INSIGNIA ENVIRONMENTAL

LS POWER GRID CALIFORNIA, LLC

COLLINSVILLE 500/230 KILOVOLT SUBSTATION PROJECT

BOTANICAL SURVEY REPORT

OCTOBER 2023

PREPARED FOR:

LS POWER GRID CALIFORNIA

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ATTACHMENTS

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

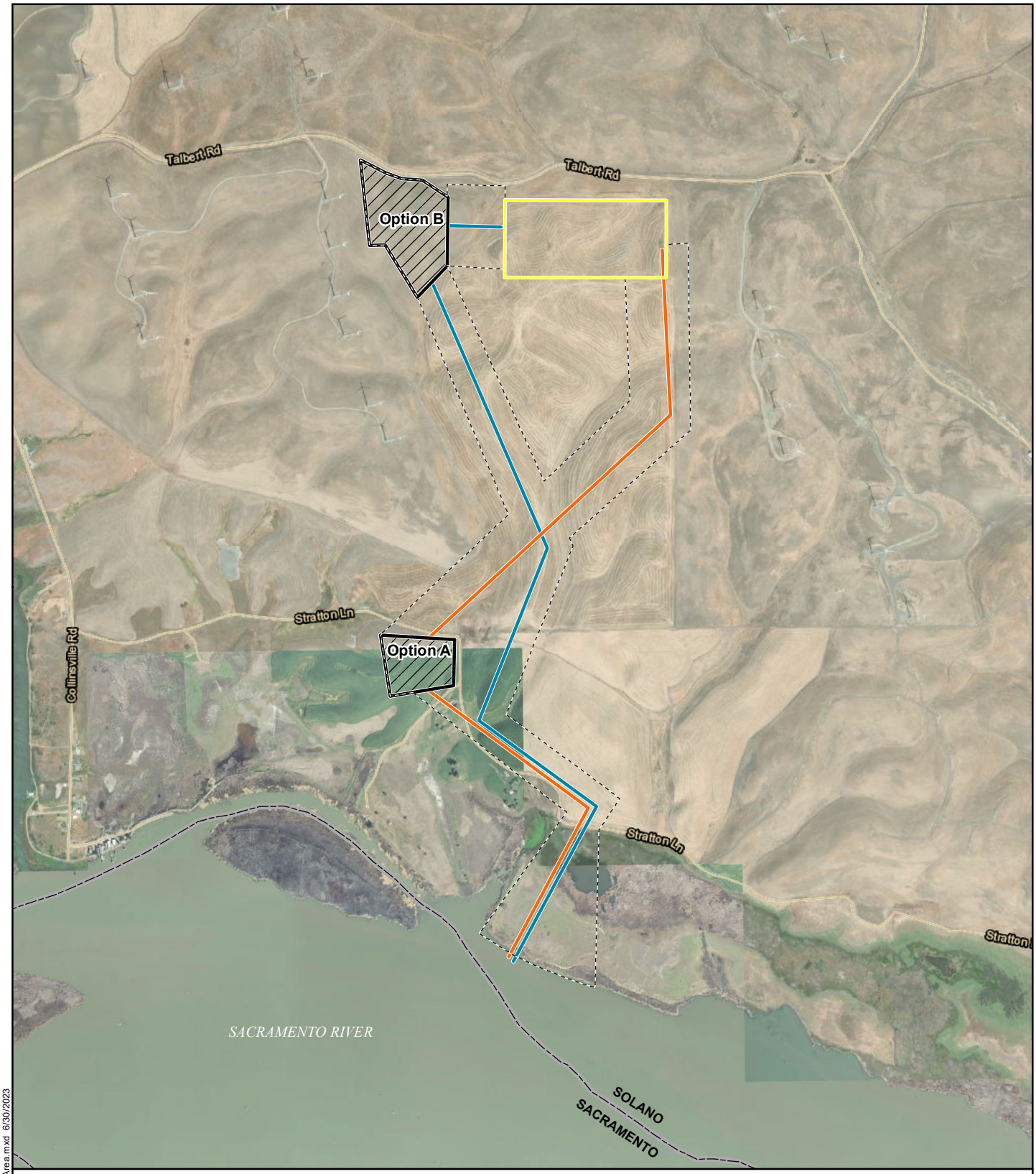


Figure 1: Project Components **Collinsville 500/230 Kilovolt Substation Project**

