 10N

0 1,000 2,000 Feet

0 300 600 Meters

N

Scale 1:24,000
1 inch = 2,000 feet

Figure 1a. North Site Project Location
Collinsville Substation
Vaca-Tesla 500kV Interconnection
Solano County, California

KLEINFELDER
Bright People. Right Solutions.

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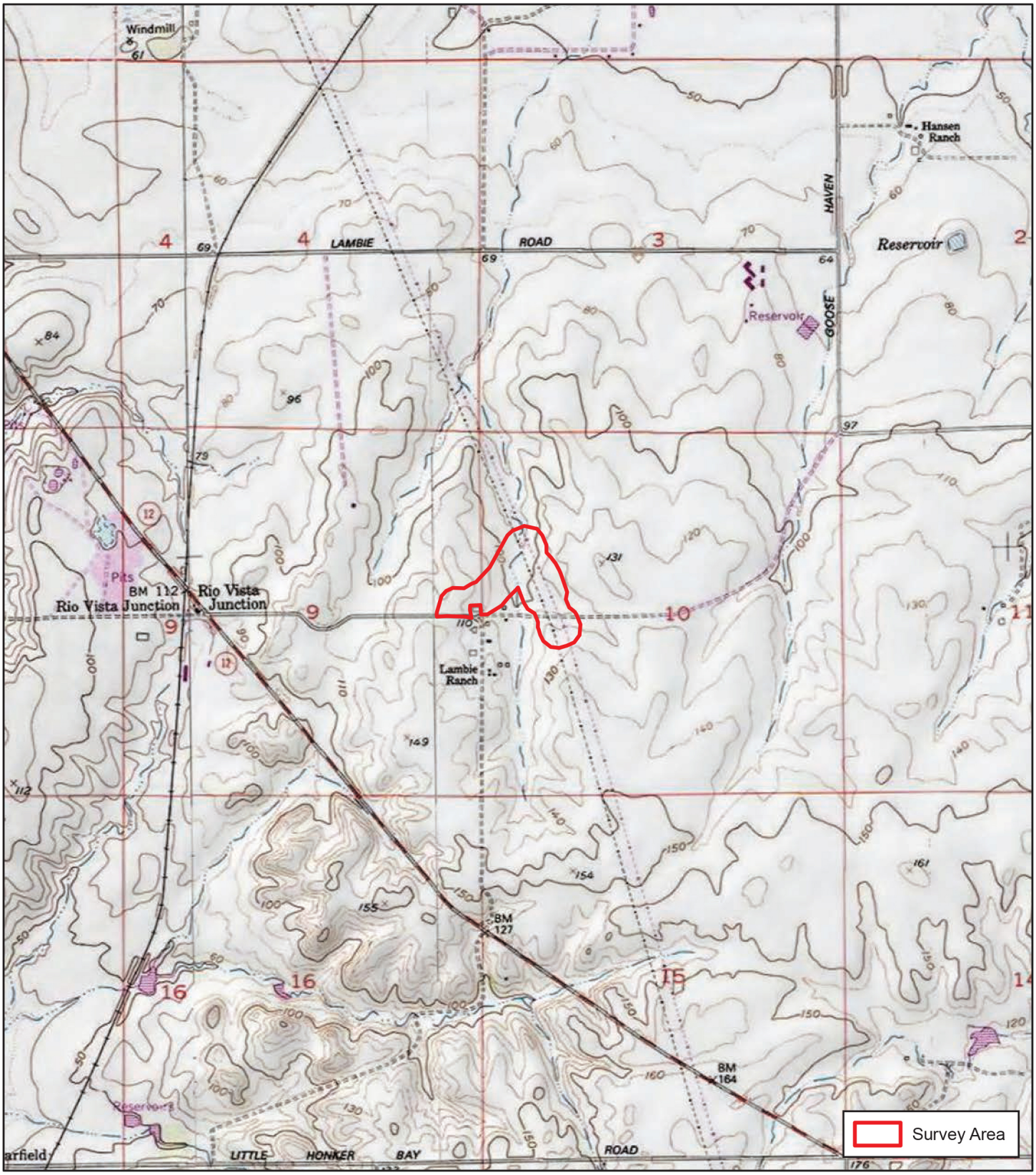

USGS 7.5' Quad: BIRD LANDING (1992)
Legal Description: T04N, R01E, SEC 9, 10
NAD 1983 UTM Zone 10N

0 1,000 2,000 Feet
0 300 600 Meters

N

Scale 1:24,000
1 inch = 2,000 feet

Figure 1b. Maud Site Project Location
Collinsville Substation
Vaca-Tesla 500kV Interconnection
Solano County, California

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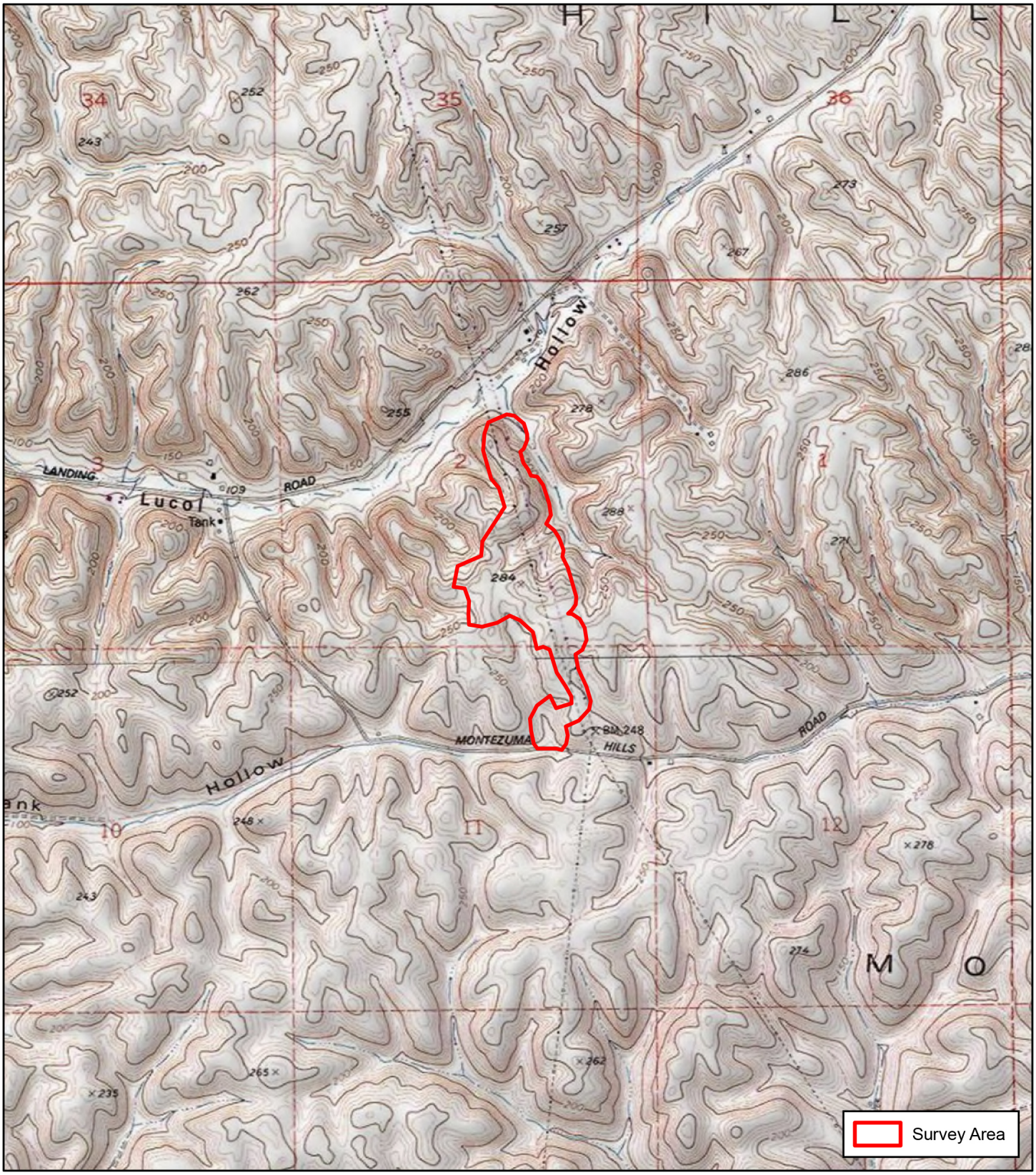

USGS 7.5' Quad: ANTIOCH NORTH (1978)
and BIDS LANDING (1992)
Legal Description: T03N, R01E, SEC 2, 11
NAD 1983 UTM Zone 10N

0 1,000 2,000 Feet

0 300 600 Meters

N

Scale 1:24,000
1 inch = 2,000 feet

Figure 1c. Bird's Landing Site Project Location
Collinsville Substation
Vaca-Tesla 500kV Interconnection
Solano County, California

KLEINFELDER
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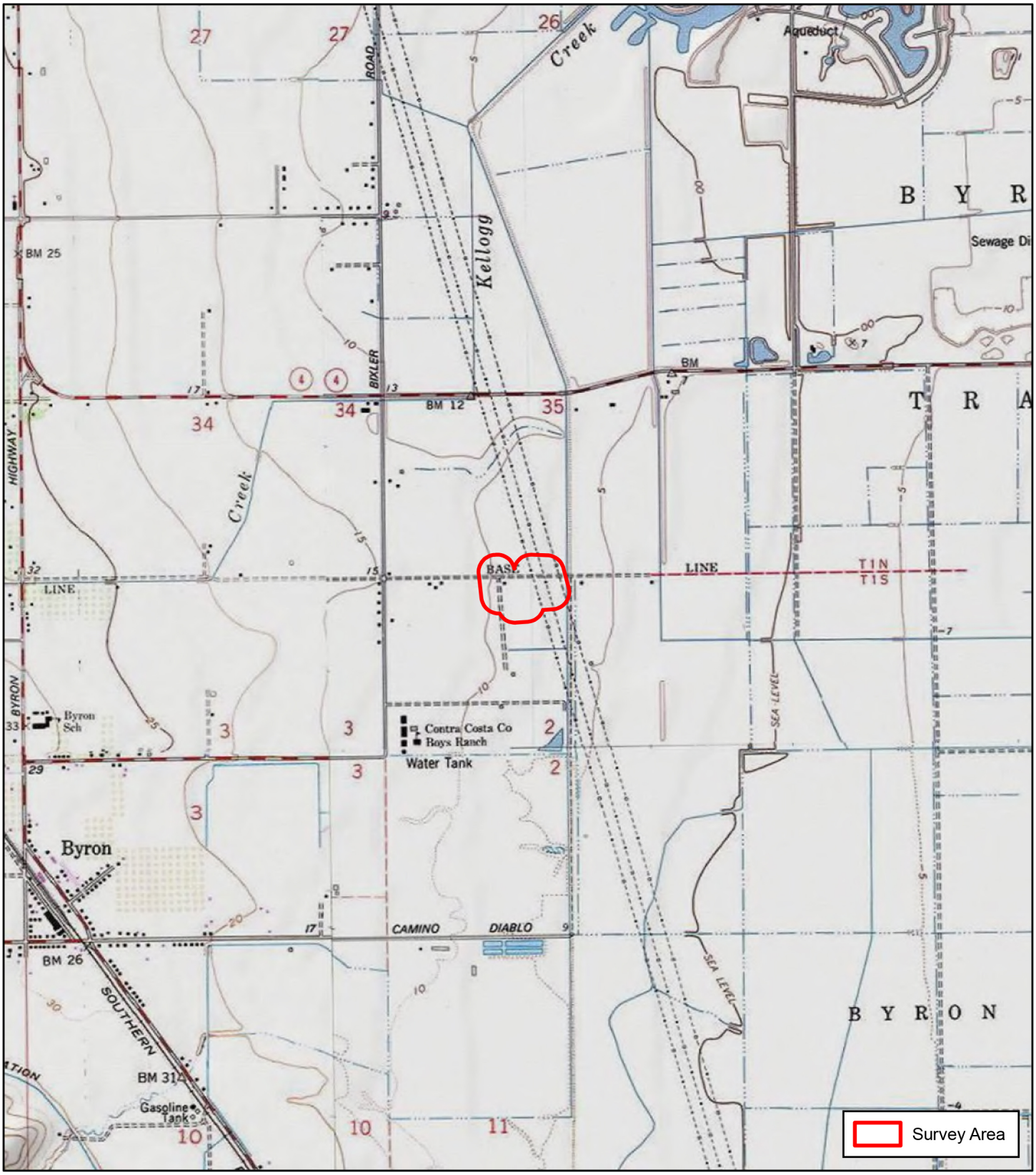

USGS 7.5' Quad: WOODWARD ISLAND (1978)
Legal Description: WET LANDS
LAND GRANT
NAD 1983 UTM Zone 10N

0 1,000 2,000 Feet
0 300 600 Meters

N

Scale 1:24,000
1 inch = 2,000 feet

Figure 1d. Byron Site Project Location
Collinsville Substation
Vaca-Tesla 500kV Interconnection
Contra Costa County, California

KLEINFELDER
Bright People. Right Solutions.

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Delineation Methods

This investigation followed the onsite routine wetland delineation methods described in the *Corps of Engineers Wetlands Delineation Manual* (USACE 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2008), and *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Lichvar and McColley 2008). The survey area lies within the Arid West Region described in the supplement. Prior to field investigations, the KLF biologist reviewed available aerial imagery, topographical maps, and soil maps of the survey area to characterize the onsite vegetation, soils, topography, and hydrology.

Senior Biologists, Mr. Rob Witthaus and Mr. Ode Bernstein, conducted field surveys on December 10 and 11, 2025 and January 21 and 27, 2026 to map the location and extent of aquatic resources within the survey areas. The investigators completed data forms along transects to document dominant vegetation, hydrology, soils, and geography present and define the lateral edges of vegetation types and geomorphic features representative of onsite wetland and water features. The surveyors mapped features using a sub-meter accurate Global Positioning System (GPS) device on a 1:1,200 scale base map with 2023 aerial imagery. KLF downloaded and differentially corrected the GPS data using the nearest available base-station data.

Field investigators identified plant species using the Jepson Manual (Baldwin et al. 2012); plant nomenclature follows the Jepson online interchange (UC Berkeley 2025). The specific wetland indicator status of each species observed has been reported from the *National Wetland Plant List, version 3.6* (USACE 2023). The list below describes each indicator status.

