Final

City of Suisun City
Highway 12 Logistics Center
Environmental Impact Report

Appendix A
Wildlife Hazard Assessment

AECOM

September 2024

AECOM
300 Lakeside Drive, Suite 400
Oakland, CA
94612

Project name:
Highway 12 Logistics Center

To:
Joe Livaich, Senior Project Manager
Buzz Oates Construction, Inc.
555 Capitol Mall, Suite 900
Sacramento, CA
95814

From:
AECOM Technical Services

Date:
July 26, 2022

Memo

Subject: Wildlife Hazard Assessment for the Highway 12 Logistics Center Property

Dear Mr. Livaich,

This memorandum describes the methods and results of the wildlife hazards assessment that was conducted for the Highway 12 Logistics Center (project), in Suisun City, California. The proposed project would develop approximately 1.28 million square feet of building space within a 93.4-acre development site situated within a 475.1-acre property parcel legally controlled and owned by Buzz Oates Construction company. As part of this project, approximately 381.66 acres east of Pennsylvania Avenue and south of Cordelia Road will become Managed Open Space and will be protected in perpetuity by a deed restriction or conservation easement. This Managed Open Space will preserve approximately 289.55 acres of seasonal and perennial wetlands, and includes the proposed Permittee Responsible Mitigation site which will create approximately 38 acres of wetlands to offset the impacts associated with the development site at a 1:1 acres created to acres impacted ratio. A detailed description of the wetland mitigation design is available in the *Mitigation and Monitoring Plan for the Highway 12 Logistics Center* (Huffman-Broadway Group, Inc., April 2022; **Attachment B**). The primary goal of this assessment was to determine the existing level of wildlife and bird activity within the entire project site and evaluate the potential for wildlife hazards to affect routine operations at Travis Air Force Base (TAFB) as a result of project construction and mitigation. This assessment was conducted in order to demonstrate compliance with Travis Air Force Base Instruction 91-212, issued January 13, 2021 by the order of the Travis Air Force Base Commander.

Methods

A desktop review of project background documents, aerial imagery, and wildlife occurrence databases including the California Department of Fish and Wildlife's Natural Diversity Database (CNDDB) was conducted on May 25, 2022 to identify habitats and species with potential to occur within the survey area. The survey area encompassed the entire 475.1-acre project site and an additional 250-foot buffer extending beyond the project site boundary extents. A pedestrian reconnaissance-level survey was conducted on May 26, 2022 by AECOM biologists Ben Pridonoff and Ranie Shreckengost. AECOM biologists used hand-written notes and the ArcGIS Field Maps application to navigate the site, record observations, and document habitat types/quality and site conditions.

Results

The 93.4-acre development site consists primarily of non-native annual grasslands and agricultural cattle pasture that was actively being grazed at the time of the survey. Ledgewood Creek flows from north to south along the western edge of the project area and may support a variety of sensitive hydrophytic and/or aquatic species.

The development site is surrounded by urban developments in the Fairfield community to the northwest, north, and northeast, and the Suisun City community is located east of the development site. TAFB is located due northeast

of the project area, and a total of 6 low-flying aircraft were observed over the property on the date of the field survey. Most of the southern portion of the property is undeveloped, and current land use is primarily agricultural cattle pasture. Coastal brackish marsh emerges in the southernmost region of the property parcel and may serve as potential habitat for blackbird colonies and other nesting bird species protected by the Migratory Bird Treaty Act of 1918.

The 381.66-acre Managed Open Space exhibited vegetation community characteristics associated with saline and freshwater wetland habitats (i.e., salt grass, cattail marsh, pickleweed, goldfields). Wetland hydrology was also observed in the form of drainage patterns, flowing stream channels, and scattered upland microtopographic relief.

Two special-status species were observed and positively identified via visual or auditory recognition during the survey; the Suisun song sparrow (*Melospiza melodia maxillaris*), and the San Francisco common yellowthroat (*Geothlypis trichas sinuosa*) both of which are California state Species of Special Concern (SSC). No active bird nests were observed. Wildlife species observed in the survey area are listed below in **Table 1**. A map depicting the proposed development site and managed open space area is included as **Figure 1**, and the wetland establishment mitigation areas are shown in **Figure 2**). Representative site photographs are provided in **Attachment A**. The April 2022 *Mitigation and Monitoring Plan for the Highway 12 Logistics Center* by Huffman-Broadway Group, Inc. is included as **Attachment B**.

Table 1. Plant and wildlife species observed during reconnaissance survey.

Scientific Name	Common Name
Amphibians and Reptiles	
Pseudacris sierra	Sierran treefrog
Thamnophis sirtalis infernalis	Red-sided garter snake
Birds	
Geothlypis trichas sinuosa	San Francisco common yellowthroat
Melospiza melodia maxillaris	Suisun song sparrow
Sturnella neglecta	Western meadowlark
Egretta thula	Snowy egret
Circus hudsonius	Northern harrier
Zenaida macroura	Mourning dove
Charadrius vociferus	Killdeer
Pelecanus erythrorhynchos	American white pelican
Botaurus lentiginosus	American bittern
Psaltriparus minimus	American bushtit
Chamaea fasciata	Wrentit
Ardea alba	Great egret
Cathartes aura	Turkey vulture
Hirundo rustica	Barn swallow
Petrochelidon pyrrhonota	Cliff swallow
Anas platyrhynchos	Mallard
Sturnus vulgaris	European starling
Mimus polyglottos	Northern mockingbird
Passer domesticus	House sparrow
Haemorhous mexicanus	House finch
Euphagus cyanocephalus	Brewer’s blackbird
Passerculus sandwichensis	Savannah sparrow

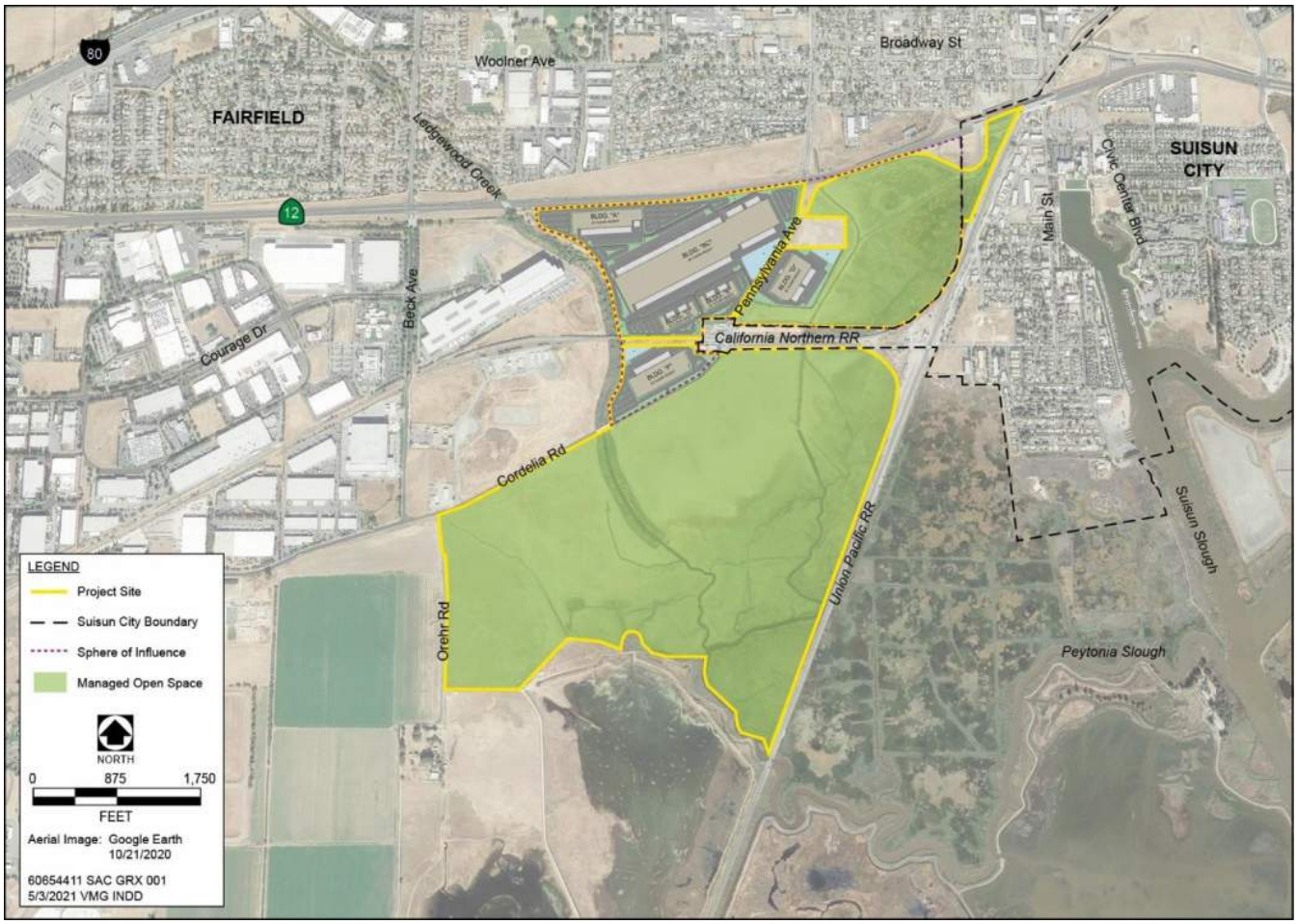
Agelaius phoeniceus	red-winged blackbird
Cistothorus palustris	marsh wren
Corvus corax	common raven
Sayornis saya	Say’s phoebe
Mammals	
Lepus californicus	Black-tailed jackrabbit
Canis latrans	Coyote
Procyon lotor	Raccoon
Plants	
Distichlis spicata	Salt grass
Salicornia spp.	Pickleweed
Typha spp.	Cattail
Lasthenia spp.	Goldfields
Triphysaria eriantha	Butter 'n' eggs

Discussion

The Highway 12 Logistics Center and e-commerce buildings associated with the project development site are not expected to result in a significant attraction of birds or other wildlife to the property. Existing vegetation will be removed and replaced with buildings, resulting in the reduction of existing habitat within the development site. Anticipated changes to the existing avian habitat associated with the proposed construction activities include grading, excavation, permanent development, storm water controls, lighting, irrigation, noise, and increased human presence.

The 381.66-acre Managed Open Space, is unlikely to result in an increase in wildlife activity due to the disturbances caused by the lighting, human presence, and noise associated with the new development site, in addition to the existing baseline noise and activity from Highway 12 vehicular traffic and the TAFB air and vehicular traffic. Natural or man-made features that could attract wildlife to the property post-construction include the proposed stormwater retention basins and the 38 acres of created wetlands. . However, the stormwater retention basins are unlikely to result in significant additional wildlife attraction because the systems are designed for quick drainage, and because the basins will be surrounded by development. As described in the Travis Air Force Base Instruction 91-212 (January 2021), TAFB is located on the Pacific Flyway. One of the passes west of TAFB which acts as a major flight path for birds is part of the Suisun Marsh. Because the Highway 12 project area is adjacent to Suisun Marsh, the wetlands in the project area are likely to attract birds as they leave and return to the marsh. Although 38 acres of new wetland habitat will be created within the Managed Open Space, this is not expected to cause an overall increase in the current level of wildlife activity because the mitigation is replacing wetlands that are being removed from the same general location (the development site) at a 1:1 ratio.

In summary, the construction and development associated with the Highway 12 Logistics Center would not increase above the existing level of activity or presence of birds or other wildlife. Therefore, the project would not present a hazard to TAFB flight operations. It is predicted that the overall wildlife activity on the property would remain at or below current levels, based on our understanding of the planned development and our best professional assessment of the existing habitat.



Source AECOM 2022

Figure 1. Proposed Development Site and Managed Open Space Area
Highway 12 Logistics Center Project
Solano County, California

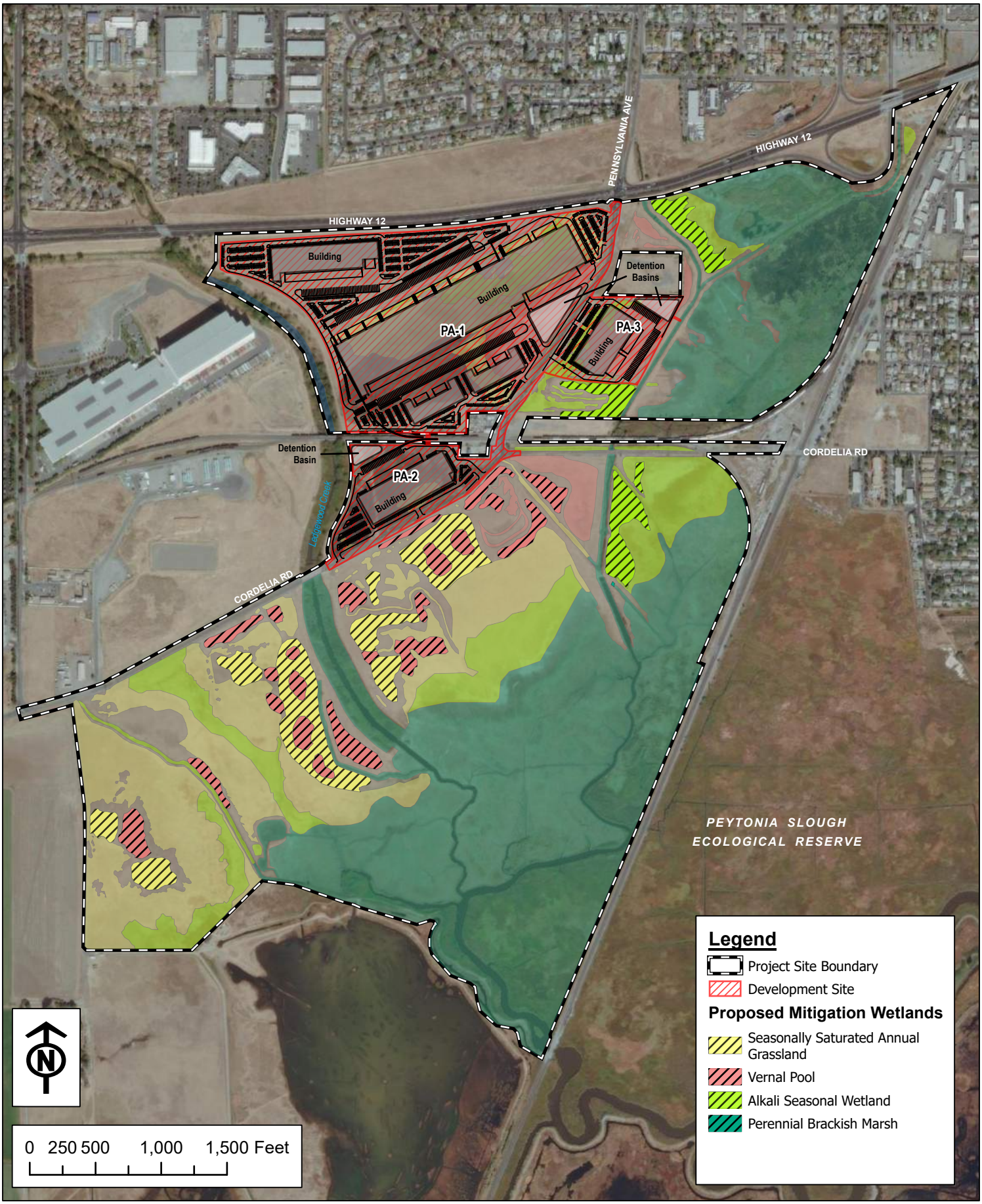


Figure 2. Wetland Establishment Mitigation Map
Highway 12 Logistics Center Project
Solano County, California

Attachment A. Site Photographs

Photograph 1: Facing north (38.2363, -122.0560), featuring the proposed development site.

Photograph 2: Facing north (38.2354, -122.0568), featuring the proposed development site.

Photograph 3: Facing east (38.2293, -122.0531), featuring seasonal wetland and annual grassland habitat in the proposed managed open space.

Photograph 4: Facing east (38.2282, -122.0645), featuring annual grassland habitat in the proposed managed open space.

Photograph 5: Facing south (38.2267, -122.0545), featuring the confluence of Ledgewood Creek and an unnamed stream channel in the proposed managed open space.

Photograph 6: Facing southwest (38.2403, -122.0451) featuring seasonal wetland and marsh habitat in the proposed managed open space.

Attachment B. Mitigation and Monitoring Plan for the Highway 12 Logistics Center

Permittee Responsible Preliminary Mitigation and Monitoring Plan and Long Term Management Plan for the Highway 12 Logistics Center, Solano County, California

Prepared For:

Buzz Oates Construction
555 Capitol Mall, Ninth Floor
Sacramento, CA 95814
Contact: Joe Livaich
916.379.8874
joelivaich@buzzoates.com

Prepared By:

Huffman-Broadway Group, Inc.
ENVIRONMENTAL REGULATORY CONSULTANTS

828 Mission Avenue
San Rafael, CA 94901
Contact: Terry Huffman, PhD
415.385.1045
thuffman@h-bgroup.com

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF APPENDICES

LIST OF APPENDICES

This report should be cited as: Huffman-Broadway Group, Inc. 2022. *Permittee-Responsible Preliminary Mitigation and Monitoring Plan and Long-Term Mitigation Management Plan for the Highway 12 Logistics Center, Solano County, California.* April.

1.0 INTRODUCTION

This Permittee-Responsible Preliminary Mitigation and Monitoring Plan (MMP) has been prepared for Buzz Oates Construction (Applicant/Landowner), by Huffman-Broadway Group, Inc. (HBG) for the Highway 12 Logistics Center Project in the City of Suisun City and Solano County, California (Project). This MMP was prepared following the guidance provided by the US Army Corps of Engineers 2008 Compensatory Mitigation for the Loss of Aquatic Resources; Final Rule (33 CFR Parts 325 and 332; 40 CFR Part 230) and in accordance with the Subpart J – Compensatory Mitigation for Losses of Aquatic Resources outlined in the State Water Resources Control Board "Procedures" and State Water Resources Control Board Implementation Guidance dated April 2020.

During the permitting process, this MMP will be reviewed by the San Francisco District US Army Corps of Engineers, US Fish and Wildlife Service, San Francisco Bay Regional Water Quality Control Board, California Department of Fish and Wildlife, and San Francisco Bay Conservation and Development Commission. During that review process modifications may be made to this MMP in accordance with comments or edits suggested by these agencies. A detailed grading plan, language for a deed restriction or conservation easement, and endowment cost will be developed during this process. Appendices not included with this MMP will be prepared during the review process and provided under an updated Final Mitigation and Monitoring Plan (Final MMP) once agencies have completed their review.

1.1 General Description of Development Project Requiring Compensatory Mitigation

The purpose of the proposed project is to develop approximately 1.28 million square feet of building space on an approximately 93.40-acre site (Development Site) within an approximately 475.06-acre property legally controlled by the Permittee. As part of this project approximately 381.66 acres within the eastern portion of the annexation area east of Pennsylvania Avenue and south of Cordelia Road will be Managed Open Space and protected in perpetuity with a deed restriction or conservation easement. This Managed Open Space will preserve approximately 289.55 acres of seasonal and perennial wetlands. Within the Managed Open Space, the Applicant intends to preserve rare plant habitat, which includes the critical habitat Subunit 5G core population of approximately 8,000+ Contra Costa goldfields over a 17 acre area, and create approximately 38 acres of wetlands, in-kind, to offset the 38-acre wetlands impacts and impacts of rare plants associated with the Development Site. Wetlands will be established/created prior to or concurrent with project construction in accordance with the Mitigation and Monitoring Plan. The MMP includes performance standards based on attributes that are objective and verifiable and 10-year monitoring period which is sufficient to demonstrate performance standards have been met.

Refer to Figure 4 for the general location of the Managed Open Space in relation to the Development Site. Refer to Figure 14 for the location of proposed mitigation wetlands in relation to existing wetlands. This Managed Open Space shall be planned and managed to offset impacts for the Development Site, and potentially serve as mitigation for other projects.

The Final MMP will include a site protection instrument (e.g., deed restriction or conservation easement(s)) that will restrict use of the Managed Open Space area and establish an endowment funded by the Project Applicant to manage the Managed Open Space in perpetuity.