- Project/Survey Area
- PG&E Parcel
- Potential Substation Sites
- Option A Overhead Alignment
- Option B Overhead Alignment
- County Boundary

1:20,000
0 1,000 2,000 Feet

LS POWER GRID CALIFORNIA INSIGNIA ENVIRONMENTAL

Z:\Projects\LS_Power_Collinsville\MXD\BRTR\Project_Area.mxd 6/30/2023

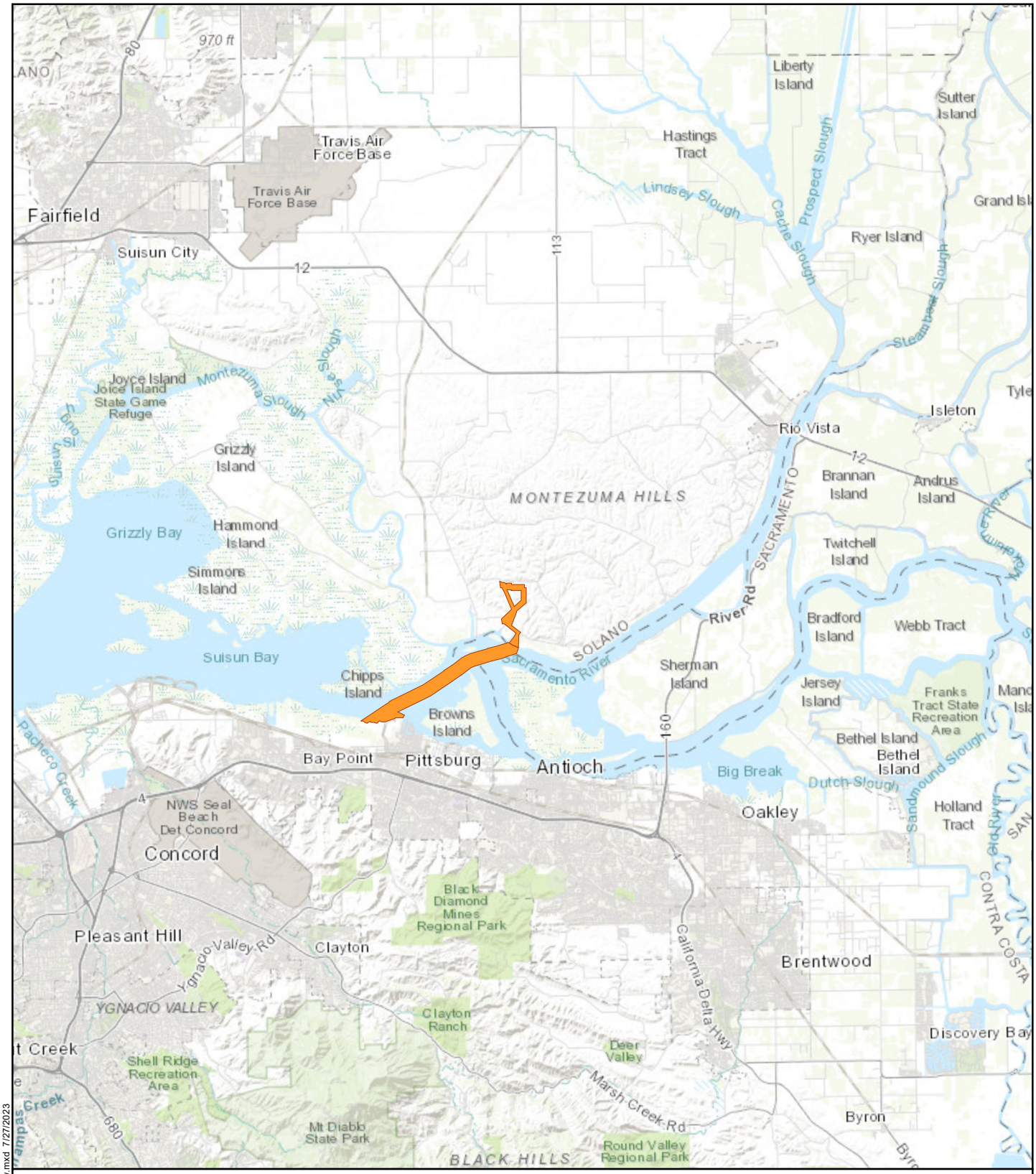


Figure 2: Project Overview Map **Collinsville 500/230 Kilovolt Substation Project**

Project/Survey Area

1:250,000

0 2 4 Miles

Z:\Projects\LS_Power_Collinsville\MXD\BRTR\Overview.mxd 7/27/2023

- 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

CDFW. 2009. Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities. Online. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=18959 . Site visited May 1, 2023.