Indicator Status	**Indicator Code**	**Wetland Indicator Status description**
Obligate Wetland	OBL	Almost always occur in wetlands
Facultative Wetland	FACW	Usually occur in wetlands, but may occur in non-wetlands
Facultative	FAC	Occur in wetlands and non-wetlands
Facultative Upland	FACU	Usually occur in non-wetlands, but may occur in wetlands
Obligate Upland	UPL	Almost never occur in wetlands

Environmental Setting

The following provides a brief description of the precipitation and growing season at the Project site, followed by general descriptions of the vegetation, hydrology, and soil types within the survey area.

Precipitation and Growing Season

The Project area climate is Mediterranean, with warm, dry summers and cool, wet winters. Rainfall primarily occurs from November through March, with an average annual precipitation over the past 25 years ranging from approximately 20 inches at the northern sites and a little more than 10 inches at the Byron Site (NRCS 2025a). Appendix F provides an Antecedent Precipitation Table using National Oceanic and Atmospheric Administration (NOAA) data from the climate stations nearest to each survey area (Vacaville/Nut Tree, Martinez, and Tracy Pumping PLT). The United States Department of Agriculture (USDA) reports a nearly year-round growing season (NRCS 2025a). The 30-day rolling precipitation total for the survey areas was near the low end of the 30-year normal range to slightly dry at the time of the field surveys in December 2025, but near the upper end of the normal range at the time of field surveys in January 2026. A large storm system in late December 2025 was responsible for bringing precipitation levels into the normal range at the time of the January surveys (USACE 2025). Conditions were considered "dry" to "normal" at all survey areas at the times they were surveyed, with slightly above-average rainfall in the 30-days antecedent. Annual rainfall in 2025 ranged from approximately 97 percent of the previous 25-year annual average at the North Site to approximately 89 percent at the Byron Site (NRCS 2025a).

Vegetation

The Project is proposed on lands within the San Francisco Bay subregion of the Central Western Region of the California Floristic Province. All four survey areas are characterized by annual grassland vegetation communities, with dominant grass species varying from perennial rye grass (*Lolium perenne*) to ripgut brome (*Bromus diandrus*) and/or wild oats (*Avena barbata*). Additional species, both native and non-native, common to these annual grass-dominated communities are represented at all four survey areas, including, but not limited to: redstem filaree (*Erodium cicutarium*), field bindweed (*Convolvulus arvensis*), Indian clover (*Trifolium albopurpureum*), dwarf sack clover (*Trifolium depauperatum*), purple vetch (*Vicia benghalensis*), fiddleneck (*Amsinckia menziesii*), smooth cat's ear (*Hypochaeris glabra*), blow-wives (*Achyrachaena mollis*), Italian thistle (*Carduus pycnocephalus*), milk thistle (*Silybum marianum*), yellow starthistle (*Centaurea solstitialis*), prickly lettuce (*Lactuca serriola*), dog fennel (*Anthemis cotula*), dove weed (*Croton setigerous*), mustard (*Brassica* spp.), Mediterranean linseed (*Bellardia trixago*), tarweed (*Deinandra* spp.), pineapple weed (*Matricaria discoidia*), spiny cocklebur (*Xanthium spinosum*), burclover (*Medicago arabica*). The Byron site has more alkaline substrates resulting in presence of additional saline-tolerant species such as saltgrass (*Distichlis spicata*), alkali mallow (*Malvella leprosa*), alkali weed (*Cressa truxilensis*), alkali heath (*Frankenia salina*), and perennial pepperweed (*Lepidium latifolium*).

Hydrology

The survey areas are within the following national hydrologic units: North Site = Byron Slough, Maud Site = Lindsay Slough, Bird's Landing Site = Three-Mile Slough-Sacramento River, and Byron Site = Lower Kellogg Creek (USGS 2025b). Regional hydrology of the four survey areas and surrounding landscape is shown in Appendix C, Hydrologic Connectivity. With the exception of the Bird's Landing Site, the survey areas are relatively flat with subtle slope. Networks of drainage ditches at the North and Byron Sites capture surface and ground water and channel it to sloughs and waterways which drain eastward to the Sacramento River via Lindsay Slough. The Maud Site has a gentle northeast gradient. An ephemeral watercourse is mapped in the survey area in U.S.G.S. topographic survey maps and in the National Hydrography Dataset (USGS 2025a). The survey area at the Maud Site is

near the top of the watershed boundary where the ephemeral feature originates. Surface water in the Maud Site survey area collects in the ephemeral watercourse which flows northeast to Lindsay Slough, which is tributary to the Sacramento River. The rolling topography of the Montezuma Hills, where the Bird's Landing Site is situated, channels water into drainages which flow east to Montezuma Slough and the associated Suisun Marsh system. The north side of the Bird's Landing Site survey area slopes to the north toward a seasonal watercourse north of the survey area. The south side of the survey area is captured in drainage ditches constructed as elements of the substation infrastructure. The drainage ditches direct water out of the survey area along the west side of the substation driveway and west along the north roadside of Montezuma Hills Road.

Routine wetland delineation sampling points were established at two locations in the survey areas, the North Site and the Maud Site, where depressions in the local topography indicate potential for wetland development. At the North Site, data points were located where depressions have formed around the footings of an electric transmission tower. At the Maud Site, a sampling point was established along the path of the mapped ephemeral watercourse to establish whether wetland or vernal pool conditions have developed within the low points in the channel.

Soils

Table 1 describes the soil map units and inclusions within the survey area. The table also lists landforms associated with each inclusion and the criteria for designating these landforms as hydric. While the mapping units reported from the North, Maud, and Bird's Landing survey areas are not designated as hydric, inclusions of Omni, Clear Lake, Pescadero and Willow series on basin floors are designated as hydric. Hydric soils are mapped at the Byron Site. Appendix E provides the National Resources Conservation Service soil maps for the four (4) sites.

Table 1 Soil Map Units in the Survey Area

Map Symbol	Map Unit	Inclusions (Percent of Map Unit)	Landform	Hydric Status	Hydric Criteria [1]
North Site					
AoA	Antioch-San Ysidro Complex 0 to 2 percent slopes	Montara and similar soils (50)	Fan remnants	No	---
		San Ysidro and similar soils (35)	Fan remnants	No	---
		Solano (8)	Fan remnants	No	---
		Pescadero (7)	Basin floors on fan remnants	Yes	3
Pc	Pescadero silty clay loam, 0 percent slopes	Pescadero (85)	Basin floors on fan remnants	No	---
		Solano (8)	Fan remnants	No	---
		Willows (7)	Basin floors	Yes	2
SeA	San Ysidro sandy loam, 0 to 2 percent slopes	San Ysidro (85)	Fan remnants	No	---
		Antioch (8)	Fan remnants	No	---
		San Ysidro – Thick surface (7)	Fan remnants	No	---

Map Symbol	Map Unit	Inclusions (Percent of Map Unit)	Landform	Hydric Status	Hydric Criteria [1]
		San Ysidro (85)	Stream terraces	No	---
SfA	San Ysidro sandy loam, thick surface , 0 to 2 percent slopes	Antioch (8)	Stream terraces	No	---
		San Ysidro (7)	Stream terraces	No	---
		Solano (85)	Stream terraces	No	---
SH	Solano loam	Pescadero (5)	Basin floors on fan remnants	No	---
		Antioch (5)	Stream terraces	No	---
		San Ysidro – Thick surface (5)	Stream terraces	No	---
Maud Site					
AIC	Altamont-San Ysidro-San Benito complex, 2 to 9 percent slopes	Altamont (60)	Eroded fan remnant sideslopes	No	---
		San Ysidro (20)	Eroded fan remnant sideslopes	No	---
		San Benito (15)	Eroded fan remnants	No	---
		Ayar (3)	Eroded fan remnant sideslopes	No	---
		Diablo (2)	Eroded fan remnant sideslopes	No	---
AmC	Altamont-Diablo clays, 2 to 9 percent slopes	Altamont (50)	Eroded fan remnant sideslopes	No	---
		Diablo (40)	Eroded fan remnant sideslopes	No	---
		Ayar (5)	Eroded fan remnant sideslopes	No	---
		San Benito (5)	Eroded fan remnants	No	---
AoA	Antioch-San Ysidro Complex 0 to 2 percent slopes	Montara and similar soils (50)	Fan remnants	No	---
		San Ysidro and similar soils (35)	Fan remnants	No	---
		Solano (8)	Fan remnants	No	---
		Pescadero (7)	Basin floors on fan remnants	Yes	3
AsA	Antioch-San Ysidro complex, thick surface, 0 to 2 perce nt slopes	Antioch (55)	Fan remnants	No	---
		San Ysidro (35)	Fan remnants	No	---
Bird's Landing Site					

Map Symbol	Map Unit	Inclusions (Percent of Map Unit)	Landform	Hydric Status	Hydric Criteria [1]
AmE2	Altamont-Diablo clays, 9 to 30 percent slopes	Altamont (50)	Eroded fan remnant sideslopes, hillslopes	No	---
		Diablo (40)	Eroded fan remnant sideslopes, hillslopes	No	---
		Ayar (5)	Eroded fan remnant sideslopes, hillslopes	No	---
		San Benito (5)	Eroded fan remnant sideslopes, hillslopes	No	---
DaC	Diablo-Ayar clays, 2 to 9 percent slopes	Diablo (65)	Eroded fan remnant sideslopes	No	---
		Ayar (25)	Eroded fan remnant sideslopes	No	---
		Altamont (5)	Eroded fan remnant sideslopes	No	---
		San Benito (5)	Eroded fan remnant sideslopes	No	---
DaE2	Diablo-Ayar clays, 9 to 30 percent slopes, eroded	Diablo (60)	Eroded fan remnant sideslopes, hillslopes	No	---
		Ayar (30)	Eroded fan remnant sideslopes, hillslopes	No	---
		Altamont (5)	Eroded fan remnant sideslopes, hillslopes	No	---
		San Benito (5)	Eroded fan remnant sideslopes, hillslopes	No	---
Om	Omni clay loam	Omni (85)	Stream terraces	Yes	2
		Clear Lake (5)	Basin floors	Yes	2
		Solano (5)	Fan remnants	No	---
		Rincon (5)	Stream terraces	No	---
Byron Site					

Map Symbol	Map Unit	Inclusions (Percent of Map Unit)	Landform	Hydric Status	Hydric Criteria [1]
Bc	Brentwood clay loam, wet	Brentwood (85)	Valley floors	No	---
		Sycamore (10)	Flood plains	Yes	2
		Unnamed (5)	Depressions	Yes	2
Mb	Marcuse clay, moderately saline, sodic, partially drained 0 to 2 percent slopes	Marcuse (85)	Basin floors	Yes	2
		Marcuse – Strongly alkaline (10)	Basin floors	Yes	2
		Sacramento (5)	Basin floors	Yes	2
Mc	Marcuse clay, strongly saline, sodic, partially drained, 0 to 2 percent slopes	Marcuse (85)	Basin floors	Yes	2
		Marcuse – Moderately alkaline (10)	Basin floors	Yes	2
		Sacramento (5)	Basin floors	Yes	2

[1]Hydric Criteria

2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that:
    a. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
    b. Show evidence that the soil meets the definition of a hydric soil;
3. Soils that are frequently ponded for long or very long duration during the growing season.
    a. Based on the range of characteristics for the soil series, will at least in part meet one or more Field Indicators of Hydric Soils in the United States, or
    b. Show evidence that the soil meets the definition of a hydric soil;

SOURCE: NRCS 2025b

Results

The field investigation identified two (2) freshwater seasonal wetlands, 14 drainage ditches, and six (6) ephemeral watercourses within the survey areas. The aquatic resources have been assigned alphanumeric binomial labels (e.g., DD-01) displayed on the maps in Appendix B. The first part of the binomial consists of an acronym for the feature type (i.e., EW for ephemeral watercourse). Each wetland/upland sample plot has been assigned a unique numerical identifier included on the data forms and maps (e.g. 001, 002). The maps in Appendix B display the plot locations as well as the location and extent of the aquatic resources mapped in this survey. Routine wetland delineation data forms describe the vegetation and geomorphic observations at each sample plot (see Appendix A).

Aquatic resources in the survey area cover a total of 5.341 acre. Table 2 lists the feature binomial and acreage of the aquatic resource. Table 3 lists the Cowardin code, type of aquatic resource feature in accordance with the "Rapanos Guidance," and latitude/longitude coordinates of the center of the mapped feature.