1.2 Objectives

The objectives of this MMP and LTMP are to improve habitat conservation and biodiversity of special status plant species and wetland habitat within Solano County. This will be accomplished by meeting the following objectives:

1. Establishment of wetland habitat meeting the USACE technical criteria for jurisdictional wetlands by:
2. Development of physical conditions similar to those found within naturally occurring depressional wetlands found within the project site.
3. Development of hydrologic conditions similar to those found within naturally occurring depressional wetlands found within the project site.
4. Development of hydric soil conditions similar to those found within naturally occurring depressional wetlands found within the project site.
5. Establishment of naturalized and native plant species similar to those found within a reference wetland within the project area watershed; and
6. Establishment of areas meeting the USACE technical criteria for jurisdictional wetlands.
7. Establishment of suitable habitat for special status plant species by:
8. Development of physical conditions similar to those found within naturally occurring occupied sensitive species habitat found within the project site.
9. Development of hydrology and soil conditions similar to those found within naturally occurring occupied habitat found within the project site.
10. Establishment of new sensitive plant species populations similar to those found within the project site impacted by the Highway 12 Logistics Center Project.
11. Providing for long-term management and land use protection of established and preserved wetlands and upland watershed habitat for conservation purposes through endowment funding and a recorded conservation easement.
12. Providing for long-term management and land use protection of occupied and suitable habitat for sensitive species through endowment funding and a deed restriction or conservation easement.
13. Protect, enhance, and manage natural habitats and diverse plant and animal communities to meet, in part, objectives outlined in the Open Space and Conservation Element of the City of Suisun City General Plan and the Resources chapter of the Solano County General Plan, and the Suisun Marsh Preservation Act.

2.0 SITE SELECTION

2.1 Proposed Permittee Responsible Mitigation Site

The Permittee Responsible Mitigation (PRM) site is within the 381.66 acre Managed Open Space area. The PRM and Managed Open Space are used interchangeably throughout this MMP.

Locations within the PRM were identified where mitigation for the development of a project generally described in Section 1.0. could be implemented. The Managed Open Space area is situated within an agricultural area used historically for grazing. Populations of sensitive species together with wetlands have been documented as being present within the Managed Open Space by various plant surveys and aquatic resources delineations. Areas where sensitive species and wetlands occur will be avoided during ground disturbing activities.

The landowner, Buzz Oats Construction, Inc., will place a deed restriction or conservation easement over the entire 381.66 acre Managed Open Space, and establish an endowment to assure the long-term management and protection of the mitigation site. For purposes of this management plan, the Landowner is responsible for land management, compliance, and funding activities..

3.0 SITE PROTECTION INSTRUMENT

Long-term "in perpetuity" land use protection will be provided by recording a deed restriction and/or conservation easement(s) with Solano County for the entirety of the 381.66 acre Managed Open Space. If a conservation easement is used, the grantee of the conservation easement shall be a non-profit 501(c)(3) conservation lands management organization approved by the USACE, USFWS, CDFW, Regional Water Quality Control Board (RWQCB), and San Francisco Bay Conservation and Development Commission (BCDC).

If requested, the USACE , USFWS, CDFW, RWQCB, and/or BCDC (the Authorizing Agencies) shall be named as the third-party beneficiaries of the conservation easement. The role of the Conservation Easement Grantee is to assure that the land is maintained in accordance with the conservation easement and the maintenance and management actions described in Sections 7.0 through 11.0. The Conservation Easement Grantee shall report to the third-party beneficiaries of the conservation easement on an annual basis. A "Land Manager" will manage the mitigation site / conservation lands in accordance with the MMP and LTMP. During the LTMP the Land Manager will be paid annually through the endowment funding described below. During years 1 through 10, the Land Manager will be paid directly by the Landowner.[1] The Conservation Easement Grantee is also paid annually through the endowment funding during the Long Term Management Period and directly by the Permittee / Landowner during years 1 through 10.

[1] As described in Section 8.0, if the agency required performance criteria are not met within the first 10 years, the Permittee / Landowner will continue to be responsible for funding measures necessary to successfully achieve agency required performance criteria, including Land Manager-related costs, to the extent that those costs exceed those already provided for long-term management activities and funded by the endowment.

4.0 BASELINE INFORMATION

This section describes the PRM/Managed Open Space site location, land use, and its environmental setting, which includes discussion of site topography, climate, soil, hydrology, vegetation, wildlife species, special status species and habitats.

4.1 Location

Parcels which make up the Managed Open Space site are within the City of Suisun City and southwestern Solano County within the Sacramento Valley geographic sub region of the Great Central Valley, California, east of US Highway 80, and southwest of Suisun City. A regional location map for the project site is shown in Figure 1. Figure 2 shows the location of the project site on the Fairfield North and Fairfield South, California, USGS 7.5-minute topographic quadrangles and an aerial image of the project site shown in Figure 3. The USGS Section, Township, Range; County APN numbers; acreages; and approximate center point latitude and longitude coordinates of the Managed Open Space area are as follows:

Table 1. Managed Open Space Parcel Location

APN	Latitude and Longitude	Section Township Range	Acreage
0032-020-160[2]	38.242142; -122.042786	Section 35, Township 5N, Range 2W	6.4
0032-020-100[3]	38.238951; -122.0425780		43.39
0032-020-140[4]	38.240581; -122.047591		22.6
0032-190-190	38.232773; -122.053062		132.6
0032-190-180	38.231161; -122.057803		10.87[5]
0032-190-170	38.230872; -122.060749		22.7
0032-190-200	38.229500; -122.056264		0.7
0046-910-280	38.229950; -122.063802		14.4
0046-010-390	38.227957; -122.054964		128.0
Total Managed Open Space			**381.66**

[2] This 6.4 acre parcel is within the City of Suisun City.
[3] Currently in the County but will be annexed into the City of Suisun City.
[4] Currently in the County but will be annexed into the City of Suisun City.
[5] Title report identifies acreage at 10.87 acres, County APN data list parcel as 7.9 acres.

4.2 Ownership

The Managed Open Space site is owned by Buzz Oats Construction, Inc. Before all permits are obtained an updated title report will be prepared to determine if there are easements on the Managed Open Space area which should be considered prior to finalizing the MMP.

4.3 Land Use

Current Zoning. The Managed Open Space area is currently zoned by Solano County as "Marsh Preservation" in the northern portion above Cordelia Road, and the southern portion below Cordelia Road is zoned "Public/Quasi-Public with a Resource Conservation Overlay." The southern portion of the area is also within the Primary and Secondary Management Area of the Suisun Marsh Protection Plan.

Current and Past Land Uses. Livestock grazing essentially occurs all year. Past land uses have been agriculture related, including crop cultivation, hay production, and livestock grazing. Current and past land uses were verified by reviewing Google Earth Pro imagery from 1985 to 2020.

Adjacent Land Use. Land uses adjacent to the Managed Open Space to the east of Pennsylvania Avenue include Highway 12 to the north, City of Suisun City to the east, and proposed commercial development to the west. Land uses adjacent to the Managed Open Space south of Cordelia Road include recreational uses along the eastern and southeastern boundary, an active duck club along the southwestern boundary and agricultural uses along the western boundary.

4.4 Topography

The topographic relief on the majority of the Managed Open Space area south of Cordelia Road is flat with slopes ranging from 1-3% moving from north to south toward Peytonia Slough. The majority of elevations range from 15 feet to 0 feet mean sea level (msl)[6].

4.5 Climate

The site is in the northern San Francisco Bay Area just west of Suisun City. The Bay Area is characterized by dry, mild summers and moist, cool winters.

HBG acquired USDA NRCS historical precipitation and temperature data using the Climate Analysis for Wetlands Tables (WETS Tables) station for Fairfield (Appendix B). Based on the Fairfield WETS station the average annual precipitation from January 1991 through December 2020 was 24.46 inches of rain and no snowfall. The wettest month is December which averaged 5.22 inches of rainfall with the lowest average amount occurring in July with 0.00 inches of rainfall. Recorded data also indicates that the annual average mean temperature is 61.4° F. Average high and low temperatures range between 73.9° F and 49.0° F with the coldest month occurring in December with a mean temperature of 48.0° F and hottest months being in

[6] Sourced from the Biological Assessment prepared by HBG dated 2006.

July where mean temperature is 73.6 ° F.

4.6 Soils

The site is within the Solano County, California NRCS soil survey area. NRCS mapping shows five soil types, Sycamore silty clay loam, saline; Pescadero silty clay loam, 0 percent slopes, MLRA 17; Alviso silty clay loam; Joice muck, MLRA 16; and Water. Refer to Appendix A, Figure 6 for a soils map. The following table summarizes soil characteristics:

Table 2. Summary of Pertinent Characteristics of Soil Mapped Onsite by NRCS

Map Unit Symbol and Unit Name	Landform/Landform Position	Depth to Restrictive Feature	Slope	Drainage Class	Depth to Water Table	Frequency of Flooding/Ponding
St - Sycamore silty clay loam, saline	Alluvial Fans	36 inches	0-2%	Somewhat poorly drained	36 to 60 inches	None/None
Pc - Pescadero silty clay loam, 0 percent slopes, MLRA 17	Basin Floors	4 inches	0%	Somewhat poorly drained	4 to 85 inches	None-Rare/Frequent
An - Alviso silty clay loam	Tidal Flats	80+ inches	0-2%	Poorly drained	24 to 36 inches	Rare/None
Ja - Joice muck, MLRA 16	Tidal Flats	80+ inches	0-2%	Very poorly drained	24 to 36 inches	Frequent to None/Frequent
W-Water	NA	NA	NA	NA	NA	NA

4.7 Hydrology

Watersheds. Appendix A, Figures 7, 8, and 9 identify US Geological Survey Hydrologic Unit Code (HUC) subbasin, watersheds and subwatersheds at and near the PRM site. The PRM site lies within the HUC 8 "Suisun Bay" subbasin and the "Suisun Bay" 10-digit HUC watershed (1805000104). More specifically, portions of the PRM site are located within the "Ledgewood Creek" (180500010101), "Laurel Creek-Frontal Suisun Bay Estuaries" (180500010108), and "Suisun Bay Estuaries" (180500010401) HUC 12-digit subwatershed (http://nhd.usgs.gov).

Inundation Source. The source of inundation of the Perennial brackish marsh is muted tide which enters through Peytonia Slough by way of a culvert under the Union Pacific Railroad (UPRR). The culvert under UPRR appears to be undersized, which likely restricts flows causing a "muted" tidal cycle. The ebb and flow of the tide enters Peytonia Slough from the Suisun Slough which receives tidal waters from Grizzly Bay.

The primary source of inundation of the seasonally saturated annual grasslands, vernal pools, and alkali seasonal wetlands are from direct precipitation. Pooling surface water and saturation

below the soil surface is driven by direct precipitation during the winter months. During heavy storm events, the pooling water may overflow into the adjacent perennial brackish marsh. Once precipitation for the winter/spring ends, surface water and soil saturation remain until the water has evaporated. The hydrology within these wetlands is not driven by the influence of tides, snow melt, or seasonal ground water.

Depending on its topographic position alkali seasonal wetlands adjacent to the perennial brackish marsh may receive tidal water during high tides and/or higher spring tides or brackish water may mix with the fresh water during the winter. This mixing of brackish water and fresh water during the winter influences the alkali plant community.

FEMA. The Managed Open Space lies within Zone A on Federal Emergency Management Agency (FEMA) flood hazard mapping for Solano County and the Suisun City area. Zone A has 0.1% annual chance of flooding.

4.8 Vegetation Communities

Vegetation communities are assemblages of plant species growing in an area of similar biological and environmental factors. An inventory of plant species found on the Managed Open Space during biological studies is provided in Appendix D Table 1. A Vegetation Communities map is shown on Figure 10.

The following habitat types were identified on various portions of the Managed Open Space:

1. Upland Annual Grassland
2. Vernal Pools
3. Alkali Seasonal Marsh
4. Seasonally Saturated Annual Grasslands
5. Perennial Brackish Marsh

Alkali Seasonal Wetland, Vernal Pool, and Seasonally Saturated Annual Grassland are classified as Palustrine Emergent Wetlands by the USFWS (Cowardin, et al. 1979) and referred to locally as seasonal wetlands. Perennial Brackish Marsh is classified as Estuarine Intertidal Emergent Wetland and are referred locally as tidal marsh. Dominant plants found within these communities are described below.

Alkali Seasonal Marsh

The alkali seasonal marshes form in low-lying basins and clay flats. They become seasonally inundated or saturated during the rainy season and gradually dry through the spring and early summer. The salinity comes from residual salts concentrated in a buried silty clay loam soil horizon within the predominant soil type (Sycamore silty clay, saline).

Alkali seasonal marshes are located in the northeastern portion of the Development Site, the southwestern portion of the annexation area east of Pennsylvania, and the northern and northwestern portions of the area south of Cordelia Road/Cordelia Street. Dominant plant species within these wetlands include several halophytes (salt-loving plants) including sickle

grass (*Parapholis incurva*), alkali weed, and alkali heath. Slightly lower areas within the wetlands are dominated by pickleweed (*Salicornia virginica*). The alkali seasonal marsh generally lacks vernal pool indicator species.

Vernal Pools

Vernal pools are seasonally flooded basins underlain by a restrictive soil layer (claypan, hardpan, or bedrock) that prevents downward percolation of rainwater from the pool basins. They are inundated throughout the winter and gradually dry during the spring and summer though evaporation and plant transpiration. The vernal pools then remain dry and desiccated through the summer and fall, filling again with the coming of the next rainy season. Vernal pools may support a unique assemblage of plants and animals specifically adapted to their unique hydrologic regime and soil chemistry. They are distinguished from other seasonal wetland types by having a predominance of certain plant species considered to be vernal pool indicator species.

The vernal pools onsite are concentrated in the center and eastern portions of the Development Site, in the western portion of the annexation area east of Pennsylvania Avenue, and in the northern and northwestern portions of the area south of Cordelia Road/Cordelia Street. Many of the pools appear to have formed or were enhanced due to the construction of berms and ditches and partially blocked culverts on the site. The partially blocked culverts and berms and ditches may collect and block the flow of water across the landscape. This is especially true in the northern portion of the project site within the proposed annexation area. The largest, deepest vernal pool occurs within the Development Site and may be the result of, or enhanced by, the adjacent berm that runs parallel to Pennsylvania Avenue and a blocked culvert at the southernmost end of the vernal pool.

Dominant species within the pools on the three properties include a mix of classic vernal pool indicator species such as Vasey's coyote-thistle (*Eryngium vaseyi*), California semaphore grass (*Pleuropogon californica*), flat-faced downingia (*Downingia pulchella*), smooth goldfields (*Lasthenia glaberrima*), hyssop-leaved loosestrife (*Lythrum hyssopifolia*), and stipitate popcornflower (*Plagiobothrys stipitatus* var. *micranthus*). In addition to vernal pool indicator species, the pools support some alkali-tolerant species (halophytes) such as alkali heath (*Frankenia salina*), pickleweed (*Salicornia virginica*), and alkali weed (*Cressa truxillensis).*

Seasonally Saturated Annual Grasslands

Given the very flat topography across the overall project site, there are broad transitional wetland areas between the low-lying seasonal wetlands (vernal pools and alkali seasonal marsh) and the surrounding upland annual grasslands. These transitional areas have prolonged periods of surface and subsurface saturation but are rarely inundated. The dominant plants include a mix of facultative wetland species associated with both the annual grasslands and alkali seasonal marsh. Common species include Italian ryegrass (*Festuca perenne*), Mediterranean barley (*Hordeum marinum* var. *gussoneanum*), alkali weed, and alkali heath.

Perennial Brackish Marsh

Perennial brackish marsh occurs throughout the southern and southeastern portions of the area south of Cordelia Road/Cordelia Street and dominates the eastern portion of the annexation area. This habitat occurs in estuarine environments where there is a mixing of fresh and salt waters such as occurs in the Delta region. The soils are perennially inundated or saturated and are generally subject to some level of tidal fluctuation. The perennial brackish marsh habitat found in the project area is subject to tidal fluctuations that extend from Suisun Bay, up tidal sloughs, and into drainage ditches that traverse the properties. The ditch within the eastern portion of the annexation area has one branch that extends northeast and provides water to the marsh habitat. In addition, water levels become elevated during the rainy season and gradually lower through the spring through evaporation, transpiration, and drainage. This is especially true for the northern portion of the marsh. The majority of alkalinity within the marsh habitat comes from residual salts in the silty clay soils in addition to salts carried through tidal fluctuations.

Within the eastern portion of the annexation area, the deepest areas within the marsh (concentrated along the eastern portion of this property) are dominated by a mix of dense, tall-growing perennial marsh species including tule (*Schoenoplectus acutus* var. *occidentalis*), Olney's bulrush (*Schoenoplectus americanus*), California bulrush (*Schoenoplectus californicus*), saltmarsh bulrush (*Schoenoplectus maritimus*), broad-leaved cattail (*Typha latifolia*), and narrow-leaved cattail (*Typha angustifolia*). Slightly higher areas are dominated by low-growing species, especially pickleweed (*Salicornia virginica*) and brass buttons (*Cotula coronopifolia*). The upper perimeter of the marsh includes additional low-growing species such as saltgrass (*Distichlis spicata*), saltmarsh sand-spurrey (*Spergularia marina*), sicklegrass, and annual beard grass.

Dominant plant species within perennial brackish marsh within the area south of Cordelia Road/Cordelia Street include a broad range of perennial emergent monocots and herbaceous and woody dicots often occurring in a mosaic dependent on local soil condition, hydrologic regime, and micro-elevation. Low-lying areas and the lower banks of sloughs are dominated by tall, dense emergent monocots including tule, Olney's bulrush, California bulrush, saltmarsh bulrush, broad-leaved cattail, and narrow-leaved cattail. Upper slough banks are dominated by a mix of woody dicots such as annual saltmarsh aster (*Aster subulatus* var. *ligulatus*), Douglas' false-willow (*Baccharis douglasii*), western goldenrod (*Euthamnia occidentalis*), and mugwort (*Artemesia douglasiana*). The special-status plants delta tule pea and Suisun Marsh aster occur in scattered locations along the upper slough banks (see "Special Status Species" section). Open areas along some of the smaller slough channels support some interesting native herbs such as water-parsley (*Oenanthe sarmentosa*) and whorled pennywort (*Hydrocotyl verticillata*). There are also dense stands of pickleweed and saltgrass in some low-lying areas away from the slough channels.

4.9 Special Status Species

Rare, endangered, or threatened animal and plant species are protected by the Federal Endangered Species Act of 1973 (Title 16, US Code, Sections 1531 *et seq*.), the California Native

Plant Protection Act of 1977 (Fish and Game Code Sections 1900 - 1913), and the California Endangered Species Act of 1970 (Fish and Game Code, Sections 2050 *et seq*.). The California Environmental Quality Act (CEQA) (Public Resources Code Sections 21000 *et seq*.) provides additional protection for unlisted species that meet the rare or endangered criteria defined in Title 14, *California Code of Regulations*, Section 15380.

4.9.1 Special Status Plant Species Surveys

Vollmar Consulting 2000 – 2005. Vollmar Consulting conducted special-status plant surveys on the portion of the project site south of Cordelia Road and Cordelia Street during spring and summer 2000. These spring surveys were conducted on May 3 and 4, 2000, with an additional summer survey conducted on August 15, 2000. Vollmar Consulting conducted additional targeted surveys in this portion of the project site during spring 2001 and 2002, focusing on vernal pool, seasonal alkali marsh, and seasonally saturated annual grassland habitats. These additional spring surveys during 2001 and 2002 were conducted in late April and early May. Spring surveys conducted between 2000 and 2002 were conducted throughout the entire project site that targeted special-status plant species associated with vernal pool, annual grassland, and seasonally saturated grassland habitats. Spring surveys were timed to coincide with peak blooms of spring periods, which typically occur during mid-spring. The summer surveys of 2000 targeted special-status plant species associated with alkali seasonal marsh and perennial marsh habitats. The summer surveys were timed to coincide with the peak summer bloom period, which typically occurs during mid-summer.

Vollmar Consulting also conducted special-status plant surveys throughout the entire project site on eight dates in 2005. The surveys targeted special-status plant species associated with each vegetation community on the project site. April surveys were timed to coincide with peak spring bloom. August surveys focused on the alkali seasonal marsh and perennial brackish marsh habitats associated with the upper Suisun Marsh and were timed to coincide with the peak summer bloom period.