CDFW. 2023. CNDDB. Online. https://www.wildlife.ca.gov/Data/CNDDB/Data-Updates. Site visited May 1, 2023.

CNPS. 2001. CNPS Botanical Survey Guidelines. Online. https://cnps.org/wp-content/uploads/2018/03/cnps_survey_guidelines.pdf. Site visited May 1, 2023.

CNPS. 2023a. *A Manual of California Vegetation Online*. Online. http://vegetation.cnps.org/. Site visited May 1, 2023.

CNPS. 2023b. Inventory of Rare and Endangered Plants of California. Online. http://www.rareplants.cnps.org/. Site visited May 1, 2023.

Bartosh, Heath. Nomad Ecology. Personal communication with M. Oates, Insignia. August 22, 2023. 925-228-3027.

Moore, Lynn and Lauenroth, William. "Differential effects of temperature and precipitation on early- vs. late-flowering species." Ecosphere. Volume 8, Issue 5. May 2017. Online. https://doi.org/10.1002/ecs2.1819. Site visited August 20, 2023.

NOAA. 2023. Climate Data Record Program. Online. https://www.ncdc.noaa.gov/cdr. Site visited May 1, 2023.

Sacramento Municipal Utility District. 2021. Solano 4 Wind Project Final Environmental Impact Report. Online. https://www.smud.org/-/media/Documents/Corporate/About-Us/Company-Information/Reports-and-Documents/CEQA-Reports/Solano_4_FEIR_2021.ashx. Site visited September 20, 2023.

USFWS. 2000. Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants. http://www.fws.gov/ventura/docs/species/protocols/botanicalinventories.pdf. Site visited May 1, 2023.

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

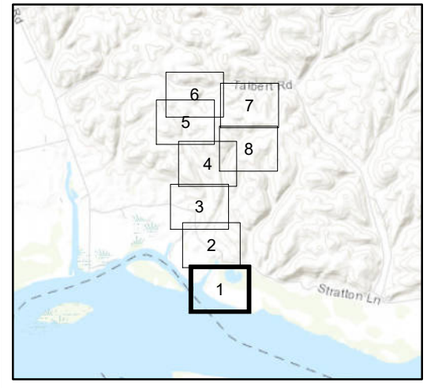
- Delta tule pea
- Mason's lilaeopsis
- Welsh mudwort

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



1:2,400

0 100 200 400 Feet

LS POWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

Z:\Projects\LS_Power_Collinsville\MXD\Botanical_Report\Survey_Results.mxd 9/19/2023

Option A

Stratton Ln

Stratton Ln

Stratton Ln

Attachment A:
Biological Resources Map
Map 2 of 8

Collinsville 500/230 Kilovolt Substation Project

Survey Area

Potential Substation Site

Vegetation Community

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

Distichlis spicata Herbaceous Alliance

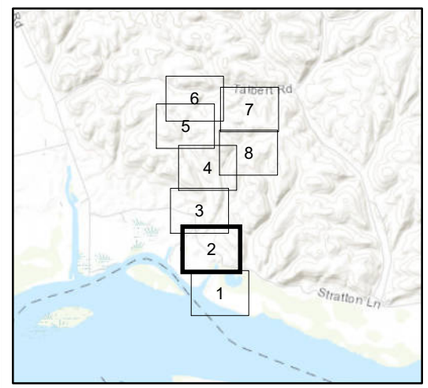
Frankenia salina Herbaceous Alliance

Lolium perenne Herbaceous Semi-Natural Alliance

Rosa californica Shrubland Alliance

Schoenoplectus (acutus, californicus) Herbaceous Alliance

Road



1:2,400

0 100 200 400 Feet

LSPOWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

Z:\Projects\LS_Power_Collinsville\MXD\Botanical_Report\Survey_Results.mxd 9/19/2023