Table 2 Acreage of Aquatic Resources in the Survey Area

Feature Number	Acreage (length in feet)
WETLAND FEATURES	
Freshwater Seasonal Wetland	
FSW-01	0.048 (64)
FSW-02	0.037 (59)
TOTAL WETLANDS	**0.085 (123)**
WATER FEATURES	
Drainage Ditch	
DD-01	2.154 (2578)
DD-02	0.109 (325)
DD-03	0.059 (710)
DD-04	0.467 (1261)
DD-05	0.562 (658)
DD-06	0.708 (1384)
DD-07	0.070 (767)
DD-08	0.230 (786)
DD-09	0.408 (461)
DD-10	0.243 (899)
DD-11	0.027 (263)
DD-12	0.025 (250)
RDD-01	0.160 (315)
RDD-02	0.018 (177)
Total Drainage Ditch	***5.061 (10,342)***
Ephemeral Watercourse	
EW-01	0.105 (674)
EW-02	0.025 (213)
EW-03	0.037 (813)
EW-04	0.012 (262)
EW-05	0.007 (152)
EW-06	0.010 (209)
Total Ephemeral Watercourse	***0.195 (2322)***
TOTAL WATERS	**5.256 (12,664)**
TOTAL AQUATIC RESOURCES	**5.341 (12,787)**

Table 3 Aquatic Resources Data

Feature	Cowardin Code	Waters Type	Latitude	Longitude
FSW-01	PEM2Jf	B1WETNONADJ	38.30129	-121.890138
FSW-02	PEM2Jf	B1WETNONADJ	38.3014	-121.889980
DD-01	R4UBFx	A2TRIBINT	38.30445	-121.883508
DD-02	R4UBFx	A2TRIBINT	38.30125	-121.888314
DD-03	R4UBFx	A2TRIBINT	38.30084	-121.889728
DD-04	R4UBFx	A2TRIBINT	38.30074	-121.886057
DD-05	R4UBFx	A2TRIBINT	38.30065	-121.889581
DD-06	R4UBFx	A2TRIBINT	38.30062	-121.885967
DD-07	R4UBFx	A2TRIBINT	38.12199	-121.830035
DD-08	R4UBFx	B5DITCH	37.88195	-121.615802
DD-09	R4UBFx	A2TRIBINT	37.88117	-121.613904
DD-10	R4UBFx	B5DITCH	37.88186	-121.615630
DD-11	R4UBFx	B5DITCH	37.88195	-121.617823
DD-12	R4UBFx	B5DITCH	37.88186	-121.617844
RDD-01	R4RBJx	B5DITCH	38.1227	-121.829569
RDD-02	R4RBJx	B5DITCH	38.12263	-121.829452
EW-01	R4SBC	B3EPHEMERAL	38.20838	-121.859371
EW-02	R4SBC	B3EPHEMERAL	38.20699	-121.859440
EW-03	R4SBC	B3EPHEMERAL	38.12948	-121.830680
EW-04	R4SBC	B3EPHEMERAL	38.12846	-121.833694
EW-05	R4SBC	B3EPHEMERAL	38.1269	-121.833516
EW-06	R4SBC	B3EPHEMERAL	38.12703	-121.831563

PEM2Jf: palustrine nonpersistent emergent intermittently flooded farmed
R4SBC: riverine intermittent streambed seasonally flooded
B1WETNONADJ; (b)(1) Non-adjacent wetland
A2TRIBINT: (a)(2) Intermittent tributary contributes surface water flow directly or indirectly to an (a)(1) water in a typical year
B5DITCH: (b)(5) Ditch that is not an (a)(1) or (a)(2) water, and those portions of a ditch constructed in an (a)(4) water that do not satisfy the conditions of (c)(1)
B3EPHEMERAL: (b)(3) Ephemeral feature, including an ephemeral stream, swale, gully, rill, or pool

The following sections provide a description of the freshwater seasonal wetlands, drainage ditches, and ephemeral watercourses that cover a total of 5.341 acres of the survey area.

Freshwater Seasonal Wetland

The field investigators observed two freshwater seasonal wetlands (FSW-01 and FSW-02) within the survey area. Both features were observed at the North Site at the base of a steel lattice electric tower. The features were noted during the survey under dry conditions on December 11, 2025 to be slightly depressed from the surrounding cultivated field, with inclusions of cocklebur (*Xanthium strumarium*, FAC) and curly dock (*Rumex crispus*, FAC) not present in the surrounding upland grasslands. Upon survey of the location on January 21, 2026, following late-December rains and under normal precipitation conditions for the area, the depressions were observed to have surface water, a primary indicator of wetland hydrology, and soil samples showed a depleted matrix within the upper 6 inches of the soil profile. The features are isolated within the surrounding annual grasslands. The features likely formed as a combination of subsidence of soils around the footings of the electric transmission tower as well as compaction of the area from livestock congregating at the tower base. The wetland boundary follows the topographic change associated with the edge of the depressional feature, including both primary and secondary hydrology indicators.

Drainage Ditches

Field surveys identified a total of fourteen drainage ditches in the survey areas. Ditches in the survey area are variably vegetated and unvegetated and include two (2) features reinforced with rock rip-rap (RDD-01 and RDD-02). All ditches in the survey areas are constructed features designed to drain agricultural lands or convey water along roadsides. Ditch features are relatively steep-walled, such that aerial mapping of the OHWM is effectively consistent with the top of bank. For the purpose of this delineation, the mapped lateral extent of drainage ditches represents both the OHWM and top of bank of the features. The investigators observed drainage ditches at the North, Bird's Landing, and Byron Site survey areas.

Six (6) drainage ditches are mapped in the survey area at the North Site (DD-01, DD-02, DD-03, DD-04, DD-05, and DD-06). Dependent upon the width and depth of the various features, they are either fully vegetated or support vegetation along their margins. Evidence of relatively permanent flow in the ditches is present in the form of erosion lines and or water marks along their banks. Drainage ditches in the North Site survey area are part of a network of agricultural drainage ditches in the region which are connected by culverts. Private property access did not allow for detailed investigation of connectivity of the various drainage ditches; however, review of aerial imagery and topographic maps indicates drainage ditches in the survey area have relatively permanent surface connection via culverts to Lindsay Slough, to the east, which is tributary to the Sacramento River, a TNW.

Three (3) drainage ditches, including one unvegetated roadside ditch (DD-07) and two rip-rap reinforced ditches (RDD-01 and RDD-02) were observed in the Bird's Landing Site survey area. All three features are constructed in uplands near the south end of the survey area and are designed to drain surface runoff from the substation property. Reinforced drainage ditches are constructed on either side of a substation access road, and convey water downslope to culverts which open to DD-07 along the west side of the substation driveway, near the entrance to the property. Drainage ditch DD-07 runs south out of the survey area to the north roadside of Montezuma Hills Road. Beyond the survey area, the drainage ditch runs west along the roadside and drains to a natural watercourse which flows west to Montezuma Slough.

Five (5) drainage ditches are identified in the Byron Site survey area. One large ditch (DD-09) runs along the east side of the survey area and has a relatively permanent, continuous surface connection via culverts to the navigable waters at Discovery Bay to the north. The remaining four (4) ditch features in the Byron Site survey area (DD-08, DD-10, DD-11, and DD-12) are vegetated roadside ditches along the north and south sides of Kellogg Creek Road. Features along the north and south sides of the road are connected by culverts where they are crossed by private driveways. Due to safety and property owner concerns, it was not possible to directly investigate surface connectivity of these features with navigable waters. Connectivity with the drainage ditch associated with DD-09 was not observed during the survey on January 27, 2026.

Ephemeral Watercourse

Six (6) ephemeral watercourse features are identified at the Maud and Bird's Landing Site survey areas. Ephemeral watercourses in the survey areas include two (2) discontinuous, natural features at the Maud Site and four (4) erosional features at the Bird's Landing Site.

Maud Site. Investigators identified two (2) discontinuous ephemeral channels in the survey area (EW-01 and EW-02) at the Maud Site during surveys. During a survey completed at a time when the Antecedent Precipitation Table in Appendix F shows conditions were drier than normal, investigators observed a broad channel which roughly follows the alignment of the ephemeral feature shown on topographic and hydrologic maps (USGS 2025a). The lateral limit of the channel is marked by a shallow shelf which defines the transition from surrounding grasslands to the low terrace or active floodplain of the watercourse. Top of bank of the ephemeral watercourse is mapped along the upper edge of the shallow shelf. Hydrology in the survey area includes surface flows which are captured in a well-defined channel (EW-02; Photos 8 and 15 in Appendix D) then transition to unconfined overland flows before returning to a well-defined channel at EW-01. The transition from overland flow to the channel at EW-01 is visible in Photo 9 in Appendix D. Within the ephemeral channel, investigators identified compound low-flow channels/active floodplain and a series of livestock wallows (Photos 10, 11, and 12, Appendix D). The livestock wallows are separated by short terraces which lack defined bed, bank, or channel. Compound channels within the top of bank may be remnant alluvial features, as indicated by soils mapped in the survey area. A clear distinction in vegetation communities was not observed during the December survey between surrounding uplands to low terraces in the channel nor the active floodplain or low-flow channels; however, occurrences of wetland vegetation types were noted in the channels. Livestock wallows were observed to be mostly bare ground. Low-flow channels are mapped where distinct channels are visible within the top of bank, and the limits of the active floodplain are defined along lines of erosion and water marks on the upper margins of the channels and livestock wallows.

Data was collected from a sampling plot within the ephemeral channel to examine if wetland conditions develop within the channels. Standing water observed on January 21, 2026, following a winter storm event, is indicative of wetland hydrology, and soils with low chroma in the upper six inches were observed; however, a predominance of wetland vegetation is not present. Occurrences of obligate wetland species, including *Eleocharis palustris* and *Callitriche palustris*, were recorded within the sample plot and were similarly observed in other locations within the channel; however, vegetative cover does not show a dominance of hydrophytic vegetation. Water marks, drift lines, and sediment deposition confirmed boundaries of ephemeral watercourses mapped along erosion lines and water marks in the well-defined channels.

Review of aerial imagery shows the ephemeral watercourse in the survey area has a relatively permanent surface connection (via culverts beneath roads) to Lindsay Slough, approximately five (5) miles to the northeast.

Bird's Landing Site. Ephemeral watercourses documented in the Bird's Landing Site survey area (EW-03, EW-04, EW-05, and EW-06) are erosional features which extend from the developed substation pads. The substation pads are constructed on a hilltop. Each of the four (4) features originates from an unvegetated buffer surrounding the substation fence. The channels form where water flows downslope from the unvegetated buffer, creating deeply eroded channels (Photos 17, 18, 19 in Appendix D). The low-flow/active floodplain channel of each feature is defined and mapped along the upper limits of a narrow, deeply-cut, approximately one-foot wide channel where water currently flows. Top of bank of each feature is defined along the limits of erosion. Each of the four ephemeral features terminates in uplands below the substation where flow from the eroded channels dissipates into sheet flow across the grassland landscape.

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Appendix A

Routine Wetland Delineation Data Forms

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville 500kV Interconnect (North Site) City/County: Vacaville/Solano Sampling Date: 01/21/2026

Applicant/Owner: Pacific Gas & Electric Company State: CA Sampling Point: 001

Investigator(s): Rob Witthaus, Ode Bernstein Section, Township, Range: Section 5, T5N, R1E

Landform (hillslope, terrace, etc.): Fan remnant Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): LRR-C Lat: 38.301432° Long: -121.889930° Datum: WGS 84

Soil Map Unit Name: Solano Loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 1 sq. meters)			
1. Rumex crispus	15	Yes	FAC
2. Xanthium strumarium	5	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
	20 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 80 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 001

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	2.5Y 3/2	100					Sandy loa	
5-15	2.5Y 3/3	90	10YR 5/6	10	RM	M	Sandy cla	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ **No** _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No _____ Depth (inches): 3

Water Table Present? Yes ✓ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ✓ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville 500kV Interconnect City/County: Vacaville/Solano Sampling Date: 01/21/2026

Applicant/Owner: Pacific Gas & Electric Company State: CA Sampling Point: 002

Investigator(s): Rob Witthaus, Ode Bernstein Section, Township, Range: Section 5, T5N, R1E

Landform (hillslope, terrace, etc.): Fan remnant Local relief (concave, convex, none): None Slope (%): 0

Subregion (LRR): LRR-C Lat: 38.301466° Long: -121.889913° Datum: WGS 84

Soil Map Unit Name: Solano Loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 1 sq. meters)			
1. Festuca perenne	75	Yes	UPL
2. Geranium dissectum	10	No	UPL
3. Trifolium albopurpureum	5	No	FACU
4. Rumex crispus	2	No	FAC
5.			
6.			
7.			
8.			
	92 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 8 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: 002

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-15	10YR 3/4 5	90	5YR /8	10	C	PL	Sandy cla	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ **No** ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes ✓ No _____ Depth (inches): 12

Saturation Present? (includes capillary fringe) Yes ✓ No _____ Depth (inches): 6

Wetland Hydrology Present? Yes _____ **No** ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Water table and associated saturation are likely seasonally high due to sampling during the growing season when surface ponding from recent rains is present. Water table and saturation are not expected within 12 inches from the surface during non-growing season sampling (as evidenced by absence of hydric soils).

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Collinsville 500kV Interconnect (Maud Site) City/County: Suisun City/Solano Sampling Date: 01/21/2026

Applicant/Owner: Pacific Gas & Electric Company State: CA Sampling Point: 003

Investigator(s): Rob Witthaus, Ode Bernstein Section, Township, Range: Section 10, T4N, R1E

Landform (hillslope, terrace, etc.): Fan remnant Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR): LRR-C Lat: 38.206827° Long: -121.859416° Datum: WGS 84

Soil Map Unit Name: Antioch-San Ysidro Complex NWI classification: R4SBC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 1 sq. meters)			
1. Avena barbata	50	Yes	UPL
2. Trifolium albopurpureum	30	Yes	FACU
3. Eleocharis palustris	10	No	OBL
4. Amsinckia menziesii	5	No	UPL
5. Erodium cicutarium	2	No	UPL
6. Rumex crispus	2	No	FAC
7. Callitriche palustris	1	No	OBL
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	11	x 1 =	11
FACW species	0	x 2 =	
FAC species	2	x 3 =	6
FACU species	30	x 4 =	120
UPL species	57	x 5 =	285
Column Totals:	100 (A)		422 (B)

Prevalence Index = B/A = 4.22

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: 003

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR 4/2	100					Sandy cla	
1-8	10YR 4/1 4	95	2.5YR /8	5	C	PL	Sandy cla	
8-14	10YR 4/1 4	99	2.5YR /8	1	C	PL	Sandy cla	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ **No** _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ✓ Water Marks (B1) (**Riverine**)
- ✓ Sediment Deposits (B2) (**Riverine**)
- ✓ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No _____ Depth (inches): 12