Plant surveys during the period of 2000 to 2002 were part of a broader biological survey and wetland delineation. During all surveys, the entire project site was walked, with the survey effort focused on specialized habitats with high potential to support special-status plant species. All plant species observed were identified and recorded. Those specimens that could not be readily identified in the field were collected and identified later. Locations of special-status plants were mapped onto enlarged (1:3,600) aerial photo base maps of the project site obtained from WAC Corporation in Eugene, Oregon.

Surveys during 2005 focused on special-status plant species only. The surveys included complete coverage of each of the entire project site with special focus on specialized habitats with high potential to support special-status plant species. During these surveys, any new species were identified and recorded. Locations of special-status plants were mapped using a GPS unit with sub-meter accuracy (Trimble GeoXT). At each occurrence of a special-status plant, the number and density of plants, the associated species, and basic habitat information were recorded. The number of plants was determined by visual estimate.

Survey Results. The results of the 2000, 2001 and 2002 special status plant surveys are reported in *Special-Status Species Survey and Wetland Delineation Report for the Barnfield Property, Suisun, Solano County, California* (Vollmar Consulting, November 11, 2003), and *Wetland Delineation and Special Status Species Survey Report for the Gentry and Tooby Properties, Suisun, Solano County, California* (Vollmar Consulting, January 27, 2003). The results of the spring 2005 surveys and summaries of the earlier findings are reported in *Gentry, Tooby and Barnfield Properties-Special-Status Plant Survey Report 2000 – 2002 and 2005 Field Seasons* (Vollmar Consulting, June 23, 2005).

The following describes in more detail the technical findings regarding five special-status plant species observed by Vollmar Consulting within the proposed 482-acre project site:

Alkali Milk-vetch - Alkali milk-vetch (*Astragalus tener var. tener*) is a small, purple-flowered annual in the pea family (Fabaceae). It is associated with seasonally saturated grasslands with alkaline soils as well as the upper margins of alkaline vernal pools. Its historical range included the Central Coast, San Francisco Bay, Delta, and mid Central Valley regions. However, due to habitat loss, it has been extirpated from the Central Coast and Bay regions and most areas in the Central Valley. Its remaining stronghold is in the Delta, especially Solano County.

Contra Costa Goldfields - Contra Costa goldfields (*Lasthenia conjugens*) is a small, yellow-flowered annual in the sunflower family (Asteraceae). It is federally listed as endangered and is considered rare and endangered (List 1B) by CNPS. It is associated with vernal pools and seasonally saturated flats and depressions in annual grasslands. Approximately 15 populations of the species have been documented, all of which are in California's Delta and coastal regions, and a large majority of which are in the immediate vicinity of Fairfield, Solano County.

Delta Tule Pea - Delta tule pea (*Lathyrus jepsonii ssp. jepsonii*) is a robust, pink-flowered perennial in the pea family (Fabaceae). It has a climbing growth habitat with stems up to 8 feet long. It is a federal species of concern and is considered rare and endangered (List 1B) by the California Native Plant Society (CNPS). It occurs in marsh habitat along the margins of brackish water (and occasionally freshwater) bays and sloughs. Its range is restricted to the upper San Pablo Bay and Delta regions of California. It historically occurred in the southwestern San Francisco Bay (Santa Clara County) but has been extirpated from this region due to habitat loss.

Saline clover - Saline clover (*Trifolium depauperatum var. hydrophilum*) is a pink flowered annual and member of the pea family (Fabaceae). It is considered to be rare and endangered (List 1B) by CNPS. It occurs in mesic grasslands and around vernal pools, typically in areas with subalkaline soils. It occurs in scattered location through the Delta, San Francisco Bay, and Central Coast regions of California. Although saline clover does not have federal status, prior to the surveys on the Gentry property, saline clover was known from only three sites in Solano County. Additional sites in the San Francisco Bay

area include one site in Yolo County, four sites in Sonoma County, and two sites in Napa County. Saline clover is threatened by the loss of seasonally saturated annual grassland and vernal pool habitat.

Suisun Marsh Aster - Suisun Marsh aster (*Symphyotrichum lentum*) is a 3 to 4-foot-tall lavender-flowered perennial in the sunflower family (Asteraceae). It is a federal species of concern and is considered rare and endangered (List 1B) by the California Native Plant Society (CNPS). It occurs along the margins of bays and the banks of slough channels with brackish waters. Its range is restricted to the upper San Pablo Bay and Delta regions of California.

Each of these species and its occurrence onsite is discussed below. The location of each of these species in the project site is shown on Figure 11.

Alkali Milk-vetch. During historical surveys of the project site, alkali milk-vetch was found within the current development site and in portions of the area south of Cordelia Road. In the surveys conducted between 2000 and 2002, alkali milk-vetch was observed in one location in seasonally saturated annual grassland near the western end of the Development Site. This location consisted of approximately 20 plants in a 1-meter square area. The 2000 occurrence of alkali milk-vetch was also one of seven occurrences located in this portion of the site during the 2005 surveys. The occurrence, located in 2000 as 20 plants, was relocated in 2005 as a single plant. This species is known to bloom sporadically and the change in number of plants from year to year is expected. Of the remaining six occurrences, three occurrences of alkali milk-vetch were located north of the California Northern Railroad and three were located south of the railroad. The northern occurrences included a single plant in the seasonally saturated grassland in the west, and two occurrences in the middle of the property, each consisting of two plants also located in the seasonally saturated grassland habitat. The southern occurrences include a single plant, an occurrence of two plants and an occurrence of three plants, all in weedy (ruderal pasture) annual grassland habitat. As this species is known to bloom sporadically from season to season, it is likely that the additional occurrences of alkali milk-vetch found in 2005 are to be expected during favorable years.

Alkali milk-vetch was observed in one location near the northwest corner of the portion of the project site located south of Cordelia Road and Cordelia Street in the 2000 – 2002 surveys. This occurrence consisted of several hundred plants. This population was not observed in 2001 but was observed in the 2005 surveys as approximately 200 plants within in a 175-square-foot area. An additional new occurrence was located during 2005 in the northwestern region of this portion of the project site and consisted of approximately 50 plants scattered in a 141-square-foot area.

Contra Costa Goldfields. During previous plant surveys, Contra Costa goldfields were observed in the Development Site, within the annexation area east of the Development Site, and within the remainder of the property south of Cordelia Road/Cordelia Street.

During surveys conducted in 2000 – 2002, one occurrence of Contra Costa goldfields was observed on the Development Site, near the northeast corner. Twenty to 30 plants were observed in a small depression within the seasonally saturated annual grasslands. This population was also found during the 2005 surveys, which also found an additional occurrence in the northeast region of the Development Site and three additional occurrences in the southwest portion of the Development Site. This new occurrence of Contra Costa goldfields in the northeast area consisted of 9 plants in a small depression within seasonally saturated grassland habitat. Of the three occurrences in the southwest portion, two were single plant occurrences located on the edge of seasonally saturated grassland habitat. The third occurrence consisted of approximately 50 plants scattered in a 583-square-foot area within the seasonally saturated grassland habitat adjacent to a man-made ditch.

During surveys conducted in 2000-2002, four occurrences of Contra Costa goldfields were observed within the annexation area east of the Development Site. Two occurrences, each consisting of a single plant, were located in two vernal pools in the northwest region of the property. Two additional occurrences were located in a larger vernal pool located in the southwest region of the property. These two occurrences each consisted of 10 to 20 plants near the upper edge of the pool basin. In 2005, ten occurrences of Contra Costa goldfields were located in this area, including four occurrences located in 2000 and six new occurrences. The four previously known occurrences included two relocated in the two small vernal pools in the northern region of the property and the two moderate sized occurrences of the 2000 surveys relocated in 2005 as single plant occurrences in the larger vernal pool in the south end of the property. Of the six new occurrences, one new occurrence was located in the large vernal pool in the south and consisted of a dense patch of approximately 100 plants in a 100-square-foot area. Five additional occurrences were located in the north-central region of the property along the west edge of the brackish marsh habitat, including an occurrence of 20 plants in a 100-square-foot area; an occurrence of 15 plants in a 100-square-foot area; an occurrence of 100 plants in a 536-square-foot area; an occurrence of 30 plants scattered in a 728-square-foot area; and an occurrence of 100 plants scattered in a 13,027-square-foot (0.3 acre) area.

During surveys conducted in 2000 – 2002 south of Cordelia Road/Cordelia Street, Contra Costa goldfields were observed in several scattered colonies in the northwestern portion of the property that can be grouped into four primary areas. A few thousand plants were observed in five small, shallow vernal pools just south of Cordelia Road and west of Ledgewood Creek. Several thousand plants were observed along a low-gradient, seasonally saturated grassland slope near the northwestern corner of the property. This slope is just above a low-lying area that supports seasonal alkali marsh. It appears that the goldfields occupy an intermediate area along the slope gradient, which provides sufficient prolonged soil saturation without excessive soil salinity. In addition to these occurrences, a few thousand plants were observed across a broad area in the far western portion of the project site. This area consists of a terrace surrounding a small hill. The terrace has undulating mound/basin topography. The basins are generally small, less than 5 feet in diameter. Contra Costa goldfields occurred as individuals and small clusters within some of these basins.

The four previously mapped, large, scattered colonies of Contra Costa goldfields were located again during the 2005 surveys. The four colonies are more accurately mapped as 3 large polygons, 14 smaller polygons, and 1 single plant occurrence. The general locations of the 2005 occurrences are similar to the year 2000 surveys. The three large occurrences included an occurrence of roughly 7.7 million plants in a 5.2-acre area; an occurrence of 10,000 plants in a 3.5-acre area; and an occurrence of 3,000 plants scattered in an 8.5-acre area. The 14 smaller polygons vary from as few as 5 plants scattered in a 150 square-foot area to a dense patch of 10,000 plants in a 0.25-acre area.

The USFWS Final Designation of Critical Habitat for Four Vernal Pool Crustaceans and Eleven Vernal Pool Plants in California and Southern Oregon (August 11, 2005) included designation of critical habitat for Contra Costa goldfields. The subject project site is included in the critical habitat designation.

Delta Tule Pea. Delta tule pea was not found anywhere within the proposed annexation area (including the Development Site) during the 2000 – 2002 or 2005 surveys but was observed in 2005 at one localized area south of Cordelia Road/UPRR at the south end of the area along the eastern bank of Peytonia Slough. This occurrence was estimated to include 400 plants.

Saline Clover. During surveys conducted in 2000 – 2002, one large occurrence of saline clover was observed at the Development Site around the upper margins of the large vernal pool. The population was estimated at several hundred plants. In addition, 16 occurrences of saline clover were located during 2005 surveys in this portion of the site. The original occurrence located in 2000 was mapped in 2005 as seven individual occurrences surrounding the large vernal pool in the eastern region portion of the site. These seven mapped points and polygons consisted of approximately 200 plants scattered in a total area of 15,292 square feet, or approximately 0.35 acre. Seven additional occurrences were located in or on the edge of the seasonally saturated grassland habitat in the northwest region of the Development Site. These seven occurrences consisted of three occurrences each with a single plant; a small polygon of 15 plants scattered in a 100-square-foot area; 20 plants scattered in a 971-square-foot area; 40 plants scattered in a 1,241-square-foot area; and 100 plants scattered in a 0.69-acre area. Two additional occurrences were located south of the Union Pacific Railroad line in the southern region of the Development Site within a weedy (ruderal pasture) annual grassland habitat. One occurrence consisted of 15 plants scattered in a 0.17-acre area and another consisted of 50 plants scattered in a 0.12-acre area. Saline clover is known to bloom sporadically from year to year based on weather conditions and is often not present in the same location each year. The increase in number of plants from 2000 to 2005 is therefore to be expected.

A total of three occurrences of saline clover were located within the annexation area east of the Development Site during the 2005 surveys. One occurrence of 15 plants in a 100-square-foot area was located in the large vernal pool in the southern region of the property. Two additional occurrences were located in the small vernal pools in the northern region of the property. These include 30 plants in a 231-square-foot area and 5 plants in a 100-square-foot area.

Saline clover was not found in the annexation area during the 2000 – 2002 surveys, but a total of 40 occurrences of saline clover were located within the area south of Cordelia Road Cordelia Street during the 2005 survey. Most of the occurrences were located in seasonally saturated annual grasslands in the western region of the property, with minor amounts in nearby upland annual grasslands and a few occurrences were located in the shallow vernal pools in the far northeast region of the property. Together the 40 occurrences total approximately 6,300 plants in a total combined area of 19.036 acres.

Suisun Marsh Aster. Suisun Marsh aster was not observed at the Development Site during the 2000 – 2002 and the 2005 surveys, but was observed in scattered locations along the southern portion of the drainage ditch that traverses the portion of the annexation area east of the Development Site during the previous late-season surveys conducted on August 15, 2000, and August 8, 2005. The ditch is subject to daily tidal fluctuations of mildly brackish waters. Total population size was estimated at 200 plants.

Suisun Marsh aster was observed in several scattered colonies along slough banks in the southern and southeastern portions of the area south of Cordelia Road and Cordelia Street during late-season surveys conducted on August 15, 2000, and August 8, 2005. Dense colonies were also observed along the two ditches on the property. Total population size of all colonies was estimated at 4,000 plants.

HBG 2021. Surveys were performed in accordance with state and federal plant survey protocols (CDFW 2018 and USFWS 2005). The methodology specifically followed the Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities prepared by the CDFW dated March 20, 2018.

Protocol rare plant surveys were conducted by Terry Huffman, PhD, of Huffman-Broadway Group, Inc. in the spring and summer of 2021 during the flowering periods of target special status species when they would be identifiable. HBG botanist Dr. Huffman conducted three separate surveys on April 23, May 19, and June 18, 2021. The timing of the 2021 protocol field surveys was based on consideration of both the blooming period for the special status species which were identified as having a potential to occur within the habitat type or types in the project site, and the soil moisture conditions which allow for adequate plant growth. Given the size of the project site it was divided into survey grid areas where Dr. Huffman conducted pedestrian surveys within each survey grid to allow for thorough visual ground observations to be made throughout the various plant communities within the entire 482-acre project site.

Prior to conducting the field surveys, the CNDDB, the USFWS Endangered Species Program Species List, and Calflora were consulted to develop a target list of sensitive plant species and sensitive natural communities potentially present within the project site. Previous rare plant surveys conducted on the project site (described above) were also reviewed. Reference sites were established using the Goldfields Conservation Bank located in Fairfield bound between Walters Road and Airbase Parkway and known mapped sensitive species occurrences within the project site. The Jepson herbarium collection was also consulted.

Survey Results. Special status plant species were found during the April 23, May 19, and June 18, 2021, botanical field surveys. The following plants were found in flower or their remnant plant parts following flowering were found in previously mapped areas within the project site on April 23, May 19, and June 18, 2021: Suisun Marsh aster (*Aster lentus*), Alkali milk-vetch (*Astragalus tener var. tener*), Delta tule pea (*Lathyrus jepsonii var. jepsonii*), Contra Costa goldfields (*Lasthenia conjugens*), and saline clover (*Trifolium depauperatum var. hydrophilum*). It should be noted that these same status plant species/plant populations were found in relatively the same locations during the biological survey work conducted by Vollmar Consulting during plant surveys conducted from 2000-2002 and 2005. This provides indication that the special status species populations found within the project site are stable and self-sustaining and have not been adversely affected by the recent drought or changing climatic conditions. It is also important to note that although the aquatic resources appear to provide suitable habitat on the Development Site, the Contra Costa goldfields populations are limited to less than 0.023 acre and has not expanded over the last 20 years. It is likely the soil type on the Development Site, sycamore silty clay loam saline, is not suitable for Contra Costa goldfields, which may be the reason the populations have remained and not expanded. It is also important to note the core population is restricted to the southwestern area of the project site which soil type is Pescadero silty clay loam, and the majority of Contra Costa goldfields population ends once the soil type changes to the sycamore silty clay loam saline.

Helm Biological Consulting 2022, In Progress: Helm Biological Consulting is currently conducting a detailed special-status plant survey on the Managed Open Space. The survey will include an update to the number of plants and occurrence size similar to the survey conducted by Vollmar Consulting conducted in 2000-2005.

4.9.2 Other Special Status Plant Species

No other special-status plants species have been observed in the proposed 482-acre project. The vernal pools provide potential habitat for several special-status plant species, such as dwarf downingia (*Downingia pusilla*), Bogg's Lake hedge-hyssop (*Gratiola heterosepala*), and legenere (*Legenere limosa*). Most known occurrences in the region of these species are several miles to the east. None of these species was observed during field surveys. Other vernal pool species, including two Orcutt grasses, Colusa grass (*Neostapfia colusana*), and Crampton's tuctoria (*Tuctoria mucronata*), were considered target species during surveys. These two grasses typically occupy large and/or deep vernal pools that remain inundated into the summer during an average rain year. The large pool at the Development Site may be considered possible habitat for Colusa grass and Crampton's tuctoria, however, surveys over the entire site over several years yielded negative results for these species. The perennial brackish marsh in the southeastern area near Peytonia Slough is designated as critical habitat Unit 2 for the Suisun thistle, however surveys over the entire site over several years yielded negative results for this species.

The alkali seasonal wetlands on the site provide potential habitat for several of the special-status plant species, especially San Joaquin spearscale (*Atriplex joaquiniana*) and other species

of saltbush (*Atriplex spp*.). San Joaquin spearscale is known from Travis Air Force Base (located a few miles northeast) in habitat similar to that observed on the project site. However, since none of these species was observed during field surveys, they are unlikely to occur on the project site.

Several of the species are associated with marsh habitat along brackish sloughs and bay margins including Suisun thistle (*Cirsium hydrophilum var. hydrophilum*), soft bird's-beak (*Chloropyron mollis ssp. mollis*), and Mason's lilaeopsis (*Lilaeopsis masonii*). Suisun thistle is known from only two locations, including one along lower Peytonia Slough. There is potential habitat for this species along the slough channels in the southern portion of the portion of the property south of Cordelia Road and the UPRR, but surveys over the entire project site over four years yielded negative results for these species. Mason's lilaeopsis and soft bird's beak are more likely to occur south of the property closer to Grizzly Bay though there is low potential for them to occur along sloughs in the far southern portion of the project site. As with Suisun thistle, there is the possibility these species could be present but were not seen during field surveys due to the difficulty of accessing this area. However, it should be noted that this area is not proposed for development.

It is noteworthy that the three large, mapped occurrences of Contra Costa goldfields within the area south of Cordelia Road and Cordelia Street are included within an area that contains a high cover of wildflower species associated with seasonally saturated grasslands and vernal pools. These fields are notable for their lack of introduced annual grasses. In addition to the high cover of Contra Costa goldfields, other common wildflower species include California goldfields (Lasthenia californica), smooth goldfields (*Lasthenia glaberrima*), varieties of cowbag clover (*Trifolium depauperaturm var. amplectens* and *Trifolium depauperaturm var. depauperatum*), variegated clover, (*Trifolium variegatum*), butter and eggs (*Triphysaria eriantha*), little owl's clover (*Triphysaria pusilla*), Valley tassels (*Castilleja attenuata*), Vasey's coyote-thistle (*Eryngium vaseyi*), flat-faced downingia (*Downingia pulchella*), brass buttons (*Cotula coronopifolia*), and stipitate popcorn flower (*Plagiobothyrs stipitatus var. micranthus*). The native vernal pool grass, California semaphore grass (*Pleuropogon californicus*), is a common associate in the lower depressions within the seasonally wet areas. The three large polygons mapped as Contra Costa goldfields in Figure 11 are also the boundaries of these areas south of Cordelia Road with a high incidence of native species.

4.10 Waters of the United States

4.10.1 Corps Jurisdictional Determinations

Vollmar Consulting conducted an investigation of the geographic extent of possible wetlands and other types of waters of the United States on the parcels north of Cordelia Road that was subsequently verified by the USACE on March 5, 2003, and May 16, 2003, under USACE file No. 26613N, and the parcel south of Cordelia Road, which was verified by the USACE on January 27, 2004, under USACE file No. 27207N. Since the verified wetland delineations did not include the rights of way for Cordelia Road and Pennsylvania Avenue, HBG conducted a delineation to

include these areas and to re-verify the January 27, 2004, verification. This re-verification of the 389-acre Review Area was verified by the USACE on July 2, 2008, under USACE file No. 2005-29818N.