Attachment A:
Biological Resources Map
Map 3 of 8

Collinsville 500/230 Kilovolt Substation Project

Survey Area

Potential Substation Site

Vegetation Community

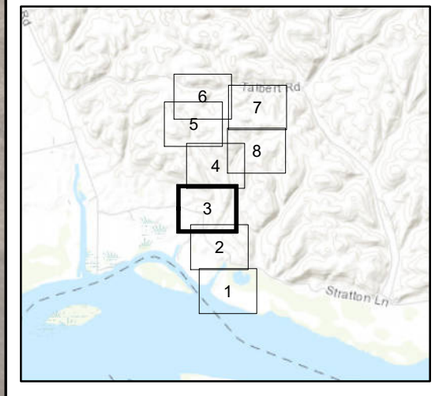
Brassica nigra - Centaurea (solstitialis, melitensis) Herbaceous Semi-Natural Alliance

Lolium perenne Herbaceous Semi-Natural Alliance

Road

Option A

Stratton Ln



1:2,400

0 100 200 400 Feet

LSPOWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

Z:\Projects\LS_Power_Collinsville\MXD\Botanical_Report\Survey_Results.mxd 9/19/2023

Attachment A:
Biological Resources Map
Map 4 of 8

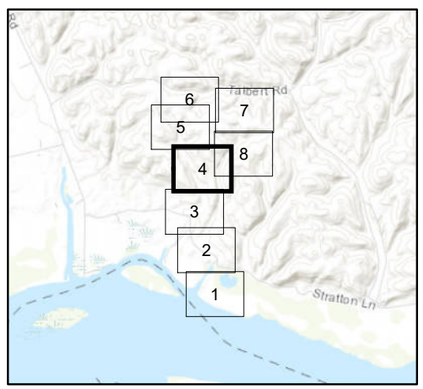
Collinsville 500/230 Kilovolt Substation Project

Survey Area

Vegetation Community

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

Lolium perenne Herbaceous Semi-Natural Alliance



1:2,400

0 100 200 400 Feet

LS POWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

Z:\Projects\LS_Power_Collinsville\MXD\Botanical_Report\Survey_Results.mxd 9/19/2023

Attachment A:
Biological Resources Map
Map 5 of 8

Collinsville 500/230 Kilovolt Substation Project

Option B

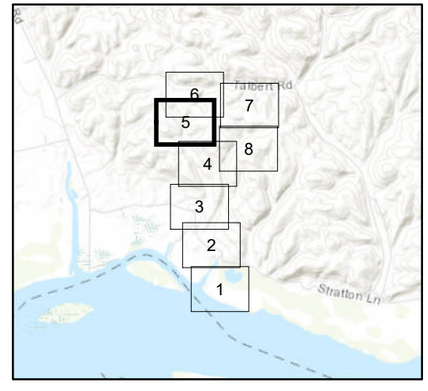
Survey Area

Potential Substation Site

Vegetation Community

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

Lolium perenne Herbaceous Semi-Natural Alliance



1:2,400

0 100 200 400 Feet

LS POWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

Z:\Projects\L.S. Power_Collinsville\MXD\Botanical_Report\Survey_Results.mxd 9/19/2023

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

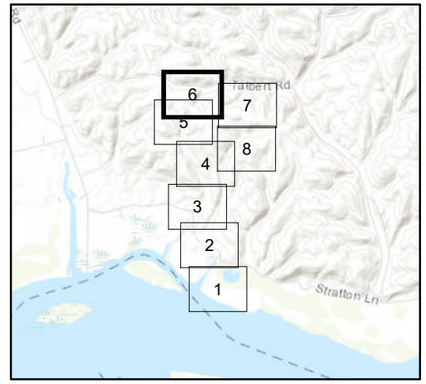
Lolium perenne Herbaceous Semi-Natural Alliance

Talbert Rd

Talbert Rd

Talbert Rd

Option B



1:2,400

0 100 200 400 Feet

LS POWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

Z:\Projects\LS Power_Collinsville\MXD\Botanical_Report\Survey_Results.mxd 9/19/2023

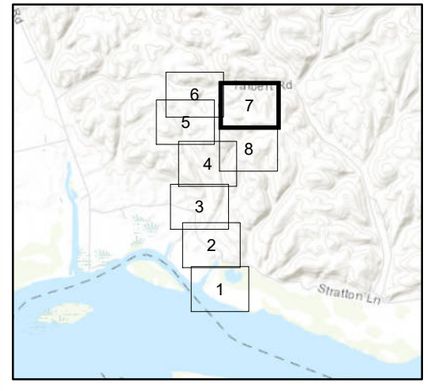
Attachment A:
Biological Resources Map
Map 7 of 8