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ **No** _____

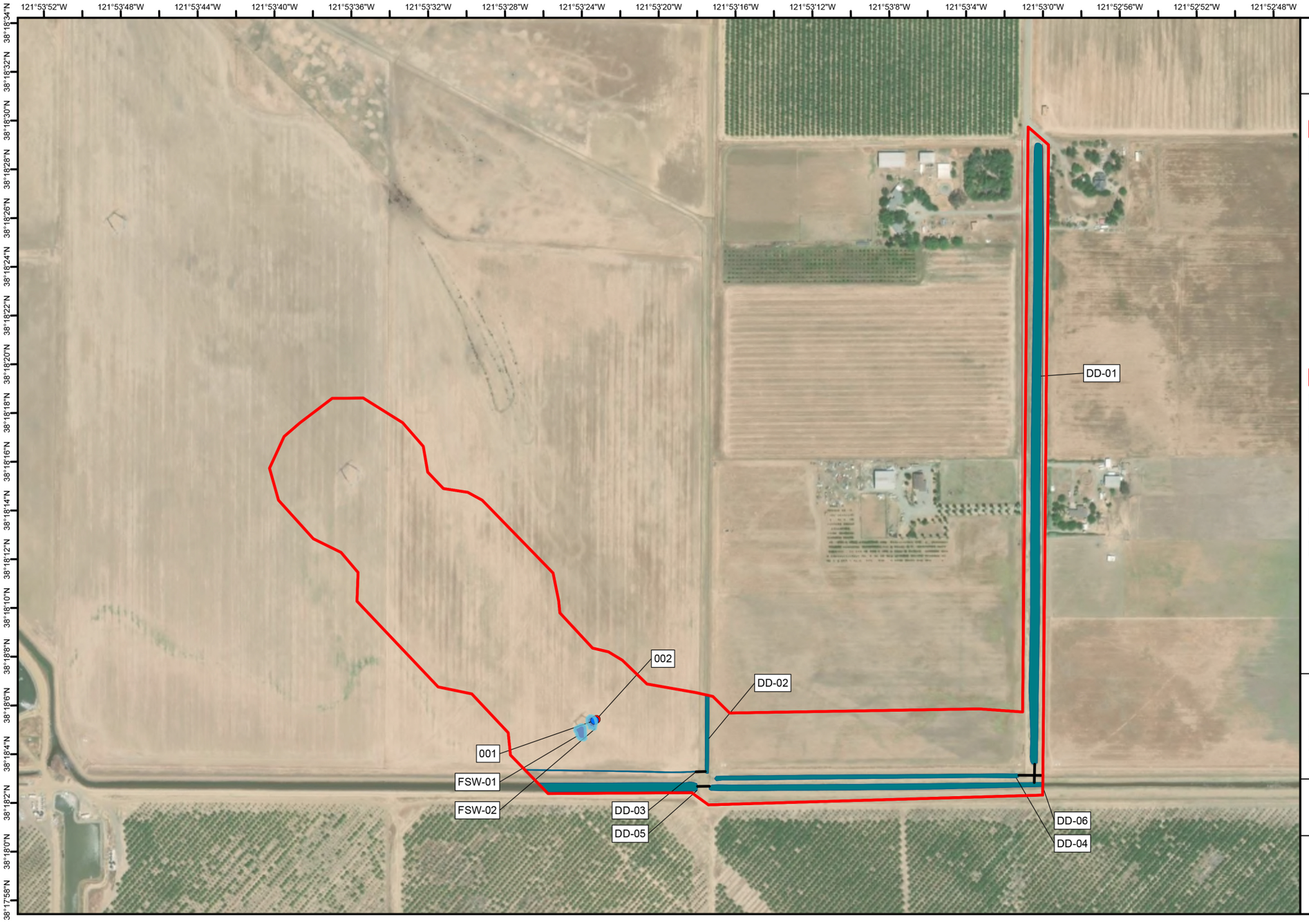
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Surface water present, but not currently flowing due to segmented channel and absence of active rainfall. Hydrology indicators for water marks, sediment deposits, and drift deposits are likely remnant from flow in the channel, indicating a more riverine character, as indicated in topographic mapping and NWI.

Appendix B

Delineation of Aquatic Resources Map



Collinsville Substation
Vaca-Tesla 500kV Interconnection
North Site
February 2026

Legend - North Site

- Survey Area (45.122 acres)
- Drainage Ditch (4.058 acres)
- Freshwater Seasonal Wetland (0.085 acres)
- Culvert
- Upland Sampling Point
- Wetland Sampling Point

Legend - Project Total

- Survey Area (196.485 acres)
- Drainage Ditch (5.061 acres)
- Ephemeral Watercourse (OHWM) (0.195 acres)
- Freshwater Seasonal Wetland (0.085 acres)
- Reinforced Drainage Ditch (0.177 acres)
- Top of Bank

N

0 200 400 Feet

1:4,800

Notes:
1. Acreage shown for each class refers to the entire delineation area.
2. Feature label key provided below.
3. ESRI World Imagery (7/24/2014)
4. Projection: UTM NAD 83 Z10N
5. Vertical datum NAVD 88

USGS 7.5' Quad: ELMIRA (1980)
PLSS: T05N, R01E, SEC 5, 8

PG&E Contact: Ode Bernstein/415-404-1482
Prepared by: Kleinfelder/415-642-8969
Delineated by: Rob Witthaus
Delineation Survey Date: 12/10-11/2025
and 01/21, 27/2026
Drawn By: Joseph Hiatt

Pacific Gas and Electric Company®

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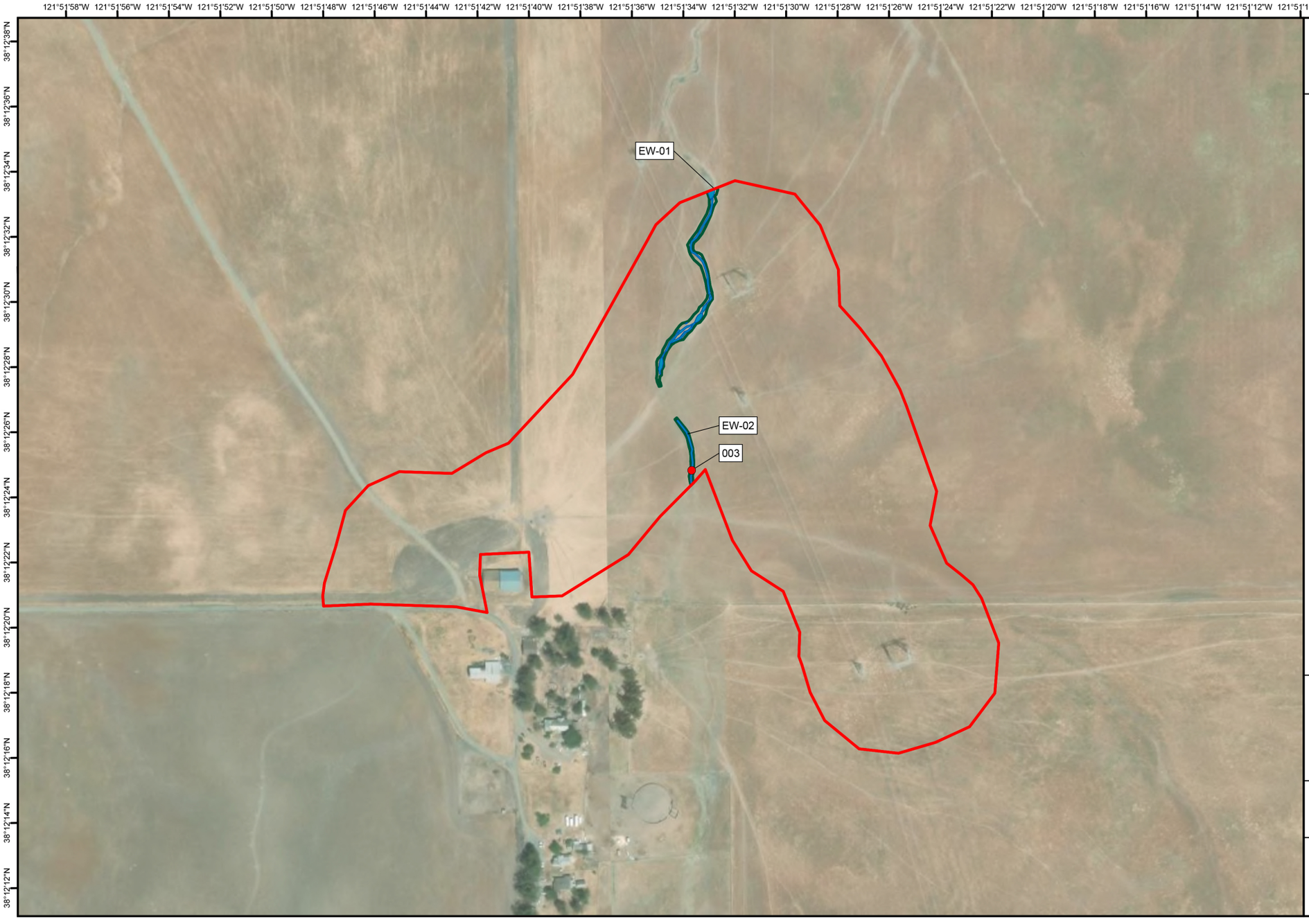

Collinsville Substation
Vaca-Tesla 500kV Interconnection
Maud Site
February 2026

Legend - Maud Site

- Ephemeral Watercourse (OHWM) (0.129 acres)
- Top of Bank
- Upland Sampling Point

Legend - Project Total

- Survey Area (196.485 acres)
- Drainage Ditch (5.061 acres)
- Ephemeral Watercourse (OHWM) (0.195 acres)
- Freshwater Seasonal Wetland (0.085 acres)
- Reinforced Drainage Ditch (0.177 acres)
- Top of Bank

N

0 200 400 Feet

1:3,600

Notes:
1. Acreage shown for each class refers to the entire delineation area.
2. Feature label key provided below.
3. ESRI World Imagery (7/24/2014)
4. Projection: UTM NAD 83 Z10N
5. Vertical datum NAVD 88

USGS 7.5' Quad: BIRD LANDING (1992)
PLSS: T04N, R01E, SEC 9, 10

PG&E Contact: Ode Bernstein/415-404-1482
Prepared by: Kleinfelder/415-642-8969
Delineated by: Rob Witthaus
Delineation Survey Date: 12/10-11/2025 and 01/21, 27/2026
Drawn By: Joseph Hiatt

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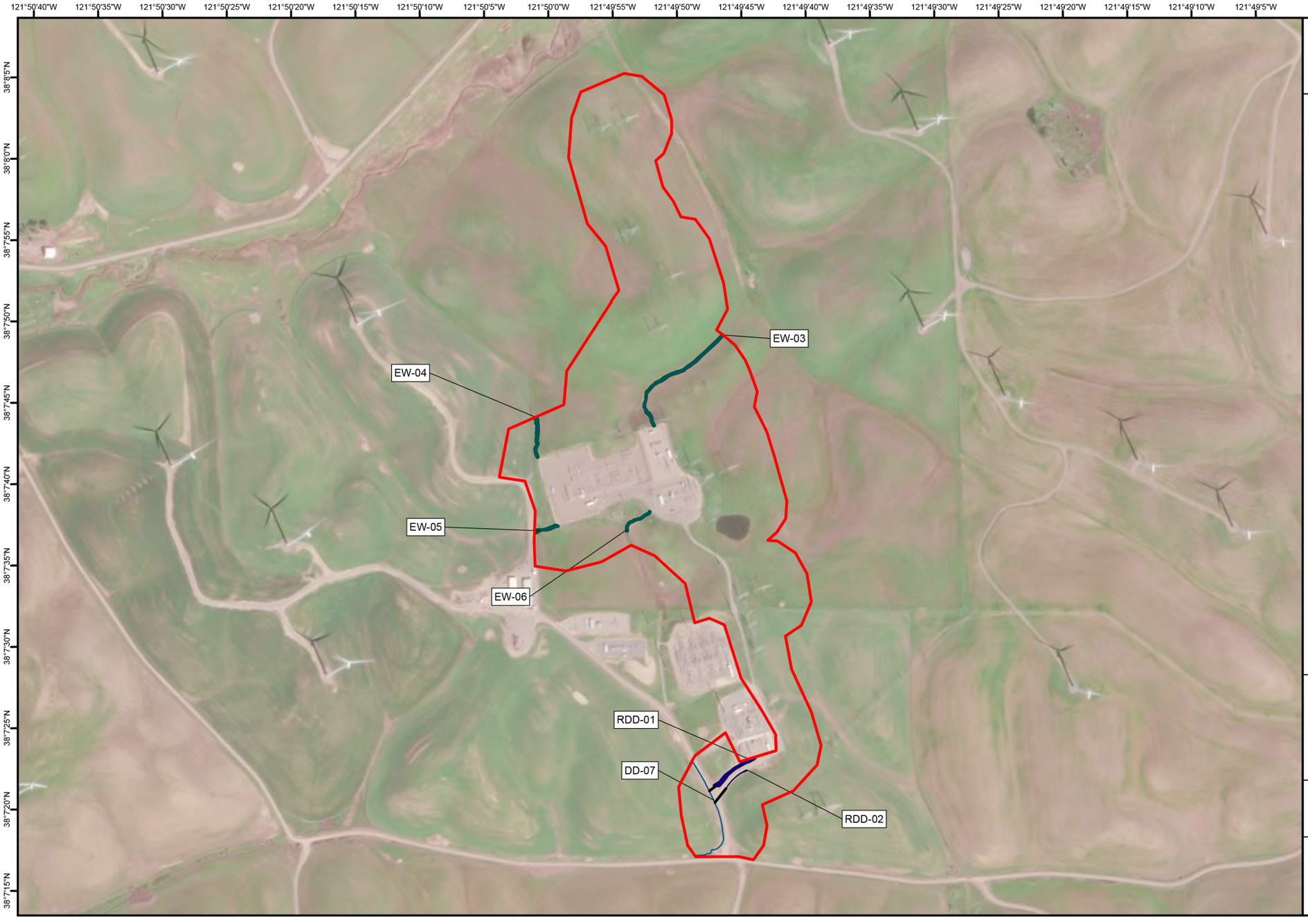


Collinsville Substation
Vaca-Tesla 500kV Interconnection
Bird's Landing Site
February 2026

Legend - Bird's Landing Site

- Survey Area (90.486 acres)
- Drainage Ditch (0.070 acres)
- Ephemeral Watercourse (OHWM) (0.066 acres)
- Top of Bank
- Reinforced Drainage Ditch (0.177 acres)
- Culvert

Legend - Project Total

- Survey Area (196.485 acres)
- Drainage Ditch (5.061 acres)
- Ephemeral Watercourse (OHWM) (0.195 acres)
- Freshwater Seasonal Wetland (0.085 acres)
- Reinforced Drainage Ditch (0.177 acres)
- Top of Bank