During 2020 and 2021 HBG conducted an aquatic resource reverification delineation in the summer of 2020, and winter and spring of 2021 that was verified as a Preliminary jurisdictional Determination on February 1, 2022, under USACE file No. SPN-2005-298180 (Appendix C).

4.10.2 Wetlands

Wetlands were identified by the above-described February 1, 2022, Corps Jurisdictional Determination letter to be present within the Managed Open Space (Appendix A, Figure 12).

4.10.3 Other Waters of the United States

No "Other Waters" of United States were identified by the above-described Corps Jurisdictional Determination letter to be present within the mitigation site.

4.11 Waters of the State

4.11.1 Wetlands (RWQCB)

The wetlands described in the February 1, 2022, Corps Jurisdictional Determination letter are also subject to the RWQCB Porter-Cologne Act jurisdiction (Appendix A, Figure 12).

4.11.2 Other Waters of the State (RWQCB)

No "Other Waters" of the State subject to the RWQCB Porter-Cologne Act jurisdiction are present within the mitigation site.

4.11.3 Lakes and Streams (CDFW)

No lakes or streams potentially subject to the CDFW Lake and Streambed Alteration Agreement program are present within the mitigation site.

4.12 Hazardous Materials

A Phase I Environmental Site Assessment for the site will be performed prior to the development of the detailed final mitigation plan.

4.13 Cultural Resources

A formal cultural resources survey for the site will be performed prior to the development of the detailed final mitigation plan.

5.0 DETERMINATION OF MITIGATION AMOUNT

5.1 Impacts

Review of the Biological Resource Report prepared for the Project indicates that the Project will impact:

(2) Wetland habitat to include alkali seasonal wetland, vernal pool, seasonally saturated annual grassland, and perennial brackish marsh,; and

(3) Four special status plant species: federally listed endangered and CNPS List 1B.1 Contra Costa goldfields, in addition to alkali milk-vetch, saline clover, and Suisun Marsh aster, all three designated on CNPS List 1B.2.

The location of impacts to wetland habitat and the four special status plant species resulting from construction of the proposed project are shown in Figure 13. The following provides an account of the special status plant species that will be impacted by the Project which occur in the described wetlands:

Contra Costa Goldfields

On the basis of the 2000 – 2002 and 2005 surveys conducted by Vollmar Consulting and the more recent 2021 survey conducted by HBG, approximately 8,445 individual Contra Costa goldfields, over an 18.36 acres area, are present within the 482 acre project site. Within the Development Site, an approximately 0.023 acre area occupied by approximately 102 individual Contra Costa goldfields would be directly impacted by the proposed project. The impact to 102 individual plants represents approximately 1.2% of the known population of Contra Costa goldfields or 0.13% of the known occupied area within the entirety of 482-acre project site.

An additional impact to Contra Costa goldfields would result from the placement of fill material within wetlands not occupied by Contra Costa goldfields but providing marginal habitat for the species. It is important to note that although the aquatic resources appear to provide suitable habitat on the Development Site, and the Development Site is within USFWS designated Contra Costa goldfields critical habitat Subunit 5G, the Contra Costa goldfields populations is limited to approximately 102 individual plants over a 0.023 acre area, and the population has not expanded over the last 20 years. It is likely the soil type on the Development Site, sycamore silty clay loam saline, is not suitable or is marginal at best for Contra Costa goldfields. This is likely the reason the populations has remained at approximately 102 individual plants over 0.023 acres and not expanded over time. It is also important to note the core population on the project site is within the Managed Open Space and supports over 8,000 individual plants over 17 acres of land and is restricted to the south western area of the project site within the Pescadero silty clay loam soil type. The core population on the project site abruptly ends once the soil type changes to the sycamore silty clay loam saline. The term “suitable Contra Costa goldfields habitat” refers to the Pescadero silty clay loam soil type and marginal refers to sycamore silty clay loam saline

The loss of the seasonally saturated annual grassland, alkali seasonal wetland, and vernal pool vegetation types within the Development Site represents the loss of marginal Contra Costa goldfields habitat. Loss of marginal Contra Costa goldfields habitat would total 38.00 acres, which equals the amount of impacted jurisdictional wetlands within the project Development Site.

In summary, development of the proposed project will directly impact 102 individual Contra Costa goldfields plants over an approximately 0.023 acre area of occupied habitat for Contra Costa goldfields, and 38.00 acres of marginal habitat for Contra Costa goldfields.

Alkali Milk-Vetch

This species was found in areas of seasonally saturated annual grassland within the Development Site. In 2005, a year with extremely high rainfall, it was also found on the Development Site in three locations of ruderal annual grassland habitat. On the basis of 2005 survey data and additional survey by HBG in 2021, approximately twelve (12) individual alkali milk-vetch plants will be impacted by the proposed project development. In addition, the proposed project development will impact 16.32 acres of seasonally saturated annual grassland habitat constituting suitable habitat for alkali milk-vetch.

In summary, development of the proposed project will directly impact approximately 12 individual alkali milk-vetch plants over an approximately 0.016 acre area, and 16.32 acres of seasonally saturated annual grassland habitat suitable to support alkali milk-vetch.

Saline Clover

Saline clover was observed around the upper margins of the large vernal pool within the Development Site and in seasonally saturated annual grassland. The loss of the vernal pool habitat and the seasonally saturated annual grassland habitat within the project development footprint represents a potential loss of 405 individual saline clover plants over a 1.10 acre area. Impacts to 1.10 acres of the onsite population of saline clover are anticipated as a result of project implementation, based on the 2000 – 2002 and 2005 surveys and the HBG survey for 2021.

In summary, development of the proposed project will directly impact 405 individual saline clover plants over a 1.10 acres area, and 14.09 acres of vernal pool and 16.32 acres of seasonally saturated annual grassland habitat suitable to support saline clover.

Suisun Marsh Aster

In the 2000 – 2002 and 2005 special status plant surveys and the 2021 survey by HBG, the Suisun Marsh aster was observed in scattered locations along the perennial brackish marsh slough channel that traverses the north eastern portion of the project site. This population is estimated at 200 plants. Based on the current Development Site footprint a stormwater culvert will be constructed on the western bank of the slough channel covering an approximately 0.002 acre area. Construction of the culvert could potentially impact the Suisun Marsh aster at the

culvert's location. The majority of the populations of Suisun Marsh aster, approximately 4,000 individuals, was observed in scattered colonies along slough banks in the southern and southeastern portions of the property. No impact to Suisun Marsh aster would occur in this area which is proposed as part of the project as Managed Open Space.

In summary, development of the proposed project could directly impact a few individual plants of Suisun Marsh aster if they occur at the location of the proposed stormwater culvert.

The following table summarizes acreage impacts to the above listed environmental resources for the Highway 12 Logistics Center Project:

Table 3. Project Impacts Resulting from the Highway 12 Logistics Center Project

Environmental Resource Impacted	Impact Amount (Acres)
WETLAND HABITAT IMPACTED	
Perennial Brackish Marsh	0.002
Alkali Seasonal Wetland	7.58
Vernal Pool	14.09
Seasonally Saturated Annual Grassland	16.32
SPECIAL STATUS SPECIES HABITAT IMPACTED	
Contra Costa Goldfields (occupied habitat)	0.023
Alkali Milk-Vetch (occupied habitat)	0.016
Saline Clover (occupied habitat)	1.10
Suisun Marsh Aster (occupied habitat - perennial brackish marsh)*	0.002

* Suisun marsh aster habitat will be impacted however impacts to individual Suisun Marsh Aster plants may be avoided during construction.

5.3 Proposed Mitigation Strategy

The proposed compensatory mitigation strategy is to provide mitigation through permittee responsible mitigation (PRM) within the 381.66 Managed Open Space site.

Table 4 provides proposed mitigation ratios to offset impacts to wetlands and CCG habitat. Once the project goes through the permitting process with the USACE and RWQCB and consultation with the USFWS and CDFW is complete this table will be updated.

Table 4. Project Mitigation Proposed Using Permittee Responsible Mitigation Site				
Environmental Resource Impacted	**Impact Amount (Acres)**	**Mitigation Type**	**Ratio**	**Acres**
WETLANDS HABITAT				
Perennial Brackish Marsh	0.002	Establishment	1:1	0.002
Alkali Seasonal Wetland	7.58	Establishment	1:1	7.58
Vernal Pool	14.09	Establishment	1:1	14.09
Seasonally Saturated Annual Grassland	16.32	Establishment	1:1	16.33
Total	**NA**	**NA**	**NA**	**38.002**
SPECIAL STATUS SPECIES HABITAT				
Contra Costa Goldfields	0.023	Establish habitat to support approximately 102 CCG plants.	1:1	0.023
Contra Costa Goldfields	0.023	Preservation of occupied habitat	739:1	17
Contra Costa Goldfields (marginal habitat)	38.00	See establishment for alkali seasonal wetland, vernal pool, and seasonally saturated annual grassland habitat above	1:1	NA
Alkali Milk-Vetch	0.016	Preservation of the 0.007 acre of seasonally saturated annual grassland habitat occupied with approximately 250 alkali milk-vetch plants	0.5:1	0.007
Alkali Milk-Vetch (potential habitat)	16.32-seasonally saturated annual grassland	See establishment for seasonally saturated annual grassland habitat above.	1:1	NA
Saline Clover	1.10	Preservation of occupied habitat that supports a minimum of 405 individual plants	1:1	1.10
Saline Clover	16.32-seasonally saturated annual grassland and 14.09-vernal pool	See establishment for seasonally saturated annual grassland and vernal pool habitat above.	1:1	NA
Suisun Marsh Aster	0.002	Preservation of 0.002 acre of occupied habitat.	1:1	0.002
Suisun Marsh Aster (suitable habitat - perennial brackish marsh)	0.002	See establishment of 0.002 acre of perennial brackish marsh habitat above.	1:1	NA
Total	**NA**	**NA**	**NA**	**18.134**

6.0 CONSTRUCTION IMPLEMENTATION PLAN

The following presents the Construction Implementation Plan for the construction of perennial brackish marsh, alkali seasonal wetland, vernal pool, seasonally saturated annual grassland, and rare plant habitats. Section 6.1 provides a construction overview, adequate hydrology determination, a general description of the detailed construction plan, and actions to be taken prior to construction; Section 6.2 discusses listed species protective measures; Section 6.3 discusses actions to be taken before disturbing soil or vegetation; Section 6.4 describes activities occurring during construction; Section 6.5 describes post-construction activities; Section 6.6 discuss adaptive management procedures to be under taken during construction, if needed; Section 6.7 describes required project authorizations; and Section 6.8 describes the anticipated construction schedule.

6.1 Wetland Habitat Design

6.1.1 Overview

The goal of this plan is to establish perennial brackish marsh, alkali seasonal wetland, vernal pool, seasonally saturated annual grassland, Contra Costa goldfields, alkali milk-vetch, saline clover, and Suisun Marsh aster habitats. This will be accomplished by excavating areas adjacent to existing populations of Contra Costa goldfields, alkali milk-vetch, saline clover, and Suisun Marsh aster and seeding with these species. The seed source will be collected prior to the implementation of the ground disturbing activities from plants within the impacted wetland habitats in the Development Site. In addition, the upper 3 to 4 inches of soil excavated within the wetland habitats occurring in the Development Site will be excavated and stock-piled separately by habitat type. This soil inoculum will be spread over the surface of the excavated wetland habitat areas. The excavation and grading work will be done during the dry season. Excavated soils will be placed on-site within an upland location. The construction design seeks to minimize site grading / ground-disturbing impacts to include access routes to the maximum extent practicable.

6.1.2 General Design Specifications

Alkali Seasonal Wetland & Seasonally Saturated Annual Grassland:

1. Depth 6 to 12 inches[7]
2. Minimum 5:1 side slope.
3. Total surface area of constructed alkali seasonal wetland habitat from top of slope = 7.58 acres.
4. Total surface area of constructed seasonally saturated annual grassland habitat from top of slope = 16.32 acres.

[7] Estimated range of depth shown. Actual constructed depth to be determined using LIDAR-based topographic mapping with 0.5 foot contour intervals and onsite spot elevations documented by a registered surveyor. . During construction grade checkers will use engineer-grade, laser-guided instrumentation to determine accuracy of graded surface elevations being graded.

Vernal Pool Habitat:

- Depth 18 to 24 inches[8]
- Minimum 5:1 side slope.
- Total surface area of constructed vernal pool habitat from top of slope = 14.09 acre.

Perennial Brackish Marsh:

- Depth 4-5 feet
- Maximum 2:1 slope.
- Total surface area of constructed perennial brackish marsh from top of slope = 0.002.

6.1.3 Adequate Hydrology Determination. To determine if there is sufficient water from seasonal direct precipitation and stormwater flows for ponding conditions suitable for wetland species development to include perennial brackish marsh, alkali seasonal wetland, vernal pool, seasonally saturated annual grassland, Contra Costa goldfields, alkali milk-vetch, saline clover, and Suisun Marsh aster habitats to occur within the constructed pool, a water balance was developed for the Site. The water balance assumes that the pool is essentially a "basin" that can be filled at the rate of direct precipitation and stormwater flows (P) and can drain at the rate of evapotranspiration (ETo) and infiltration (I). To determine the water balance, the following equation is solved for S, where S is the change in storage, that is, the net water available for ponding:

$$P - I - ETo = S$$

For ponding to occur within the constructed habitat establishment area, the amount of precipitation and associated stormwater runoff (P) must exceed the evapotranspiration (ETo) and infiltration (I) rate.

HBG staff reviewed the following local precipitation, evapotranspiration (ETo) and soils data to characterize constructed pool hydrology conditions:

1. *Precipitation*. Average monthly precipitation data over the 50-year period of record (1971-2021) from NRCS WETS Station Fairfield, ID No. 042934.
2. *Evapotranspiration*. California Irrigation Management Information System (CIMIS) ETo data for ETo Zone 6, Upland Central Coast and Los Angeles Basin, from the State of California Department of Water Resources (ETo Zones Brochure). The nearest Zone 6 CIMIS station is CIMIS Concord #170, approximately 15 miles south of the PRM site near the intersection of Bates Avenue and Port Chicago Highway (38.015372 / -122.02028).

[8] Estimated range of depth shown. Actual constructed depth to be determined using LIDAR-based topographic mapping with 0.5 foot contour intervals and onsite spot elevations documented by a registered surveyor. During construction grade checkers will use engineer-grade, laser-guided instrumentation to determine accuracy of graded surface elevations being graded.

3. *Infiltration*. To investigate infiltration rate, soil information was obtained from the Soil Survey of Solano County, CA. prepared by the NRCS.

The data presented in the table below demonstrate that the Suisun City area generally receives most of its rainfall from November through March. On average, nearly 85 percent of the annual precipitation falls in those five months. Analysis of the data indicates that average precipitation received from November through February exceeds the rate of evapotranspiration and would allow for long periods of continuous ponding that would be suitable for wetland habitat development on a clay soil whereby the soil infiltration rate is low enough to result in water not lost to evapotranspiration being ponded in the constructed pool.

Table 5. Monthly Average Precipitation for the 1971 – 2021 Period of Record[1] and Reference Evapotranspiration Zone Data, ETo Zone 6, Upland Central Coast and Los Angeles Basin

Month	Average Precipitation[1]	ETo	Precipitation - ETo
January	4.53	1.86	2.67
February	4.44	2.24	2.20
March	3.39	3.41	-0.02
April	1.32	4.80	-3.48
May	0.58	5.58	-5.00
June	0.12	6.30	-6.18
July	0.02	6.51	-6.49
August	0.04	6.20	-6.16
September	0.20	4.80	-4.60
October	1.30	3.72	-2.42
November	2.77	2.40	0.37
December	4.56	1.86	2.70
Total Average Annual Precipitation	23.27		

[1] USDA WETS Station: Fairfield, CA 047965; [2] https://cimis.water.ca.gov/Content/pdf/CimisRefEvapZones.pdf

The majority of the wetland and plant habitat will be constructed in an area that has been mapped and described by the NRCS as sycamore silty clay loam. This very deep silty clay loam is poorly drained and ponds in concave slopes. The soil exhibits very slow surface water runoff and very slow permeability.

Onsite soil pits or auger holes excavated by HBG confirm the presence of clays within the range described by the NRCS for the Site. The term permeability as used in NRCS soil surveys refers to the ability of a soil to transmit water or air and in the soil survey this property being expressed as the soil saturated hydraulic conductivity (*Ksat*). [9] Current NRCS soil surveys express soil permeability as the capacity of the most limiting layer to transmit water (Ksat) with clay soil textures having the lowest permeability / *Ksat* values, which under field conditions results in ponding within closed depressional areas. In Pescadero Clay soils, this is the poorly drained clay layer which has the capacity of the most limiting layer (clay) to transmit water (infiltration rate) (*Ksat*) is Very low to moderately low (0.00 to 0.01 in/hr). In Sycamore silty clay loam, saline soils, this is the poorly drained clay layer which has the capacity of the most limiting layer (clay) to transmit water (infiltration rate) (*Ksat*) is Moderately low to moderately high (0.06 to 0.20 in/hr).

At the Project Site, the infiltration component of the water balance is, therefore, negligible in comparison to precipitation and evapotranspiration that occurs November through March. In addition, depth to groundwater is reported at about 4 to 85 inches below the soil surface for Pescadero silty clay loam, 0 percent slopes, and about 36 to 60 inches below the soil surface for Sycamore silty clay loam, saline (NRCS 2022). The results of the water balance indicate that at a minimum, in normal and above-normal precipitation years, the formation of ponding within the clay soils of the wetland to be constructed is expected to occur for long to very long periods of time[10].

6.1.4 Detailed Construction Plan

A detailed construction plan with topographic contours at 0.5 foot minimum will be prepared during the permitting process and after input from the agencies has been received. The detailed plan will include plan and section view drawings and construction notes prepared by a professional engineer. The temporary site access route to the construction site and temporary construction area will be designated together with the location of wetland and sensitive plant species habitat exclusion fencing. Excavated soils may be placed in upland areas or used on the commercial development site.

6.1.5 Before Construction Activities Begin

The following shall occur before construction activities begin:

[9] Saturated hydraulic conductivity (*Ksat*) is the ease with which pores of a saturated soil transmit water. Formally, the proportionality coefficient that expresses the relationship of the rate of water movement to hydraulic gradient is Darcy's Law, which describes the rate of water movement through porous media.

[10] NRCS definitions: long duration is a duration class in which ponding for a single event ranges from 7 days to 1 month (≤ 28 days); very long duration is s a duration class in which ponding for a single event is greater than 1 month (> 28 days).

1. Identify the Landowner's Designated Representative / Authorized Agent responsible for communications with authorizing agencies (Corps, RWQCB, BCDC, CDFW and the USFWS) and overseeing compliance with the construction plan.
2. Identify the Qualified Biologists and the scope of their authority.
3. Identify Qualified Land Manager for the Permittee Responsible Mitigation Site.
4. Qualified Biologists, Construction Manager / Project Engineer, and Landowner or Landowner's Designated Representative meet and (1) review the construction plan for consistency with all agencies permit conditions, USFWS Biological Opinion (USFWS BO) and CDFW Incidental Take Permit (ITP) or Consistency Determination (CD)[11] conservation measures and (2) agree upon a plan of action to move forward with implementing the construction plan.

6.2 Listed Species Protective Measures

The USFWS BO and CDFW ITP or CD anticipated to be issued for the Highway 12 Logistics Center Project will have Conservation Measures to be followed to minimize effects on federal and state listed Contra Costa goldfields species prior to and during construction of the project and PRM site(s) for the establishment of Contra Costa goldfields. The USFWS BO and CDFW ITP or CD conditions will be incorporated to this MMP by reference.

6.2.1 Delineation of Access Routes and Construction Work Area

Access routes and number and size of staging and work areas will be limited to the number necessary to achieve the project goal. The access route and construction area will be clearly marked with construction staking and flagging, silt fencing, and / or orange construction fencing prior to initiating disturbing soil or vegetation.

The Qualified Biologists will approve the locations of access fencing in the field. The Construction Manager, with approval of the Qualified Biologists, will clearly mark the following areas with orange construction fencing, silt fencing, rope barriers, or staking with construction flagging:

- The outside boundary of all travel routes within the project Site to minimize the area traveled on by vehicle traffic to and from the habitat construction area.
- The outside boundary of staging areas for equipment and materials.