Collinsville 500/230 Kilovolt Substation Project

Survey Area

Vegetation Community

Lolium perenne Herbaceous Semi-Natural Alliance



1:2,400

0 100 200 400 Feet

LS POWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

Z:\Projects\LS_Power_Collinsville\MXD\Botanical_Report\Survey_Results.mxd 9/19/2023

Attachment A:
Biological Resources Map
Map 8 of 8

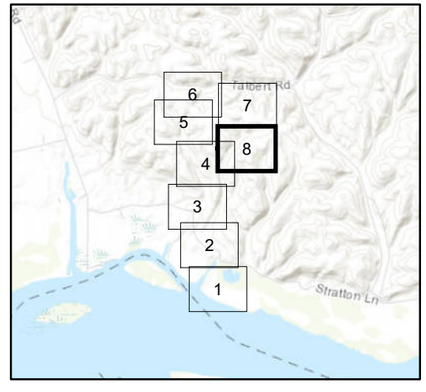
Collinsville 500/230 Kilovolt Substation Project

Survey Area

Vegetation Community

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

Lolium perenne Herbaceous Semi-Natural Alliance



1:2,400

0 100 200 400 Feet

LSPOWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

Z:\Projects\LS_Power_Collinsville\MXD\Botanical_Report\Survey_Results.mxd 9/19/2023

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

1:90,000

0 1 2 Miles

LS POWER GRID CALIFORNIA

INSIGNIA ENVIRONMENTAL

Z:\Projects\LS_Power_Collinsville\MXD\Botanical_Report\CNDDB_11x17.mxd 9/8/2023

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.

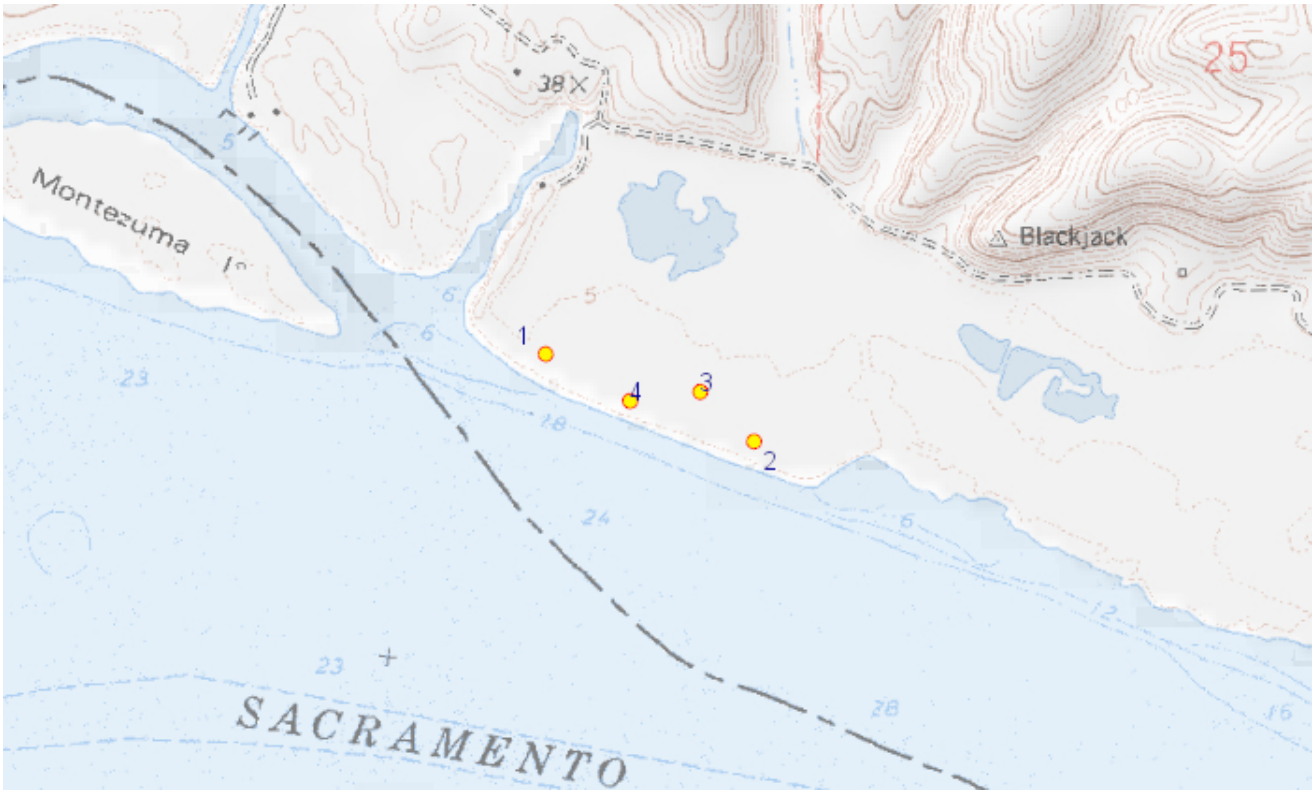
Slope: 5 to 10%
Land owner/manager:
Aspect:
Site condition + population viability: Fair
Immediate & surrounding land use: Agriculture/grazing