N

0 300 600 Feet

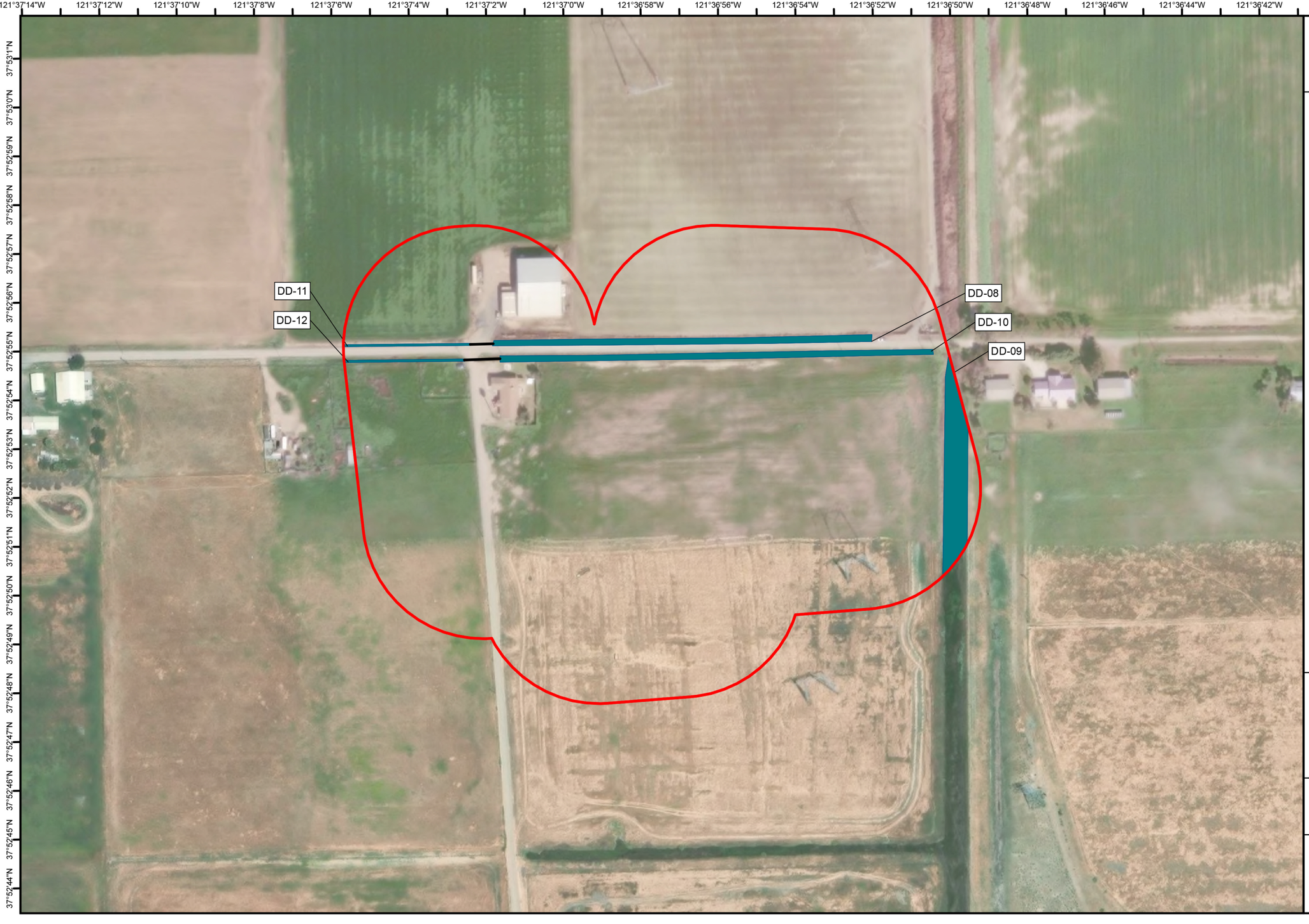
1:7,200

Notes:
1. Acreage shown for each class refers to the entire delineation area.
2. Feature label key provided below.
3. ESRI World Imagery (7/24/2014)
4. Projection: UTM NAD 83 Z10N
5. Vertical datum NAVD 88

USGS 7.5' Quad: ANTIOCH NORTH (1978) and BIDS LANDING (1992)
PLSS: T03N, R01E, SEC 2, 11

PG&E Contact: Ode Bernstein/415-404-1482
Prepared by: Kleinfelder/415-642-8969
Delineated by: Rob Witthaus
Delineation Survey Date: 12/10-11/2025 and 01/21, 27/2026
Drawn By: Joseph Hiatt

Pacific Gas and Electric Company®



Collinsville Substation
Vaca-Tesla 500kV Interconnection
Byron Site
February 2026

Legend - Byron Site

- Survey Area (23.953 acres)
- Drainage Ditch (0.881 acres)
- Culvert

Legend - Project Total

- Survey Area (196.485 acres)
- Drainage Ditch (5.061 acres)
- Ephemeral Watercourse (OHWM) (0.195 acres)
- Freshwater Seasonal Wetland (0.085 acres)
- Reinforced Drainage Ditch (0.177 acres)
- Top of Bank

N

0 100 200 Feet

1:2,400

Notes:
1. Acreage shown for each class refers to the entire delineation area.
2. Feature label key provided below.
3. ESRI World Imagery (7/24/2014)
4. Projection: UTM NAD 83 Z10N
5. Vertical datum NAVD 88

USGS 7.5' Quad: WOODWARD ISLAND (1978)
PLSS: WET LANDS
LAND GRANT

PG&E Contact: Ode Bernstein/415-404-1482
Prepared by: Kleinfelder/415-642-8969
Delineated by: Rob Witthaus
Delineation Survey Date: 12/10-11/2025 and 01/21, 27/2026
Drawn By: Joseph Hiatt

Created By: JHiatt Document Path: \\azrgisstorp03\GIS_Projects\Client\GANDA\PGE\20226076\20226076_002_76_Collinsville_Wet\Collinsville_Z10.aprx

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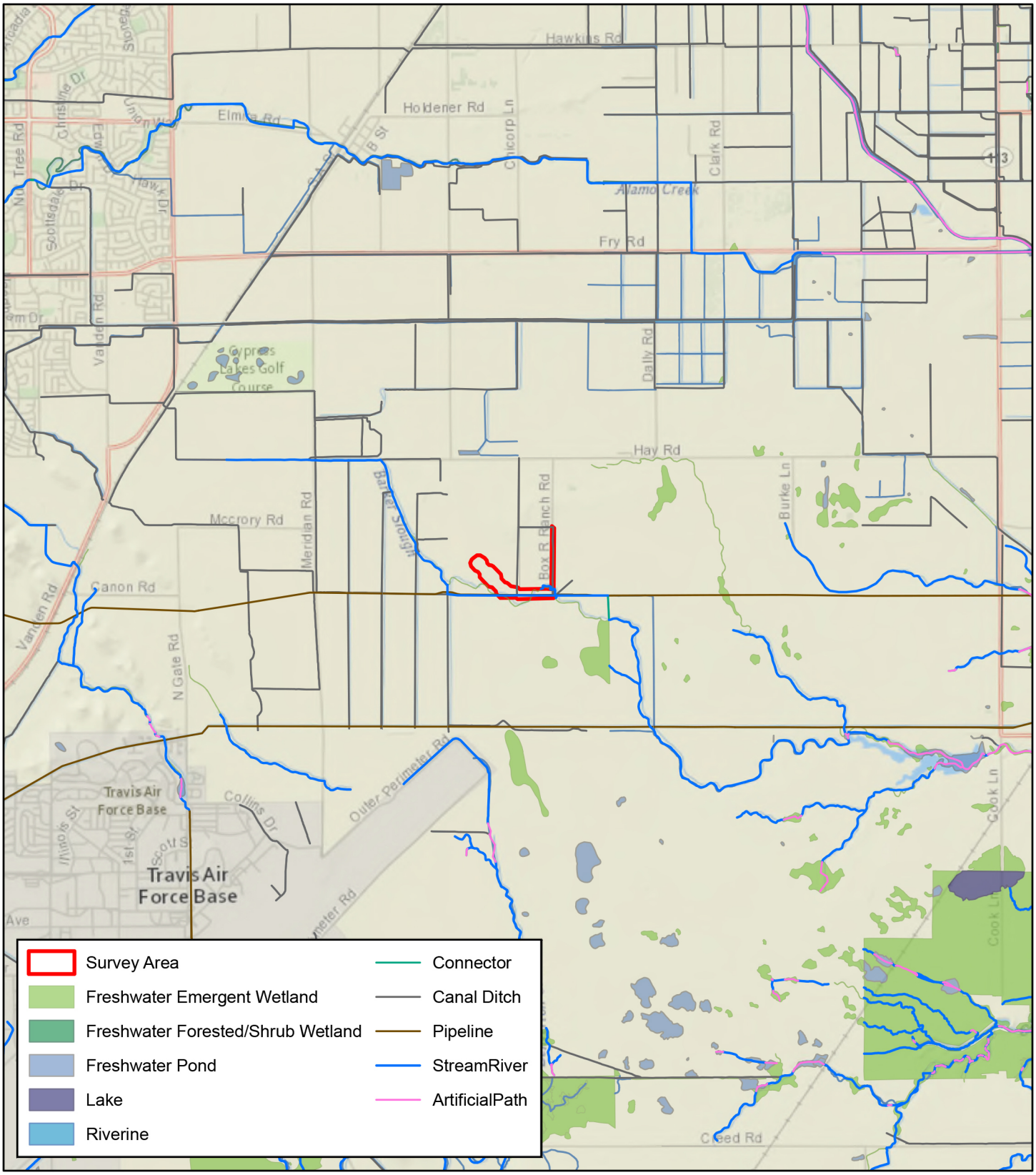
Appendix C

Hydrologic Connectivity



Source National Hydrography Dataset (NHD)

0 0.5 1 Miles

0 0.75 1.5 Kilometers

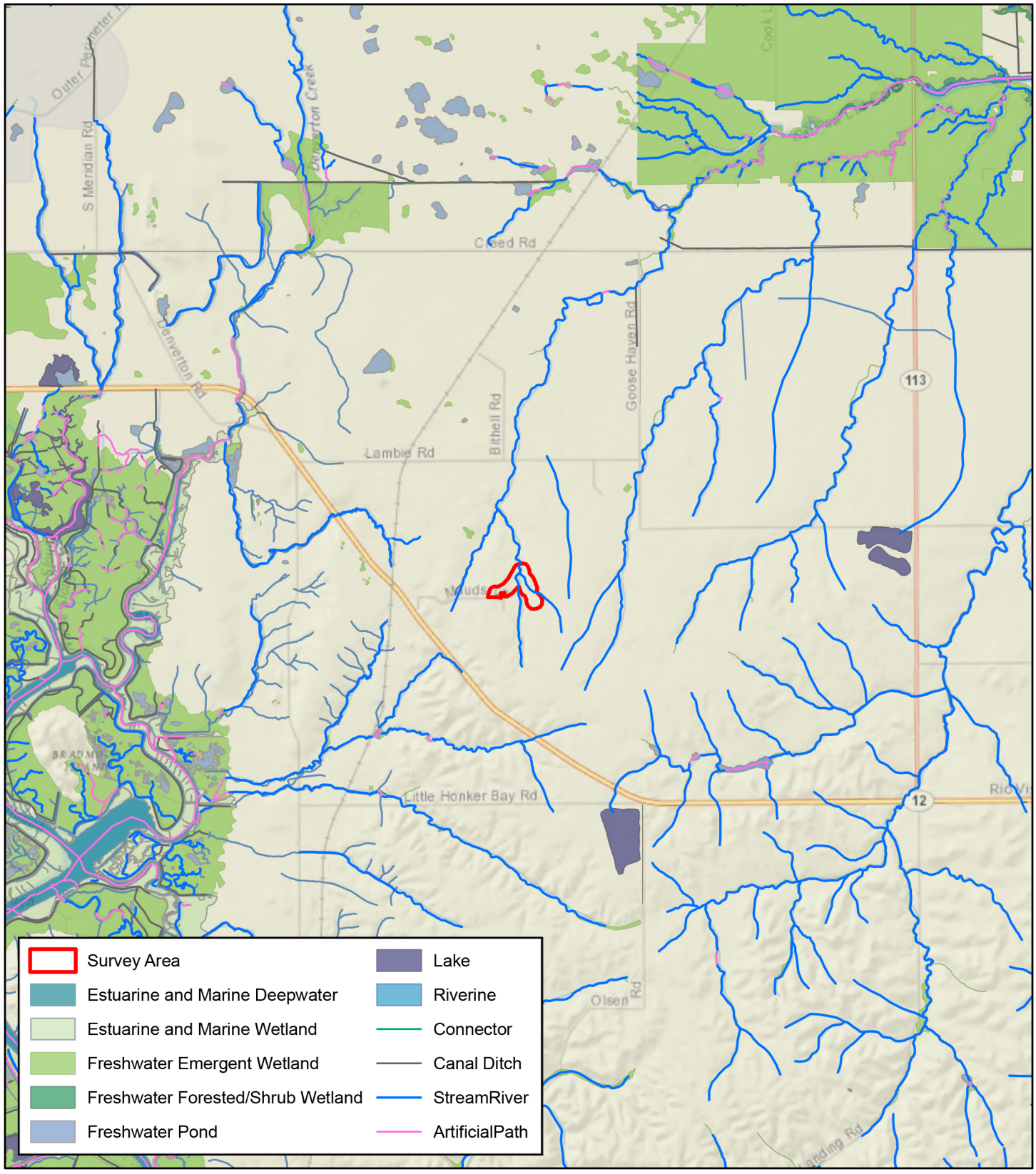
N

Scale 1:63,360
1 inch = 5,280 feet

North Site
Hydrologic Connectivity
Collinsville Substation
Vaca-Tesla 500kV Interconnection
Solano County, California

KLEINFELDER
Bright People. Right Solutions.