[11] Incidental Take Permits (ITP) - 2081 (b), Section 2081 subdivision (b) of the Fish and Game Code allows CDFW to authorize take of species listed as endangered, threatened, candidate, or a rare plant, if that take is incidental to otherwise lawful activities and if certain conditions are met. These authorizations are commonly referred to as incidental take permits (ITPs). Consistency Determination (CD) - 2080.1, If a species is listed by both the federal Endangered Species Act and CESA, Fish and Game Code section 2080.1 allows an applicant who has obtained a federal incidental take statement (federal Section 7 consultation) or a federal incidental take permit (federal Section 10(a)(1)(B)) to request that the Director of CDFW find the federal documents consistent with CESA. If the federal documents are found to be consistent with CESA, a consistency determination (CD) is issued, and no further authorization or approval is necessary under CESA.

- Wetland habitats immediately adjacent to the habitat construction area will be staked or fenced temporarily during all construction-related activities (including survey work) to prevent the transport of fill material into wetland areas.

- Sensitive plant species habitats immediately adjacent to the habitat construction area will be staked or fenced temporarily during all construction-related activities (including survey work) to prevent the transport of fill material into these habitat areas.

Other measures that may be taken during construction to prevent excavated soil from entering adjacent wetlands include temporary placement during construction of area tarps or fabric, sterile straw bales or rolls, silt fencing, or other suitable barrier materials along the perimeter of construction limit boundaries.

6.3 Before Disturbing Soil or Vegetation

This section describes the activities to be completed prior to habitat construction. The USFWS BO and CDFW ITP or CD conservation measures will also be followed as they pertain to activities to be conducted prior to disturbing soil or vegetation.

6.3.1 Establish Permanent Monitoring Photo Points and Take Preconstruction Photos

Using a GPS, the Qualified Biologists will establish permanent monitoring photo points within 30 days prior to start of construction to document: (1) habitat conditions within the overall mitigation site, (2) the habitat construction areas, and (3) the construction access route. Landscape view photographs of ground conditions will be taken at approximate north, south, east, and west view directions around each permanent photo point. The location of each photo point will be memorialized using a hand-held GPS unit with sub-meter accuracy. At a minimum, the photos shall include:

1. Gate entrances.
2. Two representative photographs of the access route to the construction site.
3. North, South, East, and West representative locations along the perimeter of the constructed habitat locations with planned unimpacted edge also showing.
4. North, South, East, and West representative locations at corner and mid-way points along the Permittee Responsible Mitigation Site boundary.

The permanent photo point locations will be memorialized using a hand-held GPS unit with sub-meter accuracy. These photo points will also be used during the Interim and Long Term Management Periods. Base line and subsequent performance monitoring, long-term monitoring, and conservation easement compliance reports will include: (1) a figure showing photo point locations and direction of view, (2) a table included with either the figure or in a table provided separately with latitude / longitude coordinates in six place decimal degrees for each photo point, and (3) representative photos taken at the permanent photo point locations with a photo caption describing the direction of view (compass bearing). All photos used in report documents will provide the location in terms of latitude and longitude in six place

decimal degrees and direction of view.

6.3.2 Prepare SWPPP, if necessary, and Obtain Coverage under NPDES Construction General Permit

The Construction Manager will ensure that a Storm Water Pollution Prevention Plan (SWPPP) is prepared, if required, for any construction or demolition activity, including, but not limited to, clearing, grading, grubbing, or excavation, or any other activity that results in a land disturbance of equal to or greater than 1.0 acre. If it is determined that a SWPPP must be prepared for the Site, the Construction Manager will obtain coverage under the State Water Resources Control Board Construction General Permit, which requires the property owner to electronically file Permit Registration Documents (PRDs) through the State Water Board's Stormwater Multi-Application and Report Tracking System (SMARTS) website. PRDs consist of the Notice of Intent, Risk Assessment, Post-Construction Calculations, a Site Map, the SWPPP, a signed certification statement by the Legally Responsible Person, and the first annual fee. The SWPPP would be prepared by a Qualified SWPPP Developer. If a SWPPP is not found to be necessary, the Construction Manager and Qualified Biologists will ensure that appropriate Best Management Practices (BMPs) will be implemented throughout the project.

6.4 Activities During Construction

This section describes the habitat construction activities to be conducted. The USFWS BO and CDFW Conservation Measures shall also be followed as pertains to activities to be conducted while disturbing soil or vegetation.

6.4.1 Timing

Grading and clearing shall be conducted between May 15 and October 15 and only when soils are dry. If more time is needed to complete ground disturbing activities, the work period may be modified in writing on a week-by-week basis by the authorizing agency or agencies.

Note: Requests for a work period extension shall: 1) describe the extent of work already completed; 2) detail the activities that remain to be completed; 3) detail the time required to complete each of the remaining activities; 4) provide photographs of both the current work completed and the proposed site for continued work; and 5) include an assessment of additional biological impacts as a result of the work extension.

6.4.2 Install and Maintain Erosion Control Measures

The Construction Manager and Qualified Biologists will ensure that all work will be done during the dry season only when the soils are dry, and no rain is predicted for the next 48 hours. If necessary, install and maintain straw wattles and silt fencing along all permanent and temporary construction areas to prevent sediment from being transported into adjacent wetlands during construction. Use only certified, weed-free, imported erosion-control materials. The use of erosion control materials potentially harmful to small animal species, such as monofilament netting (erosion control matting) or similar material, is prohibited. As necessary, upgrade entrances to the Site with 6 inches of coarse aggregate to prevent soil displacement that could lead to future sedimentation and erosion problems.

To prevent sedimentation in existing wetlands during construction activities, appropriate erosion control measures will be implemented. Sterile straw will be placed on bare soil areas following Site grading activities. The Construction Manager or subcontractor(s), in coordination with the Qualified Biologists, may also use straw bales, straw rolls, or other suitable barrier materials to prevent sediments from leaving the excavation area. Corrective actions will likely involve removal of the soil or repair of the damaged wetland, under the supervision of the Qualified Biologists, using hand tools. The land surface will be restored to original grade.

All work will be conducted with rubber-tired equipment and vehicles to avoid rutting the land surface.

6.4.3 Biological Monitoring

During all phases of construction, the Qualified Biologists, working in close coordination with the Construction Manager, will monitor all construction activity to ensure that this Construction Plan and the engineer drawings in Appendix E are followed and that activities comply with local, state, and federal regulatory authorizations. The Qualified Biologists shall have the authority in coordination with the Construction Manager to stop work to avoid non-compliance with the conditions of the authorizations.

As part of the monitoring activity, habitat construction activity will be photo-documented to ensure that this Construction Plan and engineer drawings are followed and that construction activities comply with local, state, and federal regulatory authorizations. The Qualified Biologist will also provide worker training as specified by the USFWS BO and CDFW ITP or CD conservation measures.

6.4.4 Install Cut and Fill Staking

The area to be excavated and then rough and final graded will be staked and monitored by a grade checker during construction. The grade checker will assist both the Qualified Biologists in avoiding fill placement within abutting or adjacent jurisdictional waters.

6.4.5 Rough Grading

The habitat construction site will be mass excavated followed by fine excavation to shape the side slopes and bottom microtopography. To construct the depressional area, soil will be excavated from the location(s) shown on the detailed design drawings (Appendix E). Appendix E also provides a typical section(s) of the constructed depressional area(s). Equipment will consist of a rubber-tired backhoe and front-end loader which will remove soil and deposit it in a rubber-tired dump truck. The excavated soil will be removed from the site and used as fill material at one or more nearby construction sites.

The Table below provides estimated quantities of cut and fill material resulting from this project.

Table 7. Estimated Quantities of Material to be Excavated					
Project Component	**Area (Ft^2)**	**Depth (In)**	**Area (Acs)**	**Estimated Cut for Habitat Establishment (yd^3)**	**Estimated Fill Disposed of On Site (yd^3)***
Excavation for Perennial Brackish Marsh Habitat (soil excavated)	87.12	48	0.002	12.8	12.8
Excavation for Alkali Seasonal Wetland Habitat (soil excavated)	330,184.8	12	7.58	12,229.1	12,229.1
Excavation for Vernal Pool Habitat (soil excavated)	613,760.4	24	14.09	45,463.7	45,463.7
Excavation for Seasonally Saturated Grassland Habitat (soil excavated)	711,334.8	12	16.33	26,345.7	26,345.7
Total:	**1,655,367.12**	**NA**	**38.002**	**84,051.3**	**84,051.3**
* To be disposed of within development area.					

6.4.6 Finish Excavation

Finish grading will consist of grading along the edges of the mass excavated area to tie into the existing gently sloping topography. Equipment will consist of a rubber-tired backhoe and front-end loader which will remove soil material and deposit it in a rubber-tired dump truck. Construction activities will be monitored by a grade checker using a hand level or a laser device to ensure that the constructed pool has a uniformly flat bottom surface area with less than 1 percent slope. Erosion control materials will be installed as needed. The grade checker will be under the direction of the Qualified Biologists in coordination with the Construction Manager.

6.4.7 Planting

Following finished grading, the graded sites will be track-walked followed by spreading first the inoculum obtained from wetland habitats filled within the Development Site and finally seeded. More details related to location of seeding and seed treatment prior to seeding will be provided in the detailed mitigation planting plan during the permitting process.

6.4.8 Corrective Actions for Any Activities Found not to be in Compliance

Corrective actions may be taken for any activities found not to be in compliance such as under or over excavation, but only after obtaining approval from the Qualified Biologist.

6.4.9 Install Fencing, Signs, Gates, and Monuments

The Landowner is responsible for and will fund installation of signs and monuments where required and as described below; the Site is currently fenced and gated with suitable materials.

1. *Fencing*. Suitable protective fencing and gates are currently installed along the property line. Gates will always remain secured except as authorized by the Landowner, the Qualified Biologists, Land Manager, the Conservation Easement Grantee, the USFWS, CDFW, and local agencies for emergency access. To aid in wildlife movement, where feasible, existing fencing will be replaced by a 6-foot-wide “barbless” three-wire-strand section at approximate 500-foot intervals, to be funded by the Landowner.

2. *Signs and Gates*. Signs indicating "No Trespassing ~ Conservation Area" shall be installed along all property corners and gate locations. Installation of signs will also occur at approximate North, South, East, and West center points along the perimeter of the Property.

6.4.10 Temporary Access Planting and Irrigation

Temporary impacts will occur on the mitigation site due to construction access, excavation and grading, placement of species protection fencing, and placement of erosion control BMPs. Temporary impacts to the ground surface will be restored to pre-project or better conditions (original grade elevation and vegetation cover) using only a native seed mix. Seeded bare areas will be covered by loose sterile straw. Given the dense nature of the soil, dry rutting is not anticipated when they are dry. However, if necessary, prior to seeding, a shallow uncompacted layer of topsoil excavated and stockpiled during construction shall be used to restore the rutted area back to original grade elevation. The need for irrigation is not anticipated.

Note: To be considered a wetland temporary impact the Landowner understands that all temporary impacts must meet the following criteria: (1) recontouring and seeding of the area of temporary impact shall occur by October 31 of the year of the impact, and no additional ground disturbing activities shall occur; and (2) temporary impact sites have achieved vegetation success as described in the development and construction plan. Impacts not meeting this temporary impact definition are considered permanent impacts.

6.5 Post-Construction Activities

This section describes post-construction activities to be conducted following construction and seeding. The USFWS BO and CDFW ITP or CD conservation measures shall also be followed as pertains to activities to be conducted following ground and vegetation disturbance.

6.5.1 Take Post-Construction Photos

Required Action: Post-construction photographs will be taken by the Qualified Biologists to document sensitive habitat conditions within the limits of construction disturbance. Using a GPS, locate previously established permanent monitoring photo points; take photos of the same areas previously photographed to document habitat conditions at completion of construction.

6.5.2 Prepare As-Built Report

Required Action: Within 30 days after construction is complete, a post-construction as-built topographic survey (0.5-foot contour interval) will be prepared using a total station survey instrument or LiDAR data using a drone. Within 60 days following completion of site construction, the Construction Manager will prepare a draft as-built report and submit it to both the Qualified Biologists for review and approval. This report will include:

4 An as-built plan showing both pre- and post-construction topography with minimum 0.5-foot contour intervals.

5 Written description of construction activities, paying particular attention to any adjustments to the final grading plan with adjustments marked in red on the as-built plan.
6 Photo-documentation of construction activities, as well as identification of permanent photo point locations.

6.5.3 Review Construction Manager's As-Built Report

Within 15 days following receipt of the as-built report from the Construction Manager, the Qualified Biologists will review the as built report and coordinate with the Construction Manager if corrections need to be made. The as-built report will consist of subsections describing as-built details for each habitat constructed.

6.5.4 Prepare Final As-Built Report

Within 15 days of receipt of comments from the Qualified Biologists, the Construction Manager shall finalize and return the as-built report to the Qualified Biologists.

6.5.5 Submit As-Built Report

Within 90 days following completion of construction, the Qualified Biologists, will submit the report to the USACE, RWQCB, BCDC, USFWS, CDFW (Authorizing Agencies). The Qualified Biologists in coordination with the Construction Manager shall respond to any comments regarding the review of the as-built report.

6.6 Adaptive Management

It is expected that the Qualified Biologists / Land Manager may need to make minor adjustments to the plan while construction work is on-going given the uncertainties, unforeseen challenges, and dynamic nature of habitat construction. Major changes to the construction plan are allowed if it is determined that construction as planned in terms of general location, specified depth and side slopes, or planting cannot be successfully implemented in accordance with the agency approved Construction Plan. Modification of the construction plan requires written approval from the Authorizing Agencies and Conservation Easement Grantee. The role of the Authorizing Agencies and Conservation Easement Grantee will be to review and approve proposed plan modifications. Implementation of the revised construction plan requires written approval from the Authorizing Agencies, and Conservation Easement Grantee (email or letter). Depending on the nature of the agreed-upon modification, conservation measures required by the USFWS BO and CDFW ITP or CD will continue to be implemented.

The Land Manager, in consultation with the Landowner, will identify and determine appropriate adaptive construction measures to be proposed to the Authorizing Agencies and the Conservation Easement Grantee. The Authorizing Agencies, and Conservation Easement Grantee will review and approve them if acceptable. The measures may include site modifications, access route modification, and construction design changes. The adaptive construction measures need to ensure that the modified compensatory mitigation project

provides resource functions comparable to the original Construction Plan objective.

6.7 Schedule

Construction is proposed to begin when soils are dry either prior to or at the time ground disturbing activities for the development Project begins. The Qualified Biologists will begin construction monitoring at that time and continue monitoring throughout construction implementation.

Table 8. Construction Plan Implementation Schedule

Activity	Timing
Prepare detailed construction designs in collaboration with the USACE, RWQCB, & USFWS	Prior to site mobilization
Obtain amendment to BO if additional protective measures are required	Prior to site mobilization
Obtain USACE, RWQCB, & USFWS approval of detailed construction plan	Prior to site mobilization
Conduct environmental sensitivity training.	Prior to site mobilization and construction activities
Initiate & complete Site work	Approximately 45 days
Prepare as-built topographic survey (0.5-foot contours)	Within 20 days after completion of construction
Prepare and submit as-built report to Authorizing Agencies.	Within 90 days after completion of construction

7.0 MAINTENANCE PLAN

This section describes maintenance, site inspection, and follow-up actions for maintaining the mitigation site following implementation. The objective of inspections and follow-up maintenance actions, if needed, is to ensure that agency required performance standards are successfully achieved. Site inspection and maintenance actions are discussed in detail below.

7.1 Plan Overview

The Land Manager will implement the Maintenance Plan to ensure that the goals and objectives of the MMP are achieved. Activities will include maintenance monitoring and reporting and, if necessary, maintenance. Inspection activities are described in detail below.

During maintenance inspections, the Land Manager's tasks are to:

1. Look for potential problems that could prevent achievement of the goal and objectives of the MMP.
2. Ensure that appropriate corrective actions, if necessary, are undertaken.
3. Document observations and maintenance activities on standardized monitoring forms (Appendix G).
4. Avoid adverse impacts to wetlands while conducting maintenance activities.
5. Photo-document Site conditions, including (a) problems discovered during monitoring inspections and (b) annual site photographs taken during the springtime maintenance inspection period from the permanent photo points and directions of view established during base line monitoring. Memorialize photo locations using a hand-held GPS with submeter accuracy; and
6. Prepare report section as part of the annual monitoring report describing any maintenance actions taken and recommendation for any future maintenance action(s) that may need to be taken. The Land Manager will submit the annual monitoring report to the Corps, RWQCB, USFWS, CDFW, and Conservation Easement Grantee by January 31 of the following year.

7.2 Implementation

The Land Manager or their designated qualified representative will conduct periodic site inspections and inform the Landowner if maintenance actions are needed to ensure mitigation performance success. During site inspections, the Land Manager and / or their designated representative will look for potential problems that may result in the objectives of the MMP not being achieved and to ensure that appropriate corrective actions are taken, if found necessary. A record of management inspections and any maintenance actions undertaken will be submitted as part of the annual mitigation monitoring report. Any maintenance issues discovered will be photo-documented during monitoring inspections and the location mapped, all of which will be provided with the annual monitoring report. Follow-up photo-documentation will occur once the needed maintenance action(s) is completed.

Representative photographs of the mitigation site will be taken and documented as described in 7.3.7, below. If necessary, representative photos shall also be taken of any maintenance issue identified and provided together with a description of the problem and recommended action(s) to be taken to ensure performance criterion / criteria success.

7.3 Site Inspection and Maintenance Actions

This section describes the site inspection and maintenance actions that are to be performed. Site inspection and potential maintenance actions are described below. These actions include:

- Land Use Inspections and Maintenance Actions
- Trash and Debris Inspection and Maintenance Actions
- Vegetation Management Inspection and Maintenance Actions
- Fence, Gate, and Sign inspections
- Fuel Modification
- Mosquito Control

7.3.1 Land Use Inspection and Maintenance Actions

Maintenance visits will include inspection for and documentation of any evidence of vandalism or other encroachment that may interfere with successful achievement of wetland mitigation performance standards. The mitigation site will be monitored for signs of (1) excessive human disturbance such as heavy foot traffic, (2) removal of plantings, (3) off-road vehicle use, (4) gardening, (5) evidence of waste dumping, (6) sagging fencing wires as evidence of human access by climbing over fencing, (7) cut fence, and (8) cut gate chain and/or lock. Disturbances will be documented on monitoring forms along with remedial action being taken (e.g., fill tire ruts to original grade, remove garden plots, remove trash, and replanting).

7.3.2 Manmade Trash and Litter Inspection and Maintenance Actions

Although accumulation of manmade trash and litter is not anticipated to be a significant problem, inspections for and documentation of observed trash and litter will be made. Accumulated trash and litter that may interfere with successful achievement of wetland mitigation performance standards will be removed and disposed of at an appropriate County authorized landfill location.

7.3.3 Vegetation Management

The goal of vegetation management is to maintain a competitive advantage of beneficial upland and wetland plant species over exotic invasive annual plant species, including but not limited to noxious weeds, using allowable management methods. These methods include managed grazing; hand/mechanical removal of invasive weed species; hand cutting or mowing; focused grazing; and controlled herbicide use.

The maintenance objective for "Invasive Plant Control" is ≤ 5 percent total cover for invasive plant species rated "high" [12] or included as a "red alert" species by the California Invasive Plant Council or species rated as "high priority" by the Bay Area Early Detection Network. [13]

Managed Grazing. The primary vegetation management tool is livestock grazing (typically cattle). Livestock grazing will be allowed throughout the year to control thatch buildup and minimize the potential for invasive plant species to out-compete the mitigation site's rare plant species or reduce the heterogeneity of the depressional wetland species. This will be accomplished by managing the number of livestock grazing in order to achieve a Residual Dry Matter (RDM) value ranging between 500 and ≤750 pounds per acre per year in order to avoid over-grazing, then, if necessary, adjusting RDM values over time as part of the long-term management of the mitigation site to benefit special status wetland plant species.

Maintenance inspections include periodic inspections to:

1. determine if the livestock grazing being conducted is within the range of allowable livestock per acre as specified in Table 11 (Subsection 10.5.3); and
2. collect annual RDM samples and conduct analysis following the methodology described in "Subsection 10.5.3. Task a" under the paragraph heading "Modification of Grazing Plan."