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

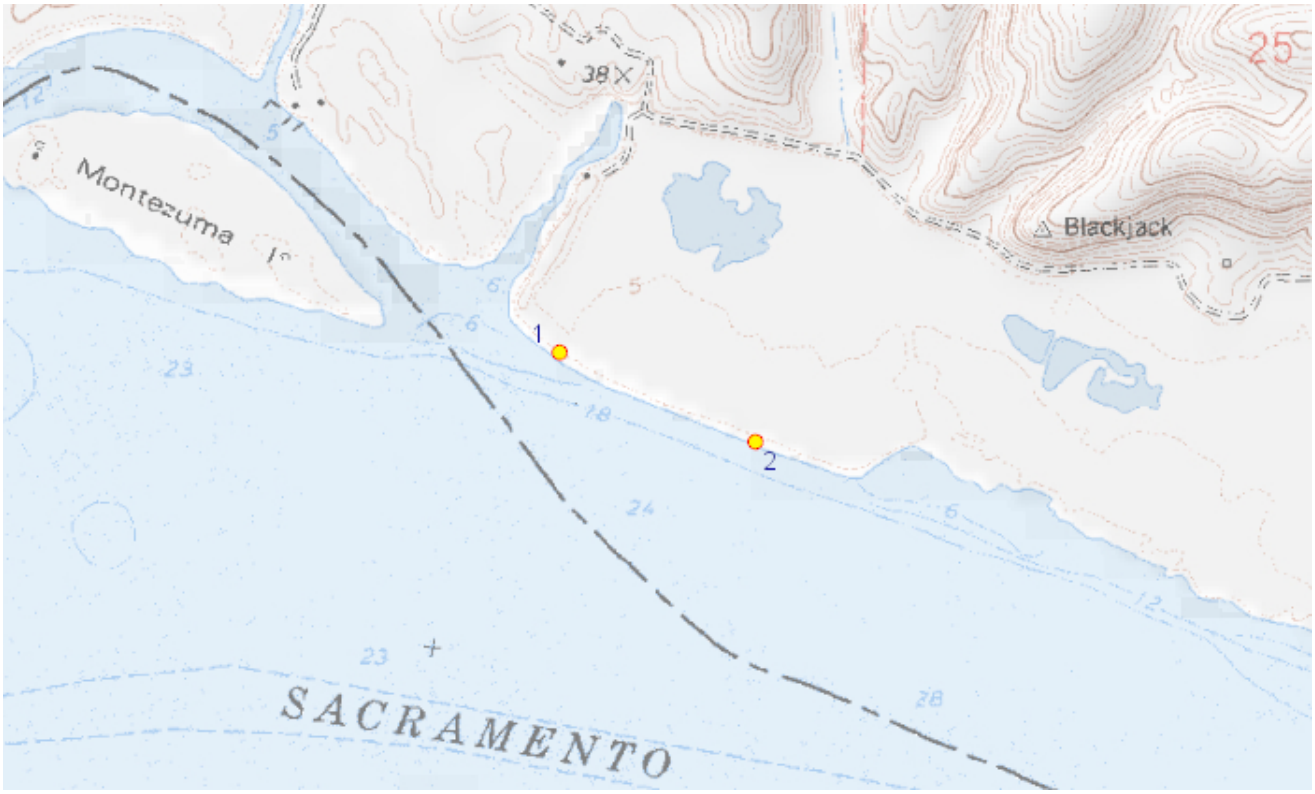
Immediate & surrounding land use: N/A

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):