Created By: JHiatt Document Path: \\arrgis\storp03\GIS_Projects\Client\GANDA\PGE\20226076\20226076_002_76_Collinsville_Wet\Collinsville_210.aprx



Source National Hydrography Dataset (NHD)

0 0.5 1 Miles

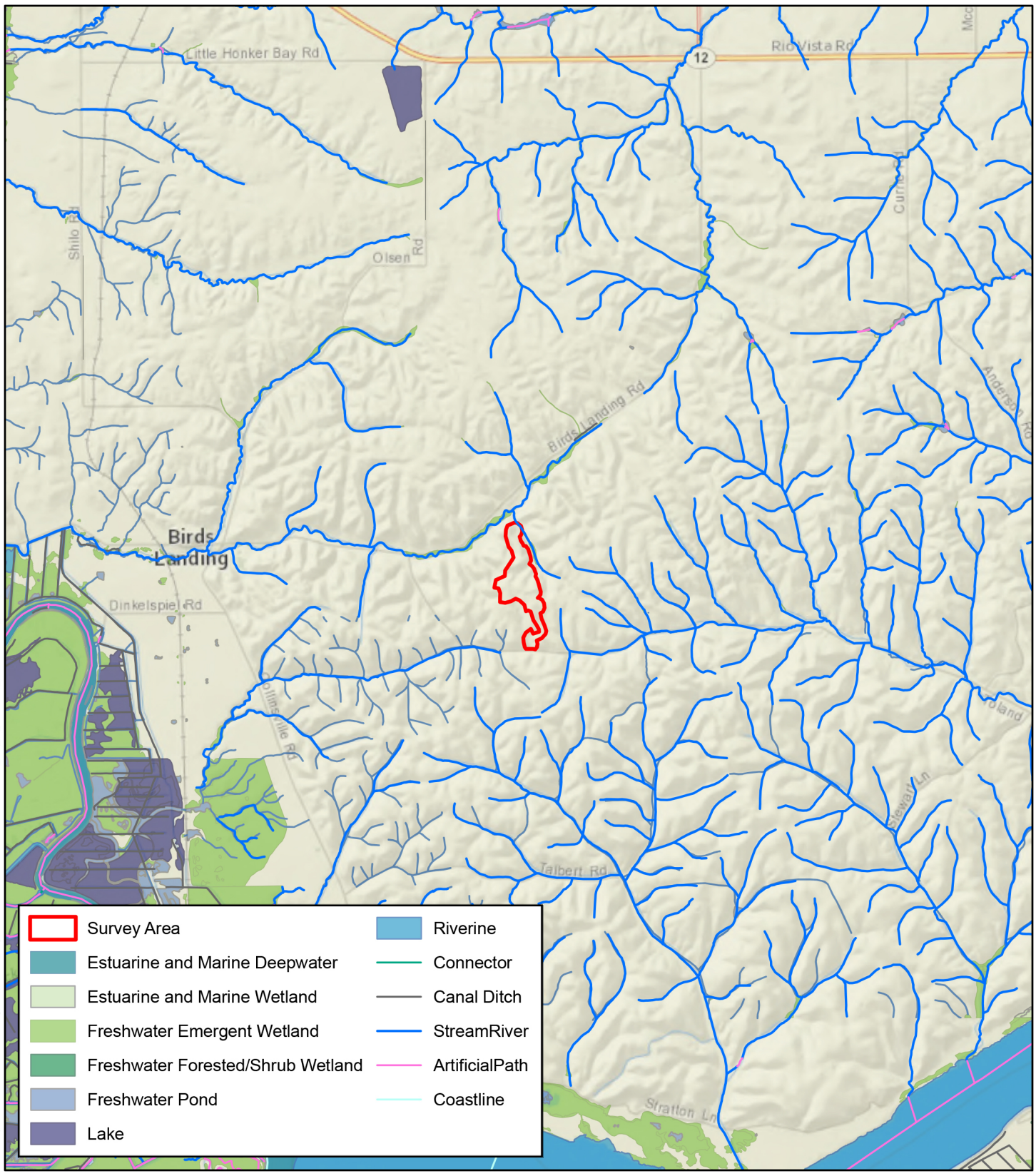
0 0.75 1.5 Kilometers

N

Scale 1:63,360
1 inch = 5,280 feet

Maud Site
Hydrologic Connectivity
Collinsville Substation
Vaca-Tesla 500kV Interconnection
Solano County, California

KLEINFELDER
Bright People. Right Solutions.



Source National Hydrography Dataset (NHD)

0 0.5 1 Miles

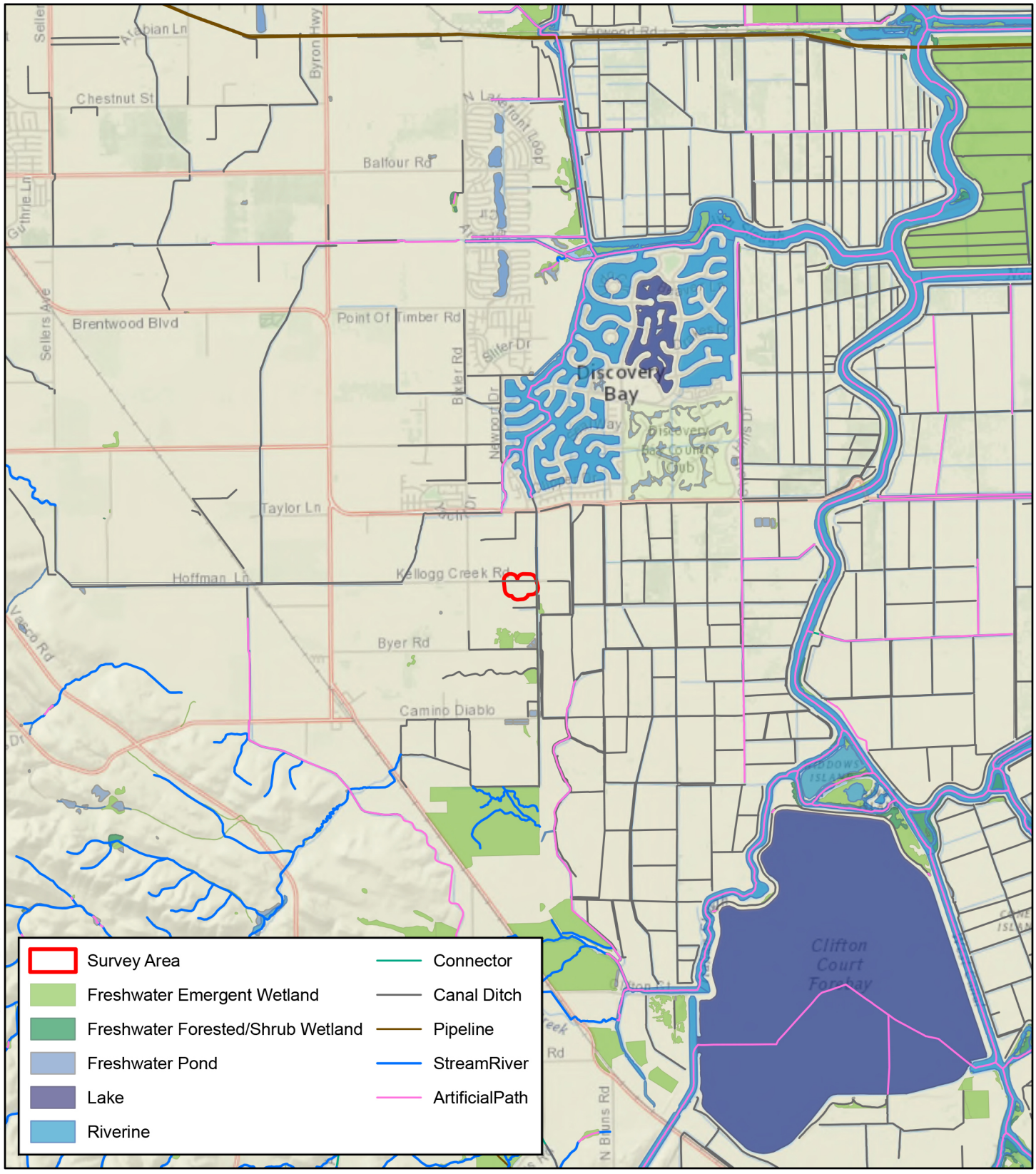
0 0.75 1.5 Kilometers

N

Scale 1:63,360
1 inch = 5,280 feet

Bird's Landing Site
Hydrologic Connectivity
Collinsville Substation
Vaca-Tesla 500kV Interconnection
Solano County, California

KLEINFELDER
Bright People. Right Solutions.



Source National Hydrography Dataset (NHD)

0 0.5 1 Miles

0 0.75 1.5 Kilometers

N

Scale 1:63,360
1 inch = 5,280 feet

Byron Site
Hydrologic Connectivity
Collinsville Substation
Vaca-Tesla 500kV Interconnection
Contra Costa County, California

KLEINFELDER
Bright People. Right Solutions.

Appendix D

Site Photographs

Photo 1 North Site – View looking west from Box R Ranch Road at DD-06; representative view of drainage ditch – 12/11/25

Photo 2 North Site – Representative view of cultivated, grazed uplands in the study area surrounding the transmission line – 12/11/25

Photo 3 **North Site - Looking east at base of electric transmission tower with *Rumex crispus* (FAC) and *Xanthium strumarium* (FAC) – 12/11/25**

Photo 4 **North Site – Facing southwest, looking at FSW-02 at base of transmission tower following rains in late December – 01/21/26**

Photo 5 North Site – Soil sample for Wetland Sampling Point 001 – 01/21/26

Photo 6 North Site – Soil sample for Upland Sampling Point 002 – 01/21/26

Photo 7 **Maud Site – Looking south showing representative view of grazed uplands in the study area – 12/10/25**

Photo 8 **Maud Site – Looking north at EW-02 showing south end of the segmented channel – 12/10/25**

Photo 9 **Maud Site - View looking north at EW-01 where the south end of the channel segment originates**

Photo 10 **Maud Site - Facing southwest, showing compound channel segments in EW-01 – 12/10/25**

Photo 11 **Maud Site - View looking northeast at EW-01 showing where livestock have created wallows along the channel separated by raised areas lacking a defined bed and bank with OHWM – 12/10/25**

Photo 12 **Maud Site – Facing northeast at compound channels in EW-01 where it runs south of the livestock wallows – 12/10/25**

Photo 13 Maud Site - EW-02 with surface water and Wetland Sampling Point 003 – 01/21/26

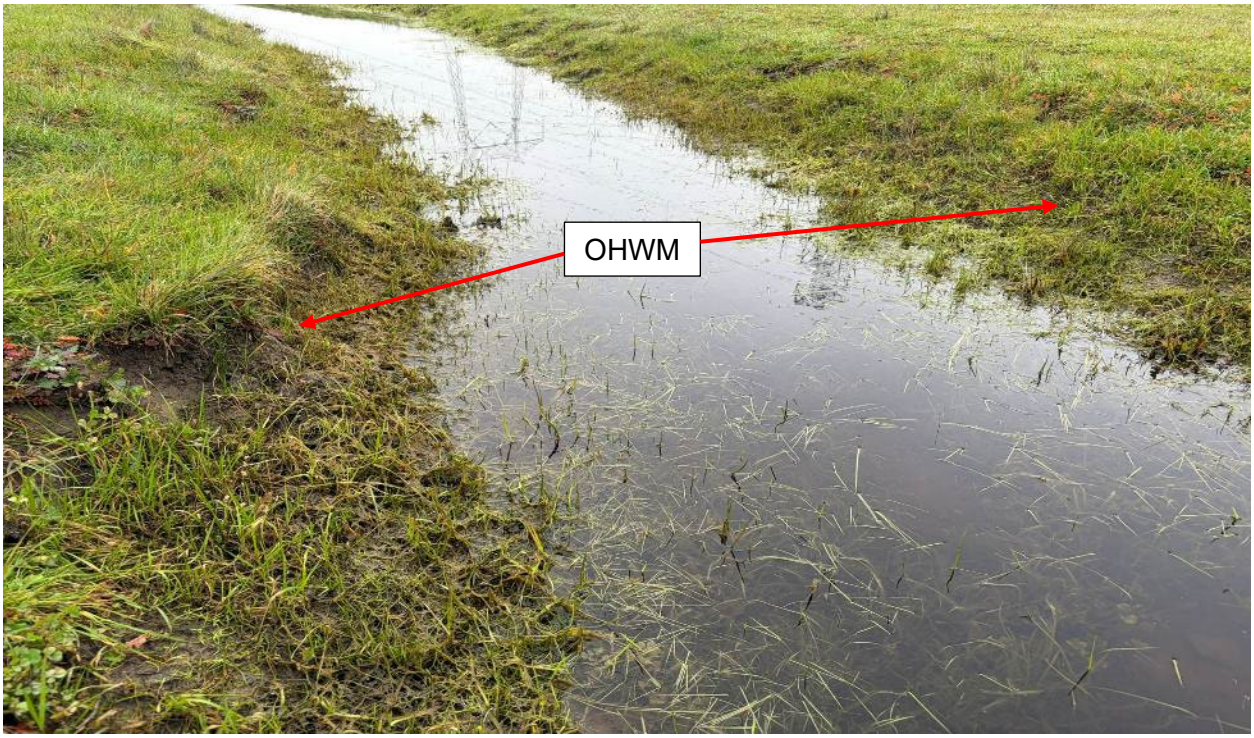


Photo 14 Maud Site – Looking north along EW-02; Line of erosion with water marks and sediment deposition indicating OHWM visible on the banks of the watercourse above the surface water – 01/21/26

Photo 15 **Maud Site - Looking south at EW-02; southern terminus of the channel visible in the upper left of the photograph – 01/21/26**

Photo 16 **Bird's Landing Site – Looking north along the east side of the substation at representative view of surrounding uplands – 12/10/25**

Photo 17 **Bird's Landing Site – Representative view of ephemeral watercourse (EW-03) running from the substation pad, with approximately 1-foot ordinary flow path within a broadly eroded channel**

Photo 18 **View looking west at the south end of EW-03 where it originates from erosion off the substation pad; view is representative of all ephemeral watercourses surrounding the site, where water flow from the substation pad has formed deeply eroded channels**

Photo 19 Bird's Landing Site – View looking west at EW-05 providing additional example of eroded channels extending from the substation pad – 12/10/25

Photo 20 Bird's Landing Site – Facing east showing rip-rap reinforced drainage ditch (RDD-01) extending from the substation – 12/10/25

Photo 21 Bird's Landing Site – Looking north at roadside drainage ditch (DD-07)