Maintenance actions taken may include reducing or increasing livestock during the monitoring year or requiring either an increase or decrease in livestock numbers during the following grazing year in order to achieve the target RDM range of 500 and ≤750 pounds per acre per year. Maintenance action may also prohibit livestock grazing in a portion or portions of established wetlands if vegetation performance standards are not being met.

Invasive Plant Inspection and Maintenance Actions. If maintenance site inspections or performance monitoring determine that invasive plant species rated "high" or included as a "red alert" species by the California Invasive Plant Council or species rated as "high priority" by the Bay Area Early Detection Network are present and comprise ≥ to 5 percent of the total plant cover of the mitigation site, invasive plant maintenance actions need to be taken. The objective of invasive plant maintenance actions is to provide a competitive advantage for native and naturalized plant species over invasive species through various vegetation management methods. Allowable methods to control invasive weed species at the wetland mitigation site are described below. In conducting invasive plant control, the use of non-chemical removal methods are to be pursued to the maximum extent feasible.

[12] Plants are considered invasive if they have been introduced into an environment where they did not evolve. As a result, they may have no natural enemies or other constraints to limit their reproduction and spread (Westbrooks, 1998, cited by BLM). Some invasive plants can produce significant changes to vegetation, composition, structure, or ecosystem function (Cronk and Fuller, 1995, cited by BLM). An inventory with ranking of invasives (High, Moderate, and Limited) can be found at https://www.cal-ipc.org/plants/inventory/

[13] https://www.sfbayjv.org/bay_area_early_detection_network.php

3 **Hand/Mechanical Removal of Invasive Weed Species***.* Hand removal or use of handheld equipment (such as a weed uprooter[14] or a chainsaw) should always be the preferred method of removing invasive weed species from the mitigation site. If hand removal methods are tried and found to be ineffective, or the problem is too widespread for hand removal to be practicable, then hand-held mechanical methods of removal, focused grazing, or chemical controls as described below can be implemented. The goal is to rely on application of herbicides as a last resort.

4 **Hand Cutting or Mowing**. Hand clipping or mowing with a hand-held mechanical mower or weed whip to control invasive weed species before they set seed is allowable during the late winter, spring, and early summer months.

5 **Focused Grazing.** Focused grazing for no longer than 30 days with sheep or goats to control invasive plants or thatch buildup is allowable preferably during the late winter, spring, and early summer months before targeted invasive plants set seed.

6 **Controlled Herbicide Use**. Only herbicides registered with the California Department of Pesticide Regulation (DPR) will be applied. Localized spot treatments should be used, when feasible. All herbicides will be applied in accordance with regulations set by DPR, used according to labeled instructions, and approved for use in an aquatic environment (e.g., Rodeo©). Labeled instructions for the herbicide used will be made available to Authorizing Agencies and DPR upon request. Herbicide application will be conducted on calm days only with wind less than five (5) miles per hour to prevent airborne transfer of herbicide. Pesticide mixing sites will be located at existing road sites outside of aquatic resource areas. No herbicides will be used where CESA and/or federally listed ESA species have been documented to occur.

7 **Replanting***.* Based on the performance standards described in Section 8.0 below, if planted vegetation and / or natural re-vegetation within any portions of the mitigation site appears unsuccessful due to invasive plants or resulting from invasive plant removal within any of the performance monitoring years, the invasive plant species will be removed from the unsuccessful area and the area will be replanted with native vegetation previously planted. Consideration should be given to the use of a pre-emergent herbicide if repopulation with a dominance of invasive species is a concern. If plant species are proposed other than previously planted, the Authorizing Agencies need to be consulted.

7.3.4 Fence, Gate, and Sign Inspections

Inspect fencing and gates to ensure they are maintained in good condition to prevent unauthorized access. Check to see that there is proper tension in the wire or fencing / gate

[14] https://www.theuprooter.com/

parts, the wire or metal grill work is not broken, and appropriate post alignment and stability is maintained. Inspect signs for readability.

Maintenance actions taken may include splicing broken wire, reattachment of wire or gate to fence posts, replacing fence posts, replacing gate parts, replacing gate, (e.g., steel gate, wire gap), and repairing or replacing signs(s).

7.3.5 Fuel Modification

If the local Fire Marshal requires fuel breaks, they will be maintained through mowing or focused livestock grazing when the ground surfaces are dry. Prior to creating fuel breaks, areas will be searched for nesting migratory birds. Areas where nesting migratory birds are found will be handled in accordance with the requirements of the Migratory Bird Treaty Act and Fish and Game Code section 3500 et seq. **Note: Disking is not permitted on the Site**.

7.3.6 Mosquito Control

In coordination with the Solano County Mosquito Abatement District (SCMAD; https://www.solanomosquito.com/), inspect the Site when surface water ponding is occurring, and temperatures are conducive to mosquito breeding. If vector control becomes necessary, SCMAD shall identify and implement mosquito abatement practices that are protective of federal and state special status species following approval by the Landowner, Land Manager, the USFWS, CDFW, and Conservation Easement Grantee.

7.3.7 Record Keeping and Reporting

Documentation of all inspection and maintenance activities will be required. A record of maintenance activities by date will be submitted yearly to the Authorizing Agencies and Conservation Easement Grantee as part of the annual Mitigation Monitoring Report. All annual reports will include the following information: (1) frequency and dates of observations, (2) photographs of areas where maintenance issue(s) are found with direction of view, latitude and longitude, and location mapping, locations of permanent photo points and direction of view, what was observed, maintenance activities, a summary of repairs and any recommended follow-up maintenance actions that may be required.

7.3.8 Schedule

To assure that the performance standards presented in Section 8.0 are successfully met, the land management activities described above will commence after habitat construction is complete and prior to ground disturbing activities at the Development Site described in Section 1.1, above. Maintenance actions will continue for 10 years according to the schedule provided by the table below unless the agency required performance standards have not been met after 10 years, in which case maintenance actions will continue until performance standards are successfully met.

The following table identifies specific responsibilities associated with management inspections and maintenance activities.

Table 9. Land Management Inspections, Responsibility, and Schedule		
Inspection and Maintenance Actions	**Responsibility**	**Schedule (Years 1-10) ***
1. Land use	I & M	January, April, July, and October
2. Manmade Trash and Litter	I & M	January, April, July, and October
3. Vegetation Management	I & M	January, April, July, and October
4. Fuel Modification	I & M	May - June
5. Mosquito Control	I & M	Rainy Season: October to May
6. Record Keeping and Reporting	Documentation & Report Preparation	Documentation: Contemporaneously during Inspection & Maintenance Activities; Reporting: January 31 following each monitoring year
. * Maintenance actions will continue for a minimum of 10 years according to schedule or until the performance standards have been met, whichever is longer.		

7.4 Funding

The Landowner[15] will fund all the costs associated with site inspection, maintenance, and adaptive management activities as described in this MMP for Years 1 - 10, which includes performance monitoring and agency-required reporting. If performance criteria are not met within 10 years, the Landowner shall continue to be responsible for funding measures necessary to successfully achieve agency required performance criteria, to include maintenance monitoring, unless all or portions thereof of the monitoring after the initial 10 years is part of the monitoring conducted as part of the long-term management activities funded by the endowment.

[15] Currently land is owned by Tom Gentry California Company but is being sold to Buzz Oats Construction upon receiving agency authorizations for the proposed project.

7.5 Responsible Parties

Successful implementation of this Mitigation Management Plan is the responsibility of:

PERMITTEE / LANDOWNER:
Buzz Oates Construction
555 Capitol Mall, Ninth Floor
Sacramento, CA 95814
Contact: Joe Livaich
916.379.8874
joelivaich@buzzoates.com

LAND MANAGER:
Terry Huffman, PhD
Huffman-Broadway Group, Inc.
828 Mission Avenue
San Rafael, CA 94901
415.385.1045 (cell) ~ 415.925.2006 (fax)
thuffman@h-bgroup.com

8.0 PERFORMANCE STANDARDS

This section presents the mitigation performance standards and monitoring methods for evaluating conformance with these standards. Compensatory Mitigation for Losses of Aquatic Resources (33 CFR Part 332) defines performance standards as "*observable or measurable physical (including hydrological), chemical and/or biological attributes that are used to determine if a compensatory mitigation project meets its objectives*" (33 CFR 332.2.) Additionally,

> Performance standards should relate to the objectives of the compensatory mitigation project, so that the project can be objectively evaluated to determine if it is developing into the desired resource type, providing the expected functions, and attaining any other applicable metrics (e.g., acres). (33 CFR 332.5(a))

Performance monitoring by Qualified Biologists is required by the Authorizing Agencies and will occur for a minimum of ten years from the time construction ends until all Performance Standards have been met. Performance Standards are observable or measurable physical or biological characteristics that can be used to evaluate success or progress toward meeting a project's goal(s). The Performance Standards are based on attributes that are objective and verifiable. If Performance Standards are not met during this period, performance monitoring will continue until the Performance Standards are achieved, unless otherwise approved in writing by CDFW and USFWS. Interim monitoring methods and reporting requirements are provided in Section 9.0.

The objective of mitigation monitoring is to track progress toward meeting the MMP objectives described in Section 1.2, above. Monitoring is designed to evaluate objectively in a quantitative manner whether desired habitat characteristics are being achieved. These include:

1. Establishment of wetland habitat meeting the USACE technical criteria for jurisdictional wetlands by:
    a. Development of physical conditions similar to those found within naturally occurring depressional wetlands found within the proposed 381.66-acre Managed Open Space.
    b. Development of hydrologic conditions similar to those found within naturally occurring depressional wetlands found within the Managed Open Space.
    c. Development of hydric soil conditions similar to those found within naturally occurring depressional wetlands found within the Managed Open Space.
    d. Establishment of naturalized and native plant species similar to those found within a naturally occurring reference wetland within the Managed Open Space area; and
    e. Establishment of areas meeting the USACE technical criteria for jurisdictional wetlands.
2. Establishment of suitable habitat for special status plant species by:

a. Development of physical conditions similar to those found within naturally occurring occupied sensitive species habitat found within the Managed Open Space.
b. Development of hydrology and soil conditions similar to those found within naturally occurring occupied habitat found within the Managed Open Space.
c. Establishment of new sensitive plant species populations similar to those found within the project site impacted by the Highway 12 Logistics Center Project.

3. Providing for long-term management and land use protection of established and preserved wetlands and upland watershed habitat and occupied and suitable habitat for sensitive species for conservation purposes through endowment funding and a recorded deed restriction or conservation easement.

The performance standards provided in the table below are designed to determine if the mitigation objectives are being achieved and provide a means to identify and remedy problems that would hinder achievement of the mitigation objectives. This will be accomplished by collecting and analyzing data to determine if the performance standards are being achieved and whether corrective actions need to be taken following the Adaptive Management Plan described in Section 11.0.

Each monitoring year will be assessed to determine if average or above average rainfall occurred on a monthly basis during the rainy season (October thru May) and how the rainfall amounts may have affected Performance Standard results. To determine if rainfall was within the "normal" or "above normal" range, HBG will conduct a "Climate Analysis for Wetlands" (WETS analysis)[16] for each monitoring year to assess whether rainfall periods fell within the normal range of precipitation based on long-term records collected for the Solano County / Suisun City area.

Table 10a. Performance Standards for Years 1 - 5						
Type & Number	**Performance Standards**	**Annual Target**				
		Yr. 1	**Yr. 2**	**Yr. 3**	**Yr. 4**	**Yr. 5***
Seasonally Saturated Annual Grasslands, Alkali Seasonal Wetlands, Vernal Pools and Perennial Brackish Marsh						
Physical-1	**Structural Patch Richness** – Using appropriate CRAM field book. 1. By year 10 the site must contain 90% or more of the total number of structural patch richness types found at the selected reference site.	NA	≥20% of reference site range	≥30% of reference site range	≥40% of reference site range	≥50% of reference site range
Physical-2	**Topographic Complexity** – Using appropriate CRAM field book. 1. By year 10 the site must have a rating equal to or greater than the reference site.	NA	NA	No more than 2 rating less than the reference site rating	NA	No more than 1 rating less than the reference site rating
Hydrologic 1	**Soil Saturation & Inundation** • By year 2-3 at least 25% of the established wetland acreage for each wetland types must be saturated or inundated to a depth within 10% of the reference site range. • By year 4-5 at least 50% of the established wetland acreage for each wetland types must be saturated or inundated to a depth within 10% of the reference site range. • The duration of soil saturation or inundation for performance standard a and b must within 70% of the reference site.	NA	+/-10% of reference site range & +/- 70% duration of the reference site.	+/-10% of reference site range & +/- 70% duration of the reference site.	+/-10% of reference site range & +/- 70% duration of the reference site.	+/-10% of reference site range & +/- 70% duration of the reference site.
Hydrologic 2	**Wetland Hydrology Indicators** Development of wetland hydrology indicators listed in the Arid West Manual. **1.** By year 10 100% of the established wetland acreage will exhibit at least 1 primary or 2 secondary wetland hydrology indicators.	NA	NA	NA	NA	NA
Hydrologic 3	**Hydric Soil Indicator -** Development of USDA NRCS hydric soil characteristics listed in the Arid West Manual. **1.** By year 10 100% of the established wetland acreage will exhibit hydric soil indicator/s.	NA	NA	NA	NA	25% of established wetlands exhibit hydric soil indicator/s.

Table 10a. Performance Standards for Years 1 - 5						
Type & Number	**Performance Standards**	**Annual Target**				
		Yr. 1	**Yr. 2**	**Yr. 3**	**Yr. 4**	**Yr. 5***
Flora 1	**Dominance of Hydrophytes** - ≥75% of absolute cover of wetland species (OBL, FACW or FAC) is met by year 10.	NA	≥10% of reference site range.	≥20% of reference site range.	≥30% of reference site range.	≥40% of reference site range.
Flora 2	**Species Composition** - ≥75% of relative cover of native and naturalized species by year 10.	NA	≥10% of reference site range.	≥20% of reference site range.	≥30% of reference site range.	≥40% of reference site range.
Flora 3	**Species Richness –** ≥75% target native species richness values are met by year 10**.**	NA	NA	≥10% of reference site range.	≥20% of reference site range.	≥30% of reference site range.
Flora 4	**Horizontal Interspersion -** Using appropriate CRAM field book. a. By year 10 the site must have a rating equal to or greater than the reference site.	NA	NA	NA	NA	No more than 2 rating less than the reference site rating
Flora 5	**Invasive Plant Species** [17] -. Plants rated "high" or included as a "red alert" species by the California Invasive Plant Council or species rated as "high priority" by the Bay Area Early Detection Network[18]shall not comprise greater than 5% of the total plant cover.	NA	≤5% invasive plant species rated "high."	≤5% invasive plant species rated "high."	≤5% invasive plant species rated "high."	≤5% invasive plant species rated "high."

[17] Plants are considered invasive if they have been introduced into an environment where they did not evolve. As a result, they may have no natural enemies or other constraints to limit their reproduction and spread (Westbrooks, 1998, cited by BLM). Some invasive plants can produce significant changes to vegetation, composition, structure, or ecosystem function (Cronk and Fuller, 1995, cited by BLM). An inventory with ranking of invasives (High, Moderate, and Limited) can be found at https://www.cal-ipc.org/plants/inventory/.

[18] https://www.sfbayjv.org/bay_area_early_detection_network.php.

Table 10a. Performance Standards for Years 1 - 5						
Type & Number	**Performance Standards**	**Annual Target**				
		Yr. 1	**Yr. 2**	**Yr. 3**	**Yr. 4**	**Yr. 5***
Flora 6	**Vegetation Management** - Maintain RDM at a level which gives native vegetation a completive advantage over introduced species.	NA	NA	Maintain Residual Dry Matter (RDM) value between 500 and ≤750 pounds per acre.	Maintain Residual Dry Matter (RDM) value between 500 and ≤750 pounds per acre.	Maintain Residual Dry Matter (RDM) value between 500 and ≤750 pounds per acre.
Flora 7	**Establish Vernal Pool Habitat** **1.** By year 10 a minimum of 14.09 acres of vernal pool habitat will be established and meet the USACE's and RWQCB's definition of a wetland.	NA	NA	NA	NA	≥25% of required wetland areas meets definition of wetland.
Flora 8	**Establish Seasonally Saturated Annual Grassland Habitat** **1.** By year 10 a minimum of 16.32 acres of seasonally saturated annual grassland habitat will be established and meet the USACE's and RWQCB's definition of a wetland.	NA	NA	NA	NA	≥25% of required wetland areas meets definition of wetland
Flora 9	**Establish Alkali Seasonal Wetland Habitat** **1.** By year 10 a minimum of 7.58 acres of alkali seasonal wetland habitat will be established and meet the USACE's and RWQCB's definition of a wetland.	NA	NA	NA	NA	≥25% of required wetland areas meets definition of wetland
Flora 10	**Establish Perennial Brackish Marsh Habitat** **1.** By year 10 a minimum of 0.002 acres of perennial brackish marsh habitat will be established and meet the USACE's and RWQCB's definition of a wetland.	NA	NA	NA	NA	≥25% of required wetland areas meets definition of wetland
Rare Plant Habitat						
Flora 11	**CCG Habitat Establishment** By year 10 establish 0.023 acre of Contra Costa Goldfields habitat with minimum growth of 102 individual CCG plants on at least 2 out of the 10 years of monitoring period (to be established within seasonally saturated annual grassland establishment area described in Flora 8)**.**	minimum growth of 102 individual CCG plants?	minimum growth of 102 individual CCG plants?	minimum growth of 102 individual CCG plants?	minimum growth of 102 individual CCG plants?	minimum growth of 102 individual CCG plants?
Flora 12	**CCG Habitat Preservation** **1.** By year 1 preserve the entire core population of 8,000+ plants over a 17 acre area.	Preservation to occur by year 1.	NA	NA	NA	NA
Flora 13	**Alkali Milk-Vetch Habitat Preservation** 1. By year 1 preserve 0.007 acre of occupied alkali milk-vetch habitat.	Preservation to occur by year 1.	NA	NA	NA	NA
Flora 14	**Saline Clover Habitat Preservation** 1. By year 1 preserve t 1.10 acres of occupied saline clover habitat.	Preservation to occur by year 1.	NA	NA	NA	NA

Table 10a. Performance Standards for Years 1 - 5						
Type & Number	**Performance Standards**	**Annual Target**				
		Yr. 1	**Yr. 2**	**Yr. 3**	**Yr. 4**	**Yr. 5***
Flora 15	**Suisun Marsh Aster Habitat Preservation** 1. By year 1 preserve 0.002 acre of occupied Suisun Marsh aster habitat.	Preservation to occur by year 1.	N/A	N/A	N/A	N/A
Flora 16	**Suisun Marsh Aster Habitat Establishment**** - (If Impacts Are Unavoidable) - Within the open space management area establish 0.002 acre of Suisun Marsh aster habitat which supports the same or greater number of plants impacted at least 2 out of the 10 years of monitoring period with minimum growth of the number of individual impacted. Suisun Marsh aster plants at least 2 out of the 10 years of monitoring period (to be established within seasonally saturated annual grassland establishment area described in Flora 9).	minimum of 200 individual Suisun Marsh aster plants at least 2 out of the 10 years of monitoring period	minimum of 200 individual Suisun Marsh aster plants at least 2 out of the 10 years of monitoring period	minimum of 200 individual Suisun Marsh aster plants at least 2 out of the 10 years of monitoring period	minimum of 200 individual Suisun Marsh aster plants at least 2 out of the 10 years of monitoring period	minimum of 200 individual Suisun Marsh aster plants at least 2 out of the 10 years of monitoring period
Managed Open Space						
Preservation 1	**Managed Open Space** Place 381.66 acre Managed Open Space site under a deed restriction or conservation easement. The 38 acres of wetland mitigation and rare plant preservation (Flora 12-15) shall be specifically designated as mitigation for the Development Site project.	Preservation to occur by year 1.	NA	NA	NA	NA

* Performance monitoring will continue for 10 years unless the agency required performance standards have not been met in which case performance monitoring will continue until performance standards are successfully met.

** Preconstruction plant surveys should be conducted prior to the construction of the stormwater culvert outfall to ensure impacts to individual Suisun Marsh aster plants are avoided. If individual plants do occur in the proposed location of the stormwater outfall culvert the location should be modified, if feasible, to avoid impacting the plants.