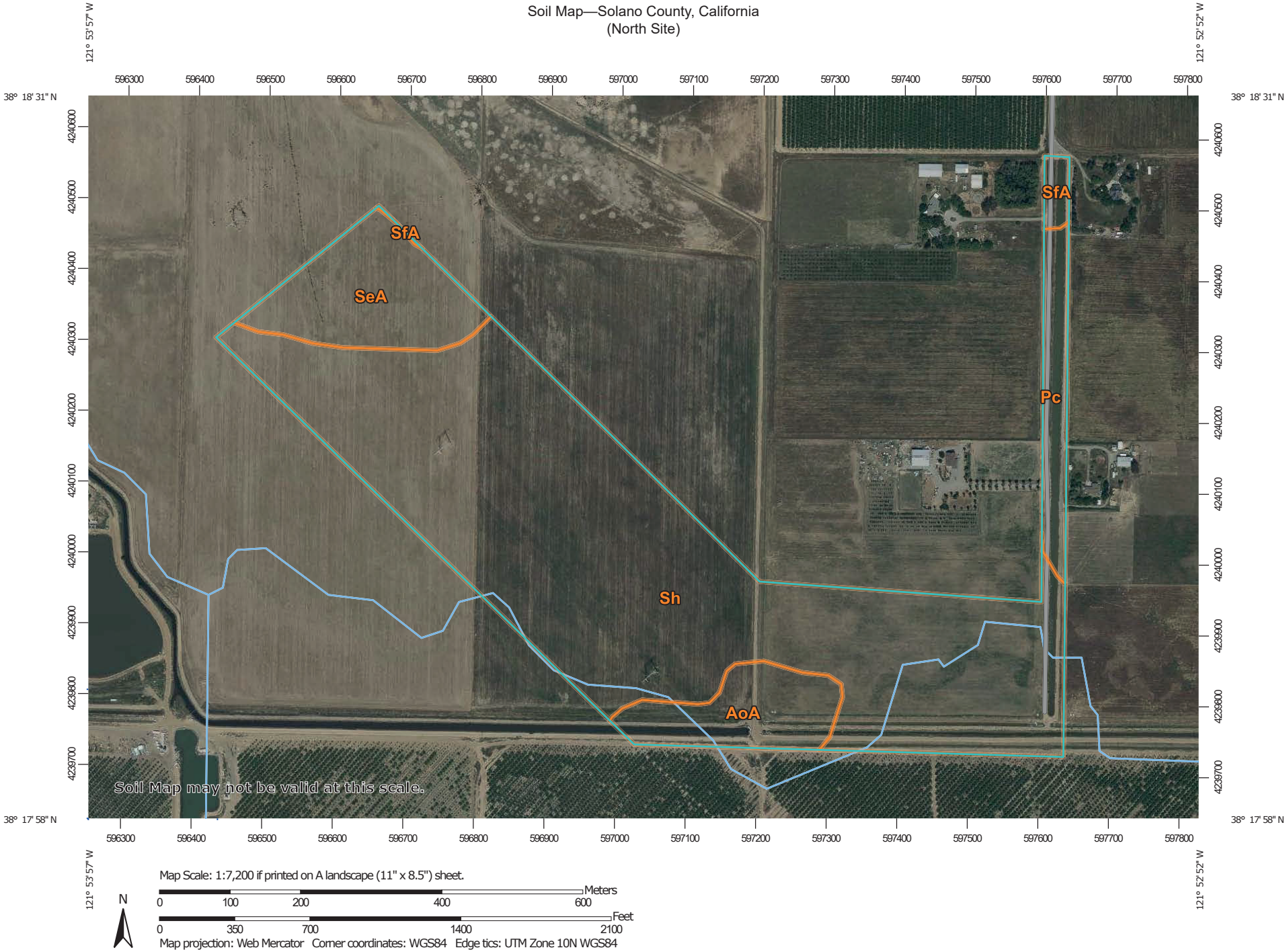
Photo 22 Byron Site – View looking south at DD-09 on the east side of the survey area

Photo 23 Byron Site – Roadside drainage ditch (DD-08) with *Allenrolfea occidentalis* (FACW) along the north side of Kellogg Creek Road; facing west – 01/27/26

Appendix E

Hydric Soils List and Soil Map

Soil Map—Solano County, California
(North Site)



Map Scale: 1:7,200 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 100 200 400 600

Feet
0 350 700 1400 2100

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Solano County, California
Survey Area Data: Version 20, Sep 3, 2025

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

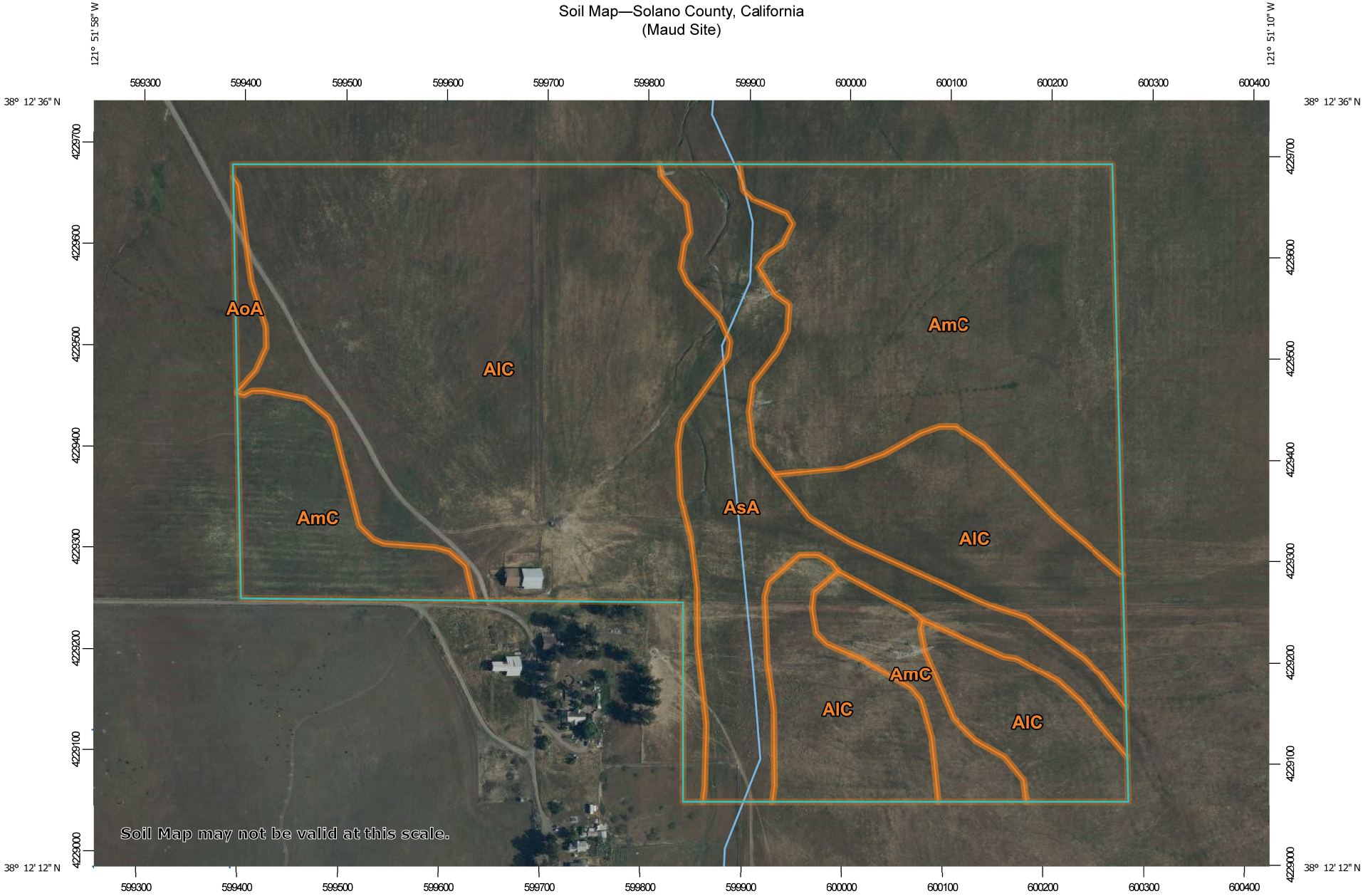
Date(s) aerial images were photographed: Apr 23, 2022—Apr 24, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AoA	Antioch-San Ysidro complex, 0 to 2 percent slopes	6.7	7.3%
Pc	Pescadero silty clay loam, 0 percent slopes, MLRA 17	4.1	4.5%
SeA	San Ysidro sandy loam, 0 to 2 percent slopes	10.0	10.9%
SfA	San Ysidro sandy loam, thick surface , 0 to 2 percent slopes	0.9	1.0%
Sh	Solano loam	70.2	76.4%
Totals for Area of Interest		**91.9**	**100.0%**

Soil Map—Solano County, California
(Maud Site)



Map Scale: 1:5,340 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 50 100 200 300

Feet
0 250 500 1000 1500

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Solano County, California
Survey Area Data: Version 20, Sep 3, 2025

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 23, 2022—Apr 24, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AlC	Altamont-San Ysidro-San Benito complex, 2 to 9 percent slopes	62.1	54.0%
AmC	Altamont-Diablo clays, 2 to 9 percent slopes	36.9	32.1%
AoA	Antioch-San Ysidro complex, 0 to 2 percent slopes	0.8	0.7%
AsA	Antioch-San Ysidro complex, thick surface, 0 to 2 perce nt slopes	15.2	13.2%
Totals for Area of Interest		**115.2**	**100.0%**

Soil Map—Solano County, California
(Bird's Landing Site)

Map Scale: 1:9,740 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 100 200 400 600

Feet
0 450 900 1800 2700

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
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- Saline Spot
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- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Solano County, California
Survey Area Data: Version 20, Sep 3, 2025

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 23, 2022—Apr 24, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AmE2	Altamont-Diablo clays, 9 to 30 percent slopes	30.4	13.6%
DaC	Diablo-Ayar clays, 2 to 9 percent slopes	1.0	0.4%
DaE2	Diablo-Ayar clays, 9 to 30 percent slopes, eroded	183.7	82.0%
Om	Omni clay loam	8.9	4.0%
Totals for Area of Interest		**224.0**	**100.0%**

Soil Map—Contra Costa County, California
(Byron Sity)

Map Scale: 1:3,800 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 50 100 200 300

Feet
0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
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- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
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- Slide or Slip
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- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Contra Costa County, California
Survey Area Data: Version 22, Sep 2, 2025

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 9, 2022—Mar 11, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

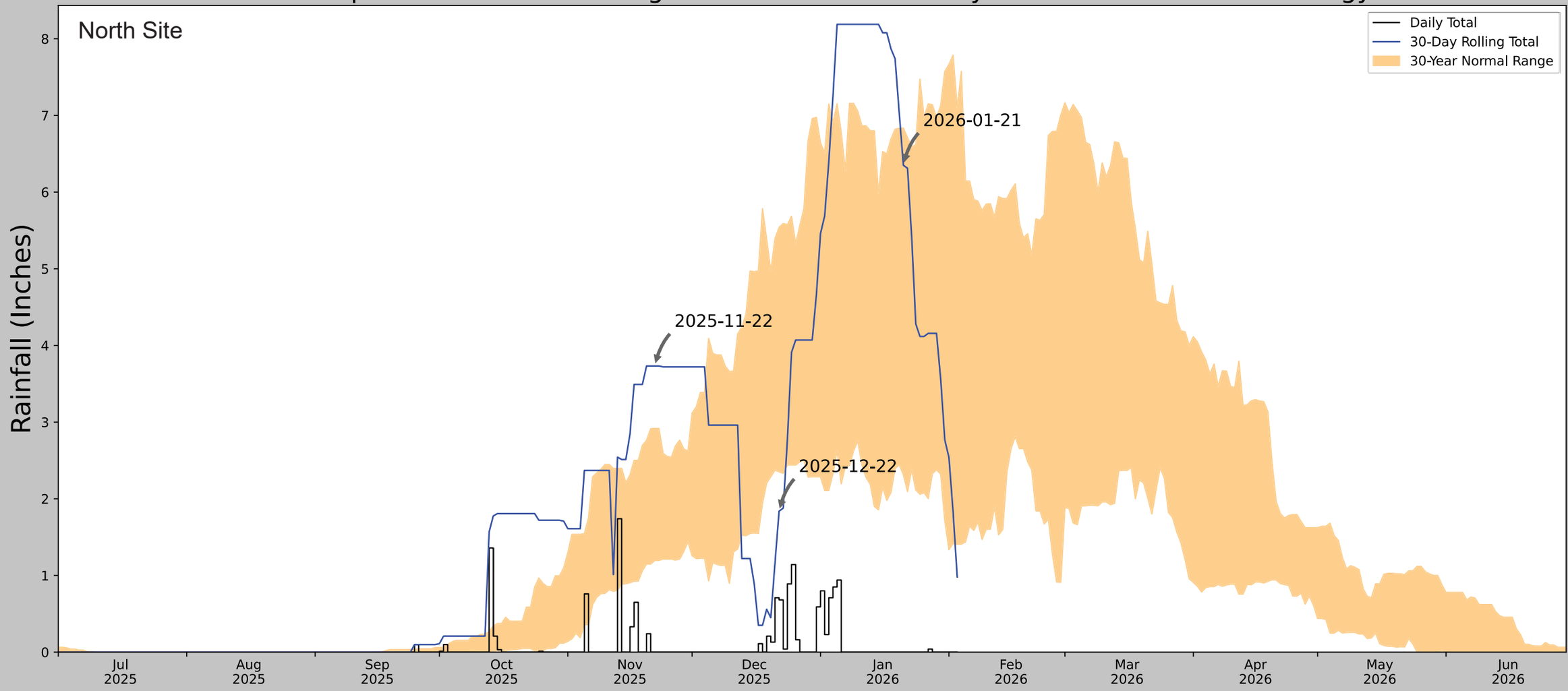
Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Bc	Brentwood clay loam, wet	0.5	1.0%
Mb	Marcuse clay, moderately saline, sodic, partially drained 0 to 2 percent slopes	22.3	43.0%
Mc	Marcuse clay, strongly saline, sodic, partially drained, 0 to 2 percent slopes	28.9	55.9%
Totals for Area of Interest		**51.7**	**100.0%**

Appendix F

Antecedent Precipitation Table

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	38.30138, -121.88993
Observation Date	2026-01-21
Elevation (ft)	49.856
Drought Index (PDSI)	Not available
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2026-01-21	2.315354	6.83504	6.350394	Normal	2	3	6
2025-12-22	2.352756	5.539764	1.838583	Dry	1	2	2
2025-11-22	1.196457	2.917323	3.732284	Wet	3	1	3
Result							Normal Conditions - 11