Table 10b. Performance Standards for Years 6 - 10						
Type & Number	***Performance Standards***	**Annual Target**				
		Yr. 6	**Yr. 7**	**Yr. 8**	**Yr. 9**	**Yr. 10***
Seasonally Saturated Annual Grasslands, Alkali Seasonal Wetlands, Vernal Pools and Perennial Brackish Marsh						
Physical-1	***Structural Patch Richness*** *– Using appropriate CRAM field book.* *1. By year 10 the site must contain 90% or more of the total number of structural patch richness types found at the selected reference site.*	≥60% of reference site range	≥70% of reference site range	≥80% of reference site range	≥80% of reference site range	≥90% of reference site range
Physical-2	***Topographic Complexity*** *– Using appropriate CRAM field book.* *1. By year 10 the site must have a rating equal to or greater than the reference site.*	NA	No more than 1 rating less than the reference site rating	NA	NA	≥ the reference site rating

Table 10b. Performance Standards for Years 6 - 10						
Type & Number	***Performance Standards***	**Annual Target**				
		Yr. 6	**Yr. 7**	**Yr. 8**	**Yr. 9**	**Yr. 10***
Hydrologic 1	***Soil Saturation & Inundation*** *1. By year 7 at least 60% of the established wetland acreage for each wetland types must be saturated or inundated to a depth within 10% of the reference site range.* *2. By year 10 at least 70% of the established wetland acreage for each wetland types must be saturated or inundated to a depth within 10% of the reference site range.* *3. The duration of soil saturation or inundation for performance standard a and b must within 70% of the reference site.*	NA	+/-10% of reference site range & +/- 70% duration of the reference site.	NA	NA	+/-10% of reference site range & +/- 70% duration of the reference site.
Hydrologic 2	**Wetland Hydrology Indicators** Development of wetland hydrology indicators listed in the Arid West Manual. **4.** By year 10 100% of the established wetland acreage will exhibit at least 1 primary or 2 secondary wetland hydrology indicators.	NA	Exhibits at least 1 secondary indicator	NA	NA	Exhibits at least 1 primary or 2 secondary indicators
Hydrologic 3	**Hydric Soil Indicator** - Development of USDA NRCS hydric soil characteristics listed in the Arid West Manual. **5.** By year 10 100% of the established wetland acreage will exhibit hydric soil indicator/s.	NA	50% of established wetlands exhibit hydric soil indicator/s.	NA	NA	100% of established wetlands exhibit hydric soil indicator/s.
Flora 1	**Dominance of Hydrophytes** - ≥75% of absolute cover of wetland species (OBL, FACW or FAC) is met by year 10.	NA	≥60% of reference site range.	NA	NA	≥75% of reference site range.
Flora 2	**Species Composition** - ≥75% of relative cover of native and naturalized species by year 10.	NA	≥60% of reference site range.	NA	NA	≥75% of reference site range.
Flora 3	**Species Richness** – The target native species richness values are each monitoring year.	NA	≥50% of reference site range.	NA	NA	≥75% of reference site range.

Table 10b. Performance Standards for Years 6 - 10						
Type & Number	***Performance Standards***	**Annual Target**				
		Yr. 6	**Yr. 7**	**Yr. 8**	**Yr. 9**	**Yr. 10***
Flora 4	**Horizontal Interspersion -** Using appropriate CRAM field book. a. By year 10 the site must have a rating equal to or greater than the reference site.	NA	No more than 1 rating less than the reference site rating	NA	NA	≥ the reference site rating
Flora 5	**Invasive Plant Species** [19] -. Plants rated "high" or included as a "red alert" species by the California Invasive Plant Council or species rated as "high priority" by the Bay Area Early Detection Network[20]shall not comprise greater than 5% of the total plant cover.	≤5% invasive plant species rated "high."	≤5% invasive plant species rated "high."	≤5% invasive plant species rated "high."	≤5% invasive plant species rated "high."	≤5% invasive plant species rated "high."
Flora 6	**Vegetation Management** - Maintain RDM at a level which gives native vegetation a completive advantage over introduced species.	Maintain Residual Dry Matter (RDM) value between 500 and ≤750 pounds per acre.	Maintain Residual Dry Matter (RDM) value between 500 and ≤750 pounds per acre.	Maintain Residual Dry Matter (RDM) value between 500 and ≤750 pounds per acre.	Maintain Residual Dry Matter (RDM) value between 500 and ≤750 pounds per acre.	Maintain Residual Dry Matter (RDM) value between 500 and ≤750 pounds per acre.
Flora 7	**Establish Vernal Pool Habitat** **6.** By year 10 a minimum of 14.09 acres of vernal pool habitat will be established and meet the USACE's and RWQCB's definition of a wetland.	NA	≥50% of required wetland areas meets definition of wetland	NA	NA	≥14.09 acres of vernal pool habitat.
Flora 8	**Establish Seasonally Saturated Annual Grassland Habitat** **7.** By year 10 a minimum of 16.32 acres of seasonally saturated annual grassland habitat will be established and meet the USACE's and RWQCB's definition of a wetland.	NA	≥50% of required wetland areas meets definition of wetland	NA	NA	≥16.32 acres of seasonally saturated annually grassland habitat.
Flora 9	**Establish Alkali Seasonal Wetland Habitat** **8.** By year 10 a minimum of 7.58 acres of alkali seasonal wetland habitat will be established and meet the USACE's and RWQCB's definition of a wetland.	NA	≥50% of required wetland areas meets definition of wetland	NA	NA	≥7.58 acres of alkali seasonal wetland habitat.;

[19] Plants are considered invasive if they have been introduced into an environment where they did not evolve. As a result, they may have no natural enemies or other constraints to limit their reproduction and spread (Westbrooks, 1998, cited by BLM). Some invasive plants can produce significant changes to vegetation, composition, structure, or ecosystem function (Cronk and Fuller, 1995, cited by BLM). An inventory with ranking of invasives (High, Moderate, and Limited) can be found at https://www.cal-ipc.org/plants/inventory/.

[20] https://www.sfbayjv.org/bay_area_early_detection_network.php.

Table 10b. Performance Standards for Years 6 - 10						
Type & Number	***Performance Standards***	**Annual Target**				
		Yr. 6	**Yr. 7**	**Yr. 8**	**Yr. 9**	**Yr. 10***
Flora 10	**Establish Perennial Brackish Marsh Habitat** **9.** By year 10 a minimum of 0.002 acres of perennial brackish marsh habitat will be established and meet the USACE's and RWQCB's definition of a wetland.	NA	≥50% of required wetland areas meets definition of wetland	NA	NA	≥0.002 acre of perennial brackish marsh habitat.
Rare Plant Habitat						
Flora 11	**CCG Habitat Establishment** By year 10 establish 0.023 acre of Contra Costa Goldfields habitat with minimum growth of 102 individual CCG plants on at least 2 out of the 10 years of monitoring period (to be established within seasonally saturated annual grassland establishment area described in Flora 8)**.**	minimum growth of 102 individual CCG plants?	minimum growth of 102 individual CCG plants?	minimum growth of 102 individual CCG plants?	minimum growth of 102 individual CCG plants?	minimum growth of 102 individual CCG plants?
Flora 12	**CCG Habitat Preservation** **10.** By year 1 preserve the entire core population of 8,000+ plants over a 17 acre area. See Preservation 1 performance standard.	NA	NA	NA	NA	NA
Flora 13	**Alkali Milk-Vetch Habitat Preservation** 11. By year 1 preserve 0.007 acre of occupied alkali milk-vetch habitat. See Preservation 1 performance standard.	NA	NA	NA	NA	NA
Flora 14	**Saline Clover Habitat Preservation** 12. By year 1 preserve t 1.10 acres of occupied saline clover habitat. See Preservation 1 performance standard.	NA	NA	NA	NA	NA
Flora 15	**Suisun Marsh Aster Habitat Preservation** 13. By year 1 preserve 0.002 acre of occupied Suisun Marsh aster habitat. See Preservation 1 performance standard.	NA	NA	NA	NA	NA
Flora 16	**Suisun Marsh Aster Habitat Establishment**** - (If Impacts Are Unavoidable) - Within the open space management area establish 0.002 acre of Suisun Marsh aster habitat which supports the same or greater number of plants impacted at least 2 out of the 10 years of monitoring period with minimum growth of the number of individual impacted. Suisun Marsh aster plants at least 2 out of the 10 years of monitoring period (to be established within seasonally saturated annual grassland establishment area described in Flora 9)**.**	minimum of 200 individual Suisun Marsh aster plants at least 2 out of the 10 years of monitoring period	minimum of 200 individual Suisun Marsh aster plants at least 2 out of the 10 years of monitoring period	minimum of 200 individual Suisun Marsh aster plants at least 2 out of the 10 years of monitoring period	minimum of 200 individual Suisun Marsh aster plants at least 2 out of the 10 years of monitoring period	minimum of 200 individual Suisun Marsh aster plants at least 2 out of the 10 years of monitoring period
Managed Open Space						
Preservation 1	**Managed Open Space** 1. Place 381.66 acre Managed Open Space site under a deed restriction or conservation easement. The 38 acres of wetland mitigation and rare plant preservation (Flora 12-15) shall be specifically designated as mitigation for the Development Site project.	NA	NA	NA	NA	NA
* Performance monitoring will continue for 10 years unless the agency required performance standards have not been met in which case performance monitoring will continue until performance standards are successfully met.						

Table 10b. Performance Standards for Years 6 - 10						
Type & Number	***Performance Standards***	**Annual Target**				
		Yr. 6	**Yr. 7**	**Yr. 8**	**Yr. 9**	**Yr. 10***
** Preconstruction plant surveys should be conducted prior to the construction of the stormwater culvert outfall to ensure impacts to individual Suisun Marsh aster plants are avoided. If individual plants do occur in the proposed location of the stormwater outfall culvert the location should be modified, if feasible, to avoid impacting the plants.						

9.0 INTERIM PERFORMANCE MONITORING REQUIREMENTS

Annual performance monitoring is required by the Authorizing Agencies to determine whether the mitigation is successful or is trending toward success as determined by meeting the performance standards described in Section 8.0 (Table 10a and 10b). The Land Manager will implement the annual performance monitoring program described by this Plan.

9.1 Plan Overview

The Land Manager will implement interim performance monitoring to ensure that the goals and objectives of the MMP are achieved. Activities will include performance standard monitoring and reporting as described in Tables 12, and, if necessary, maintenance. Inspection activities are described in detail below.

During performance monitoring, the Land Manager's tasks are to:

7. Document observations on standardized Arid West Region data form and customized tables.
8. Look for potential problems that could prevent achievement of the goal and objectives of the MMP.
9. Ensure that appropriate corrective actions, if necessary, are undertaken.
10. Photo-document any problem locations discovered not meeting performance standards during monitoring. Memorialize photo locations using a hand-held GPS unit with submeter accuracy; and
11. Prepare annual monitoring report and submit it to the Corps, RWQCB, USFWS, CDFW by January 31 of the following year.

9.2 Monitoring Objective

The objective of monitoring is to determine by quantitative means whether the performance standards defined in Section 8.0 are being successfully met and to identify actual and potential problems that may impact the success of the mitigation effort. This will be accomplished by collecting data to determine the level of success and the need for any improvements or remedial actions to be taken in the mitigation effort.

9.3 Baseline Monitoring

Baseline conditions at the reference site(s) will be established prior to the start of grading activities. Reference sites will be located within naturally occurring wetlands within the proposed Managed Open Space site. The primary purpose of base-line monitoring is to establish a basis of comparison between naturally occurring on-site wetlands and on-site constructed wetland habitat conditions and thus be used to determine whether performance standards have been successfully met or are proceeding on a trajectory toward success or if adaptive management needs to occur. Base-line monitoring will document existing land surface conditions using the performance standard data collection methodologies described below.

Base-line conditions will be analyzed by comparison of reference site(s) and mitigation site annual monitoring results obtained over the 5-year monitoring period.

Representative photographs of the mitigation site will be taken as described in 6.3.1. If necessary, representative photos should also be taken of any maintenance issue identified and provided together with a description of the problem and recommended action(s) to be taken to ensure performance criterion / criteria success.

9.4 Sampling Methodology

This section describes the methodology that will be used to collect data to determine whether the physical, hydrologic, flora, fauna, and water quality performance standards are being met.

9.4.1 Physical Performance Standard

Determining if the physical performance standards "Physical 1. Structural Patch Richness" and "Physical 2. Topographic Complexity" and Flora performance standard "Flora 4 Horizontal Interspersion" as described in Section 8.0 (Table 10a and 10b) are met will be determined through observations made during annual vegetation sampling of the site. At least one Assessment Area (AA) will be assessed for each reference and mitigation wetland type. The AA will be determined, in general, using the California Rapid Assessment Method procedures for determining an AA. Sampling methodology for physical performance standards is as follows:

Physical 1. Structural Patch Richness. This performance criterion will be determined through analysis of the physical structure attribute using Metric 1 "Structural Patch Richness" described in the California Rapid Assessment Method field book for each respective wetland type.

Physical 2. Topographic Complexity. This performance criterion will be determined through analysis of the physical structure attribute using Metric 2 "Topographic Complexity" described in the California Rapid Assessment Method field book for each respective wetland type.

Flora 4. Horizontal Interspersion. This performance criterion will be determined through analysis of the biotic structure attribute using Metric 2 "Horizontal Interspersion" described in the California Rapid Assessment Method field book for each respective wetland type.

9.4.2 Hydrologic Performance Standards

Determining if hydrologic performance standards "Hydrologic 1. Soil Saturation;" "Hydrologic 2. Inundation;" and "Hydrologic 3. Hydric Soils" as described in Section 8.0 (Table 10a and 10b) are met will be determined through analysis of hydrology and hydric soil field indicators found within the mitigation and reference site(s).

Hydrology and hydric soil conditions will be monitored by documenting the presence of hydrology and hydric soil indicators within each vegetation sampling quadrat following the Corps wetland delineation criteria and methodology as described in the *Corps' 1987 Wetlands Delineation Manual (Corps Delineation Manual)*, and the *Corps' 2008 Regional Supplement to*

the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0) (*Arid West Supplement*). Subsurface hydrology and hydric soil indicators will be determined by digging a soil pit (or auguring) up to 22-inches deep. On-site observations will be recorded on Corps' Arid West Data Forms. The location of any area within the mitigation site that does not satisfy the hydrology or hydric soil criteria will be memorialized as a polygon feature using a Global Positioning System (GPS) unit with real-time beacon correction (accuracy <50cm) and the feature added to the annual report mapping of site conditions. Representative photographs of hydrology indicators observed at the site will be taken. All photos used in report documents will provide the location in terms of latitude and longitude six place decimal degree coordinates, direction of view, and identification of hydrology and/or hydric soil indicator present.

9.4.3 Flora Performance Standards

Determining if the flora performance standards are met will be determined through analysis of plant cover[21] data and complete floristic surveys of species found within the mitigation and reference site(s). Sampling methodology for flora performance standards is as follows:

Flora 1. Dominance of Hydrophytes; Flora 2. Species Composition; Flora 3. Species Richness; and Flora 5. Invasive Plant Species. Plant cover data will be collected at both mitigation and reference site(s) for a period of 10 years to obtain data for determining performance standards Flora 1 – Flora 4. A random sampling design will be used to sample vegetation to determine percent cover at the mitigation site and reference site(s). Methodology to determine plant cover will follow Elzinga, *et al*. (undated). Vegetation will be sampled between March and June each monitoring year (depending on general plant growth related to precipitation received) using 3-foot by 3-foot or 2-foot by 2-foot sampling quadrats depending on mitigation site width and geographical shape. The number of sample plots used for sampling will be determined using a cumulative species/ sample (or cumulative species/area) curve with a minimum of 5 quadrats[22] sampled within the planted areas at each mitigation (wetland establishment site) and reference site(s). Locations for each quadrat will be determined using a random number generator during each sampling period. During each annual sampling period, the location of each quadrat randomly determined will be loaded into a GPS unit with real-time beacon correction (accuracy <50cm), and georeferenced in the field during quadrat sampling. On-site observations will be recorded on Corps' Wetland Determination Data Forms – Arid West Region.

Representative photographs of each sample quadrat will be taken. Mitigation site overview photographs will also be taken from permanent approximate north, south, east, and west

[21] The percentage of the ground covered by the vertical projection of the plant crowns of a species or defined set of plants (also known as the vertical projection of foliage of plants) as viewed from above. Small openings in the canopy and overlap are excluded (SRM 1989). The absolute cover of herbaceous plants includes any standing (Attached to a living plant, and not lying on the ground) plant parts, whether alive or dead; this definition excludes litter and other separated plant material. http://www.cnps.org/cnps/vegetation/

[22] A quadrat as referred to here is a plot used in ecological field sampling to isolate a standard unit of area for study of the distribution of vegetation data over a larger area.

photo points established during base line monitoring. All photos used in report documents will provide the location in terms of latitude and longitude six place decimal degree coordinates, direction of view, and identification of dominant species present.

Flora 6. Vegetation Management. Residual Dry Matter (RDM) to assist with determining the number of livestock to be utilized will be determined as described in the paragraph entitled "Modification of Grazing Plan" in Section 10.5.3.

Flora 7, 8, 9, and 10 Establish Wetland Habitat. The 38 acres of established wetlands will be delineated using the Corps 1987 Manual, the Arid West Manual, and supporting guidance documents. To determine the landward extent of wetlands soil pits will be excavated within representative landform areas. The number and location of soil pits will be determined based on the size of the wetlands, topography and landscape and drainage features. The soil pits will be dug to a depth required to determine if the soil is hydric. Vegetation and hydrologic conditions will be observed within 3 to 5 foot radius sampling plots surrounding the pits. Sample point locations will be geo-referenced onto orthorectified satellite imagery. Soil, vegetation, and hydrology observations will be recorded on Wetland Determination Data Forms – Arid West Region, Version 2.0. A delineation report will be prepared and provided to the USACE with a request for a Preliminary Jurisdictional Determination. HBG will provide a copy of the report to the RWQCB and include RWQCB staff on correspondence with the USACE.

Floras 11 and 16 Habitat Establishment. Plant cover data will be collected at both mitigation and reference site(s) for a period of 10 years to obtain data for determining performance standards Flora 11 and 16. A random sampling design will be used to sample vegetation to determine percent cover at the mitigation site and reference site(s). Methodology to determine plant cover will follow Elzinga, *et al*. (undated). Vegetation will be sampled between March and June each monitoring year (depending on general plant growth related to precipitation received) using 3-foot by 3-foot or 2-foot by 2-foot sampling quadrats depending on mitigation site width and geographical shape. The number of sample plots used for sampling will be determined using a cumulative species/ sample (or cumulative species/area) curve with a minimum of 5 quadrats[23] sampled within the planted areas at each mitigation (wetland establishment site) and reference site(s). Locations for each quadrat will be determined using a random number generator during each sampling period. During each annual sampling period, the location of each quadrat randomly determined will be loaded into a GPS unit with real-time beacon correction (accuracy <50cm), and georeferenced in the field during quadrat sampling. On-site observations will be recorded on Corps' Arid West Data Forms.

Representative photographs of each sample quadrat will be taken. Mitigation site overview photographs will also be taken from permanent approximate north, south, east, and west photo points established during base line monitoring. All photos used in report documents will

[23] A quadrat as referred to here is a plot used in ecological field sampling to isolate a standard unit of area for study of the distribution of vegetation data over a larger area.

provide the location in terms of latitude and longitude six place decimal degree coordinates, direction of view, and identification of dominant species present.

RDM to assist with determining the number of livestock to be utilized will be determined as described in the paragraph entitled “Modification of Grazing Plan” in Section 10.5.3.

Preservation 1 . Habitat preservation will be demonstrated either prior to or during mitigation implementation by providing a deed restriction or conservation easement approved by the authorizing agencies that has been recorded with Solano County. The 38 acres of wetland mitigation and rare plant preservation (Flora 12-15) shall be specifically designated as mitigation for the Development Site project. A map showing the location of these areas will be included in the deed restriction or conservation easement.

9.5 Data Analysis

The monitoring data obtained during the annual monitoring periods will be compared with the data from: (1) base-line monitoring prior to the initiation of ground disturbing activities and (2) reference site data taken prior to ground disturbing activities and contemporaneously during performance monitoring. Data analysis will be accomplished using Microsoft Excel and ArcGIS.