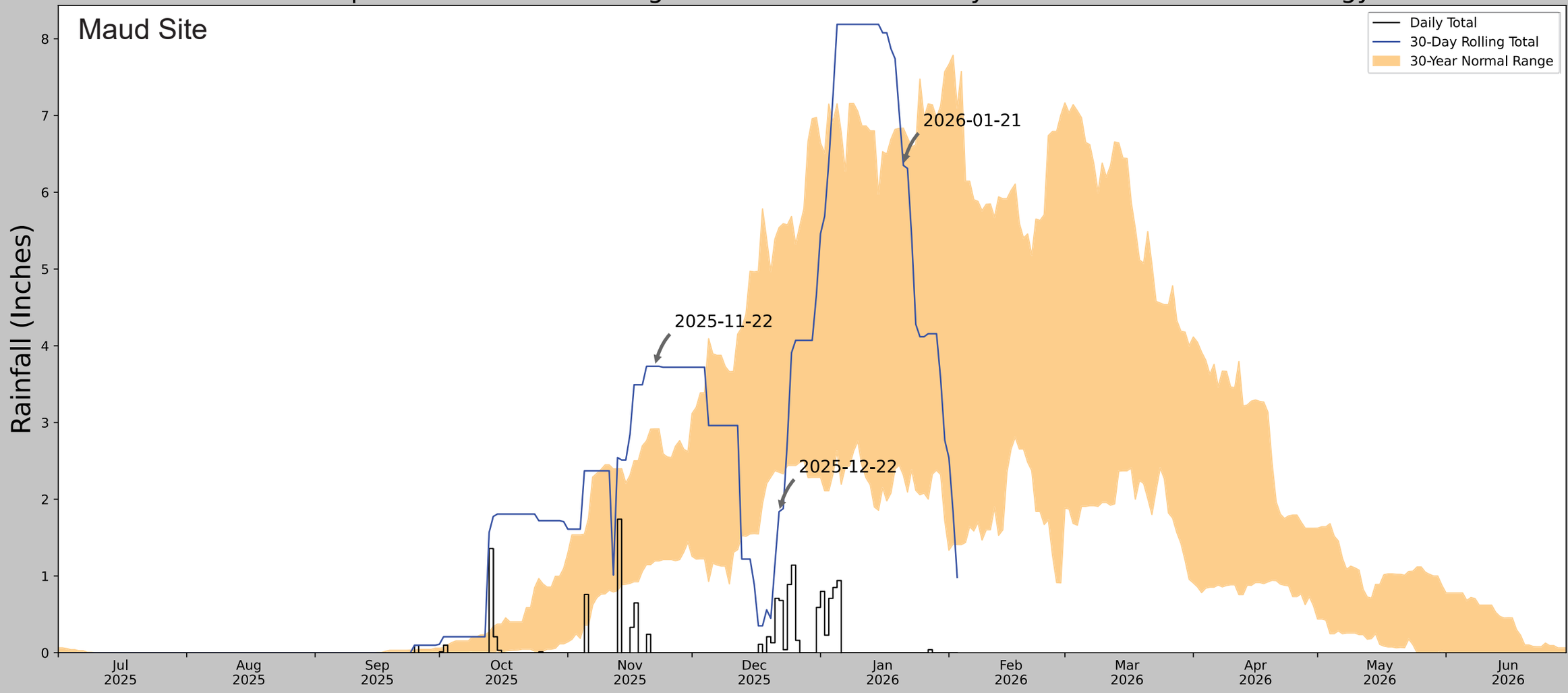
Figures and tables made by the Antecedent Precipitation Tool Version 3.0

US Army Corps of Engineers.
ERDC

Developed by:
U.S. Army Corps of Engineers and
U.S. Army Engineer Research and Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
VACAVILLE/NUT TREE AP ASOS	38.3775, -121.9586	104.003	6.443	54.147	3.248	9927	90
VACAVILLE	38.3956, -121.9608	109.908	1.256	5.905	0.573	1322	0
VACAVILLE 2.4 NW	38.3825, -122.0029	279.856	2.424	175.853	1.517	18	0
VACAVILLE 2.3 NW	38.3857, -121.9954	433.071	2.072	329.068	1.614	4	0
LAKE SOLANO	38.4919, -122.0039	187.008	8.276	83.005	4.411	82	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	38.2067, -121.85791
Observation Date	2026-01-21
Elevation (ft)	106.753
Drought Index (PDSI)	Not available
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2026-01-21	2.315354	6.83504	6.350394	Normal	2	3	6
2025-12-22	2.352756	5.539764	1.838583	Dry	1	2	2
2025-11-22	1.196457	2.917323	3.732284	Wet	3	1	3
Result							Normal Conditions - 11

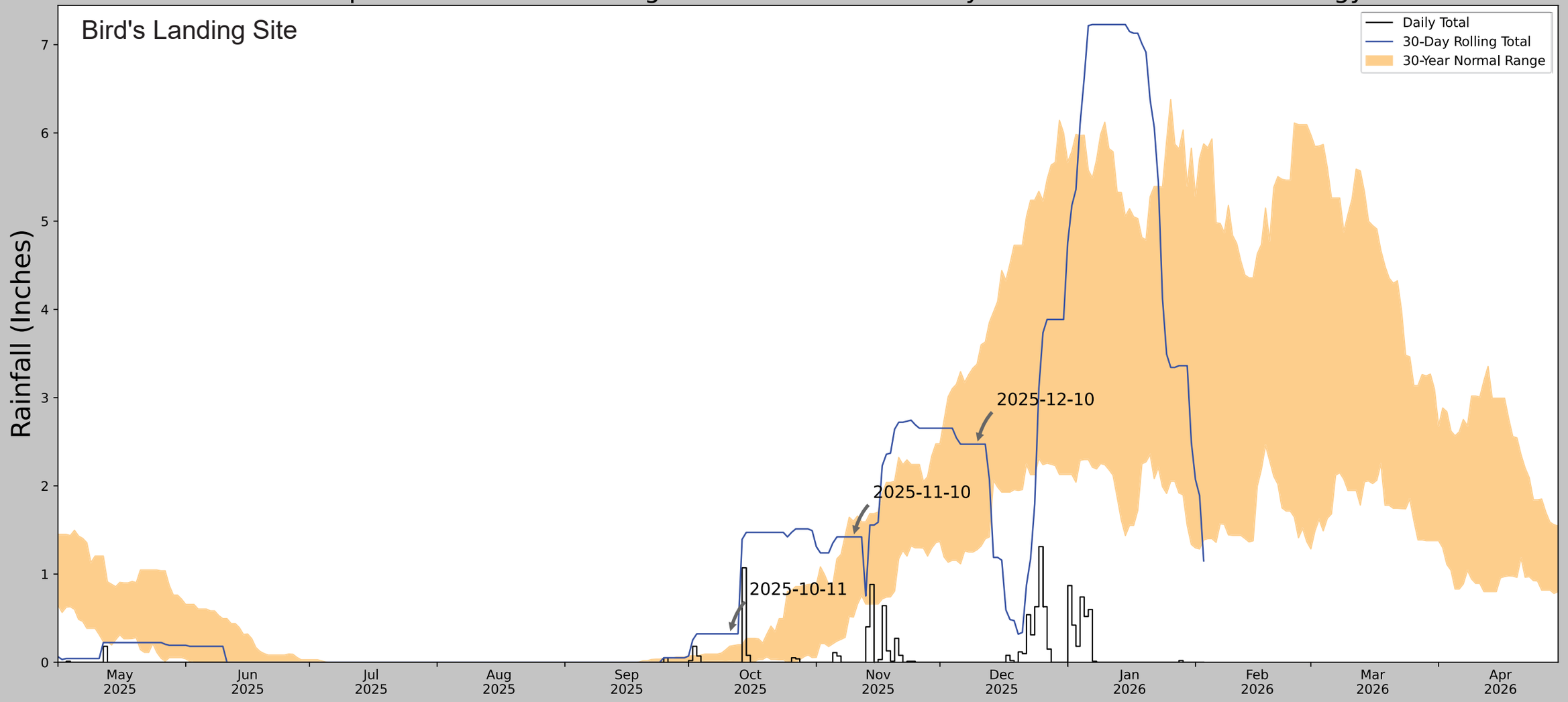
Figures and tables made by the Antecedent Precipitation Tool Version 3.0

US Army Corps of Engineers.
ERDC

Developed by:
U.S. Army Corps of Engineers and
U.S. Army Engineer Research and Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
VACAVILLE/NUT TREE AP ASOS	38.3775, -121.9586	104.003	13.003	2.75	5.887	9927	90
VACAVILLE	38.3956, -121.9608	109.908	1.256	5.905	0.573	1322	0
VACAVILLE 2.4 NW	38.3825, -122.0029	279.856	2.424	175.853	1.517	18	0
VACAVILLE 2.3 NW	38.3857, -121.9954	433.071	2.072	329.068	1.614	4	0
LAKE SOLANO	38.4919, -122.0039	187.008	8.276	83.005	4.411	82	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	38.1263, -121.82984
Observation Date	2025-12-10
Elevation (ft)	278.18
Drought Index (PDSI)	Incipient drought
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2025-12-10	1.275984	3.378347	2.472441	Normal	2	3	6
2025-11-10	0.512598	1.598819	1.42126	Normal	2	2	4
2025-10-11	0.011811	0.18189	0.322835	Wet	3	1	3
Result							Normal Conditions - 13

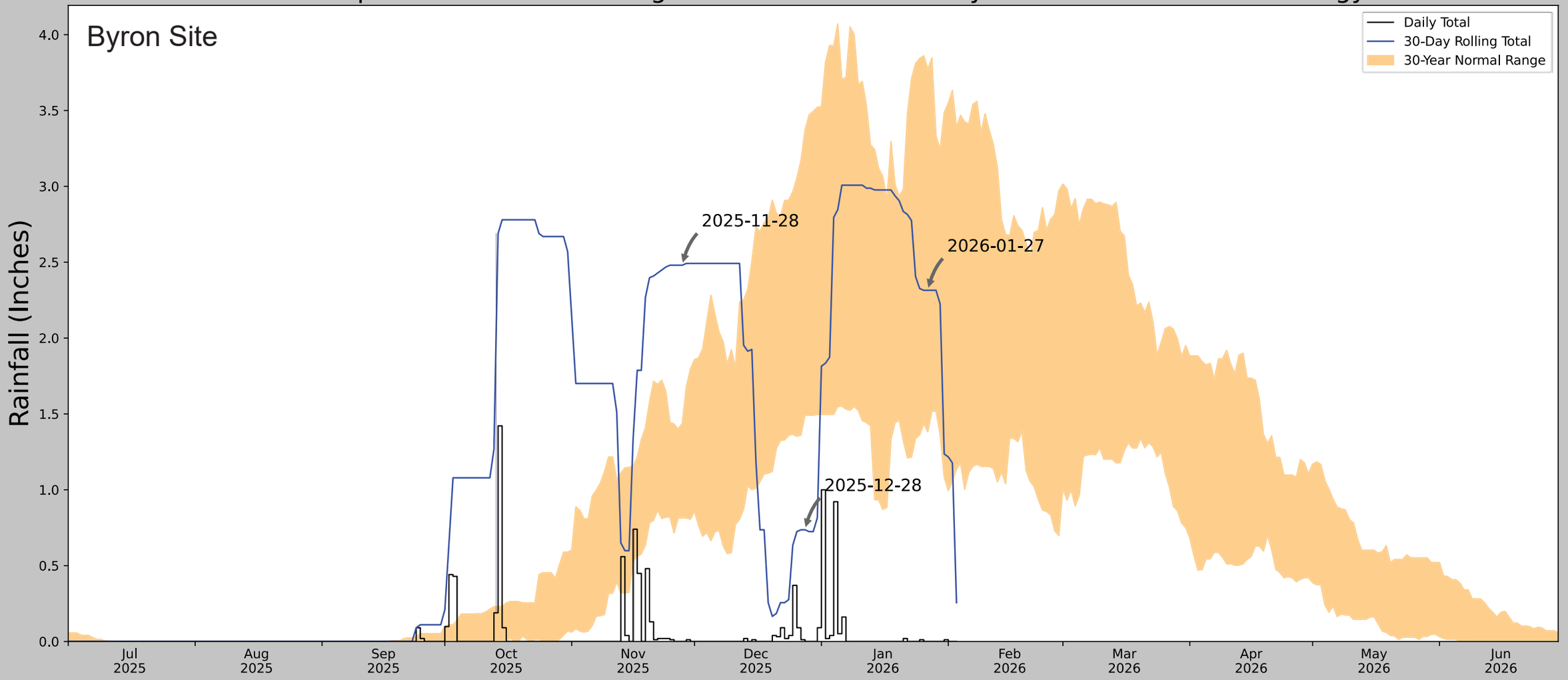
Figures and tables made by the
Antecedent Precipitation Tool
Version 3.0

US Army Corps of Engineers.
ERDC

Developed by:
U.S. Army Corps of Engineers and
U.S. Army Engineer Research and
Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
MARTINEZ 0.8 SSE	37.9898, -122.1085	251.969	17.854	26.211	8.502	6208	90
MARTINEZ WTP	38.0131, -122.1142	40.026	1.64	211.943	1.086	5145	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	37.88154, -121.61541
Observation Date	2026-01-27
Elevation (ft)	9.26
Drought Index (PDSI)	Not available
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2026-01-27	1.382677	3.771654	2.314961	Normal	2	3	6
2025-12-28	1.490945	3.372047	0.73622	Dry	1	2	2
2025-11-28	0.81378	1.438189	2.480315	Wet	3	1	3
Result							Normal Conditions - 11

Figures and tables made by the Antecedent Precipitation Tool Version 3.0

US Army Corps of Engineers.
ERDC

Developed by:
U.S. Army Corps of Engineers and
U.S. Army Engineer Research and Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
TRACY PUMPING PLT	37.7958, -121.5831	61.024	6.181	51.764	3.101	11313	86
TRACY 2.1 W	37.7353, -121.4699	51.837	7.463	9.187	3.427	6	0
TRACY 1.1 SSW	37.7232, -121.4403	78.084	9.274	17.06	4.332	24	4
ANTIOCH PUMPING PLT #3	37.9833, -121.7525	60.039	15.911	0.985	7.176	8	0
TRACY CARBONA	37.6819, -121.3467	134.843	15.125	73.819	7.923	1	0
STOCKTON 2.1 NW	37.9912, -121.3333	6.89	19.178	54.134	9.668	1	0