Microsoft Excel will be used to create various graphical comparisons to include:

- Percent cover mapping
- Percent cover of native and naturalized plant species vs. invasive plant species

Habitat feature mapping using the GIS program ArcGIS will be conducted for visual comparative purposes to include:

- Vegetation cover mapping
- Bare ground cover mapping
- Point location and cover mapping of invasive weed species
- Location of signs of erosion
- Location of signs of sedimentation
- Protective fencing Location (if used)

9.6 Annual Monitoring Report

Monitoring reports will be submitted on an annual basis during the month of January after each monitoring year (1 - 9) and a final summary report in the tenth (10^{th}) year of monitoring. Monitoring reports will be submitted to the Authorizing Agencies on January 31 of the year following the monitoring period. These reports will provide technical findings as to the progress toward achievement of final performance success and recommendations if adaptive management action is required to successfully meet agency required performance standards. The reports will include the following:

1.0 Executive Summary
2.0 Introduction
- 2.1 Background
- 2.2 Objective
- 2.3 Performance Standards

2.4 Monitoring Requirements

3.0 Methods

3.1 Sampling

3.2 Analysis

4.0 Results

4.1 Implementation of Maintenance Actions

4.2 Status of Successfully Meeting Performance Standards

4.2.1 Physical

- Hydrologic
- Flora

5.0 Recommendations

5.1 Maintenance Monitoring

5.2 Maintenance Actions

6.0 Literature Cited

7.0 Appendices

1- Location Maps (mitigation site, plant associations, sample locations)
2- Monitoring Data Sheets (vegetation, hydrology, wetlands)
3- Maintenance Records (observations and actions taken)
4- Photo Documentation (aerial and on-site)
5- GIS Comparison Mapping/Analysis
6- Data Summaries
7- Floristic Survey
8- Agency Contacts
9- Names, title and company names of all persons who prepared the report and conducted field work

9.7 Annual Review of Monitoring Procedures

The protocol and results of the monitoring program will be reviewed annually by the Land Manager. Adjustments to monitoring procedures may be required as the site changes over time, or if logistical problems render a procedure unduly difficult to conduct. Such adjustments would be reported to the Authorizing Agencies and Conservation Easement Grantee. After reviewing annual reports, Authorizing Agencies staff may have suggestions for adjusting the monitoring program. Agency suggestions will be reviewed and if appropriate will be incorporated into the monitoring program, following agreement between the Landowner, Land Manager, Conservation Easement Grantee, and Authorizing Agency staff. The key is to anticipate that the monitoring program may need occasional adjustments to remain viable for determining attainment of performance standards and the identification of factors that may be limiting successful achievement of one or more performance standards.

9.8 Completion of Annual Monitoring

9.8.1 Notification of Completion

When the final performance monitoring period is complete, and if the Landowner on behalf of the Permittee(s) believes the agency required performance standards have been successfully met, the Landowner or Designated Representative will notify the Authorizing Agencies and Conservation Easement Grantee when submitting the final annual report.

9.8.2 Agency Confirmation

Following receipt of the report the Authorizing Agencies may require a site visit to confirm performance success prior to providing a written confirmation either in Email or official letter form that mitigation is successful.

9.9 Funding

The Landowner will fund all the costs associated with the monitoring activities outlined in this Plan for Years 1 - 10, which includes performance monitoring and agency-required reporting. If performance criteria are not met within 10 years, the Landowner shall continue to be responsible for funding measures necessary to successfully achieve agency required performance criteria, to include performance monitoring, unless all or portions thereof of the monitoring after the initial 10 years is part of the monitoring conducted as part of the long-term management activities funded by the endowment.

9.10 Responsible Parties

Successful implementation of the above-described performance monitoring and reporting is the responsibility of:

PERMITTEE / LANDOWNER:
Buzz Oates Construction
555 Capitol Mall, Ninth Floor
Sacramento, CA 95814
Contact: Joe Livaich
916.379.8874
joelivaich@buzzoates.com

LAND MANAGER:
Terry Huffman, PhD
Huffman-Broadway Group, Inc.
828 Mission Avenue
San Rafael, CA 94901
415.385.1045 (cell) ~ 415.925.2006 (fax)
thuffman@h-bgroup.com

10.0 LONG-TERM MANAGEMENT PLAN

10.1 Plan Overview

The objective of this Long-Term Management Plan (LTMP) is to manage habitat conditions, using an adaptive management approach, to benefit special status plant species, and wetlands in perpetuity.

The LTMP elements described in this section are designed to manage for the viability of special status plant species, and wetlands. Monitoring, maintenance, and management activities are the responsibility of an agency-approved Land Manager that is proposed by the landowner who has the knowledge, training, and experience to accomplish the land management responsibilities described herein. Monitoring reports shall be submitted annually to the Conservation Easement Grantee, and to the Corps, USFWS, CDFW, and RWQCB, the third-party beneficiaries of the Conservation Easement.

10.2 Land Manager Responsibilities

The Land Manager is responsible for implementing the LTMP to ensure that the Mitigation and Monitoring Plan objectives (Section 1.2) are achieved through the following actions:

3 Through timely monitoring of the mitigation site, identify conditions that could prevent continued achievement of the MMP objectives.
4 Ensure that appropriate and timely maintenance actions are taken.
5 Implement adaptive management actions if determined necessary.
6 Avoid adverse impacts to special status species, and seasonal wetland areas when maintenance and adaptive management actions are taken.
7 Document and report all actions taken.

Land Manager activities, including Deed restriction or Conservation Easement consistency inspection, biological monitoring, vegetation management and security inspection, performance of necessary maintenance action, and annual reporting are detailed in the Sections below. Costs for land management activities are to be submitted by the Land Manager quarterly to the Conservation Easement Grantee, which will also hold the endowment that funds the LTMP.

10.3 Deed Restriction or Conservation Easement Consistency Inspection (PAR Element A.1[24])

Objective. Conservation Easement Grantee and Land Manager inspect property to determine if the requirements of the Conservation Easement (CE) are being met.

[24] To be provided as part of the Final MMP following receipt of authorizing agency review comments provided for the Preliminary MMP.

10.3.1 Site Inspection (PAR Element A.1)

Frequency: Annually after wetland soils dry
Responsibility: Land Manager and Conservation Easement Grantee

Task a – Conservation Easement Grantee and Land Manager inspect property. Conservation Easement Grantee prepares annual inspection report for submittal to the third-party CE beneficiaries. Report may include management recommendations to maintain consistency with requirements of the CE and LTMP.

10.4 Biological Resources Monitoring (PAR Elements B.1, B.2, and B.3)

This section presents the methods, tasks, frequency, and responsibilities for monitoring biological resources on-site, together with the monitoring objective and performance standards that define successful habitat preservation.

Objective. The objective of biological resources monitoring is to determine that habitat conditions remain suitable for special status species, and wetlands. By collecting biological monitoring data, the Land Manager will be able to identify and evaluate conditions on-site, create an ongoing record using consistent data points to monitor trends, and provide early identification of any problems at the mitigation site.

10.4.1 Vegetation Monitoring (PAR Element B.1)

Frequency: Every 5 years during spring flowering season, typically between March and May.
Responsibility: Land Manager / Landowner

***Task a – Vegetation Monitoring*.** Conduct vegetation monitoring to determine presence / absence of sensitive plant species and, if found present, estimate number of plants per species. Surveys will follow USFWS and CDFW protocols (USFWS 1996 and CDFW 2009). Location of sensitive plant species population(s) will be documented with a hand-held GPS unit with submeter accuracy. Record all plant species encountered during the survey.

Task b – Download GPS data and link to GIS database.

Task c – Analyze monitoring data for trends; compare with base line and previous data obtained during interim performance monitoring.

Task d – Prepare a detailed list of all plant species found during the survey.

10.4.2 Wetland Monitoring (PAR Element B.2)

Frequency: Every 5 years during spring flowering season, typically between March and May.
Responsibility: Land Manager / Landowner

***Task a – Wetland Monitoring*.** Every 5 years, typically between March and May, conduct an aquatic resources delineation following current Corps methodology for delineating wetlands.

Collect wetland indicator field data by recording observations on a Corps Arid West Data Sheet. Document sample locations using a hand-held GPS unit with submeter accuracy.

Task b – Analyze field data and determine presence / absence of wetlands

Task c – Map natural wetland, established wetland, and upland boundaries.

Task d – Analyze mapping for trends compared with base line and previous delineations and include with above technical report.

Task e – Prepare wetland / aquatic resources delineation report.

10.4.4 Biological Resources Monitoring Report (PAR Element B.4)

Task – Prepare letter report every 5 years that presents vegetation and wetland monitoring results and includes monitoring forms, photos, and mapping and identifies any monitoring and maintenance issues, their resolution, and future activities.

10.5 Vegetation Management (PAR Elements C.1, C.2, and C.3.)

Objective. The objective of vegetation management is to maintain the existing competitive advantage of native and naturalized wetland species over non-native invasive annual plant species.

Non-native invasive species threaten the diversity or abundance of native species through competition for resources, with native populations causing physical or chemical changes to the invaded habitat. Both native and non-native plant species occur at the mitigation site. If not properly managed, non-native invasive plant species can out-compete native plant species.

This section describes tasks for invasive species research, annual site inspections, and vegetation management methods. Managed grazing is the preferred vegetation management method.

Any significant modification to the vegetation management approach described above shall be reviewed and approved by the USFWS, CDFW, and Conservation Easement Grantee prior to implementation. These actions will be monitored and supervised by the Land Manager.

10.5.1 Vegetation Management Inspections (PAR Element C.1)

Frequency: Annually (concurrently with PAR Elements D.1, D.2, D.3 & D.4).
Responsibility: Land Manager / Landowner

Task – Annual Vegetation Management Inspections. Inspect the mitigation site annually after wetland soils dry for signs of non-native invasive vegetation growth that has the potential to gain a competitive advantage over wetland plants. Monitor and document the presence/absence of exotic / invasive species, determine appropriate adaptive management strategy and make recommendation(s) as follows:

- Using a GPS instrument, map the outer edge / perimeter of areas containing concentrations of exotic vegetation.
- Photo-document any problems discovered.
- Complete non-native invasive vegetation portion of Maintenance Monitoring Field Form to document conditions observed.
- Plot GPS polygon data on the mitigation site base map to show location(s) of invasive vegetation. When data is available (Monitoring Year 3 +) compare data with base line (Year 1 of LTMP implementation) and previous years' data in terms of geographic extent of exotic / invasive vegetation growth.

- Determine an appropriate adaptive management strategy for invasive species, then recommend vegetation management maintenance action(s) necessary to correct problem(s).

10.5.2 Invasive Species Research (PAR Element C.2)

Frequency: Annually
Responsibility: Land Manager / Landowner

Task – Non-native Invasive Species Research. The Land Manager will consult the following (or similar) sources to identify species which may threaten the mitigation site and methods for the above described development of a strategy for managing / eliminating those species:

- California Department of Food and Agriculture's Integrated Pest Control Branch (http://www.cdfa.ca.gov/plant/ipc/)
- California Department of Food and Agriculture (CDFA) list of "noxious weeds" that are subject to regulation or quarantine by county agricultural departments (Encyclopedia: https://www.cdfa.ca.gov/plant/ipc/encycloweedia/encycloweedia_hp.html)
- University of California Statewide Integrated Pest Management Program list of "Exotic and invasive pests and diseases that threaten California's agricultural, urban, or natural areas" (http://www.ipm.ucdavis.edu/GENERAL/links.html).
- California Invasive Plant Council's California Invasive Plant Inventory (https://www.cal-ipc.org/plants/inventory/)

The websites listed above, and similar websites, are frequently updated and website addresses may change as well. The Land Manager should check the websites for updated information.

10.5.3 Vegetation Management (PAR Element C.3)

Frequency: Varies; see PAR in Appendix I
Responsibility: Land Manager / Landowner

Objective: Maintain the existing competitive advantage of beneficial upland and wetland plant species over exotic invasive annual plant species, including but not limited to noxious weeds, using allowable management methods: managed grazing, mowing, and/or controlled herbicide application. The management goal is ≤ 5 percent total cover for invasive[25] plant species rated

[25] An inventory with ranking of invasives (High, Moderate, and Limited) can be found at https://www.cal-ipc.org/plants/inventory/

"high" or included as a "red alert" species by the California Invasive Plant Council or species rated as "high priority" by the Bay Area Early Detection Network.[26] Grazing is the preferred method of invasive plant control. Hand pulling is second, mowing is third, and/or a combination of these methods, with spot treatment with herbicide is the least favored. The goal is to avoid using chemical herbicides.

Note: *Prescribed burns as an adaptive management measure will not be allowed without the concurrence and written permission of the fire marshal.*

Task a – Managed Grazing. Livestock grazing (typically cattle) will be allowed throughout the year to control thatch buildup and minimize the potential for invasive plant species to out-compete the mitigation site's beneficial upland grassland species and reduce the heterogeneity of the depressional wetland vegetation. Focused grazing of sheep or goats is also allowed to control thatch buildup or problem species such as star-thistle until the problem is eliminated, but no longer than 30 days. The table below provides a summary of grazing plan details.

Grazing Agreements. Should the Land Manager allow livestock grazing on-site to manage vegetation, long-term grazing will only be allowed through an annual, renewable grazing lease signed by the Landowner, Land Manager, and the grazing lessee (if not the Landowner), with a copy provided to the Conservation Easement Grantee. The lease will be for a period of one year, subject to renewal if the terms and conditions of the previous year were met. The lease will specify the objective of the grazing program; the location(s) where livestock are allowed to graze, be watered, loaded and unloaded; the number of livestock allowed per acre; and that all fencing and gates will be maintained in proper working order (sufficient tension in the wire, repair of broken wire, and appropriate post alignment and stability). If required for localized or rotational grazing, exclusionary fencing will be provided by the grazing lessee, grazing contractor, or Land Owner to protect wetland areas specified by the Land Manager. The grazing period allowed for the year will be specified, but with the provision that during the grazing period, the Land Manager will make the final determination regarding the duration of the grazing period and whether livestock have to be removed or reduced in numbers based on the amount of rainfall received in a given year which may dictate an increase or decrease in the duration of grazing based on vegetation growth.

Livestock Watering and Loading/Unloading. Watering and loading/unloading of livestock will be conducted in specified areas away from special status species populations thereby minimizing impacts caused by these activities. Watering troughs will be equipped with adjustable float valves, so spillage is minimized.

Supplemental Feeding**.** No supplemental feeding will be allowed except for the use of certified weed-free livestock feed due to the potential for introduction of additional invasive plant

[26] https://www.sfbayjv.org/bay_area_early_detection_network.php

species to the mitigation site.

Modification of Grazing Plan. The above-described plan is only a beginning toward the development of a successful vegetation management strategy. The amount and duration of seasonal grazing may be increased or decreased from the maximum per acre livestock numbers as an adaptive management approach to meet the vegetation management objective of maintaining the existing competitive advantage of wetland and upland species over exotic annual plant species. It is important to establish a target residual dry matter (RDM) amount to assist in making appropriate decisions regarding the level of grazing to allow in order to prevent over grazing but reduce thatch levels to encourage wetland plant development in depressional areas within the landscape. As part of the maintenance monitoring program, the Land Manager will develop a "qualitative visual guided estimation approach" for estimating target RDM amounts (e.g., 300 to ≤ 500 (low RDM Range) >500 to ≤750 (Medium RDM Range); >750 to ≤1,000; and >1,000 lbs./acre (High RDM Range)) (Bartolom, Frost, and McDougald, 2006). Target RDM values will be developed from site-specific biomass, cover, density, and height data collected at six randomly located 5-foot by 5-foot sampling plots on-site using documented scientific vegetation sampling procedures. The visual guide will be based on 5 years of annual monitoring starting with the year the MMP begins and extending through the first 2 years of the LTMP implementation. The goal of the grazing management program is to achieve and maintain a medium ranging RDM in order to avoid over grazing then adjust over time, if necessary, to maintain existing state- and federal-listed plant species populations.

***Grazing Plan Reporting*.** To evaluate progress in maximizing wetland habitat development, through management for removal of invasive plant species and eliminating thatch build-up, and attaining the vegetation management objective, the Land Manager, with the assistance, as necessary, of a specialist(s) in grazing management, will include in the annual inspection and maintenance monitoring report the results of vegetation sampling in the mitigation area, the estimated RDM volumes per acre, and recommendations for any modifications to the grazing plan.

Table 11. Grazing Plan Details

Grazing Details	Specification/Requirement	Comment
Timing:		
Rainy Season	Grazing allowed.	
Dry Season	Grazing allowed.	
Type of Livestock:		
Cattle	Grazing allowed year-round.	
Sheep or Goats	Focused grazing for duration necessary to control thatch or exotic invasive weed species.	
Number:		
Cattle	Number will be determined based on vegetation management goals and comments from the agencies during the permitting review process.	Annual written agreement
Sheep or goats	Number of sheep or goats / acre and duration of	Focused grazing only

Table 11. Grazing Plan Details		
Grazing Details	**Specification/Requirement**	**Comment**
	grazing will be determined on a case by case basis.	
Other:		
Livestock Watering	Watering trough location(s) to be specified by Land Manager	Map designating location(s) will be provided by the Land Manager to the lessee as part of grazing lease agreement.
Target Residual Dry Matter	>500 to ≤750 lbs / acre around seasonal wetland areas prior to the beginning of the rainy season	A qualitative visual guided assessment approach will be developed by the Land Manager.
Sensitive Species and Habitat Protection:	Long-term Grazing. If required for localized or rotational grazing, exclusionary fencing will be provided by the Lessee or Land Owner to protect wetland areas specified by the Land Manager. Focused Grazing. If focused grazing is necessary to protect sensitive habitats, portable solar electric cross fencing will be added by grazing contractor or Land Owner.	For example, if eutrophication or disruption of long-term documentation of special status species occurrence becomes a problem.
Livestock owned/managed by:	With the exception of short-term focused grazing, livestock can be grazed only in accordance with annual written agreement signed by the Land Manager, Landowner, and Grazing Lessee	Annual agreements are renewable if the terms and conditions of the previous year were met.
Landowner:	Buzz Oates Construction 555 Capitol Mall, Ninth Floor Sacramento, CA 95814 Contact: Joe Livaich 916.379.8874 joelivaich@buzzoates.com	
Land Manager	Terry Huffman, Ph.D. Huffman-Broadway Group, Inc. 828 Mission Avenue San Rafael, CA 94901 Telephone: 415.385.1045	--
Conservation Easement Grantee	Agricultural-Natural Resources Trust 5554 Clayton Rd., #2 Concord, CA 94521 Telephone: 925. 672.2354	--

Task b – Hand Pulling. Second to grazing, hand pulling of invasive species is the preferred method. Identify the non-native species to remove, loosen the soil around the plant and pull the entire plant up from the root. Use short or long handled weeding tools and related garden aids. Optimum time is before these plants have gone to seed.

Task c – Mowing. Mowing is allowable to control nonnative invasive species during the summer months (i.e., after June 1) (a) with hand-held mechanical mowers and/or (b) with rubber-tired mowers when the ground surface and subsoil (upper 12 inches) are dry so that vehicle ruts do

not form, and special status plant species that have not gone to seed are not likely to be encountered. Prior to mowing, areas will be searched for nesting migratory birds. Areas where nesting migratory birds are found will be handled in accordance with the requirements of the Migratory Bird Treaty Act. Collect mowed material with invasive species using a hand rake, place it in disposable lawn bags, and dispose of it at a County-approved waste disposal location.

Task d – Controlled Herbicide Use. Herbicide application is allowable, but only to control small, localized non-native invasive species problem areas during the dry season. Application of herbicides will be accomplished in accordance with the following standards:

- Herbicides will be used only by a licensed applicator.
- Under the direction of the Land Manager, a biological monitor will accompany sprayers to prevent impacts to non-target native and naturalized vegetation that is to be retained.
- Nonnative plants will only be sprayed using EPA-approved post-emergent herbicides that are demonstrated to have no significant adverse effects on special status plant species.
- No herbicides shall be used within 250 feet of any special status species population without authorization from the USFWS and CDFW.

Task e - Replanting. Based on the performance standards described in Section 8.0, if planted vegetation and / or natural re-vegetation within any portions of the mitigation site appears unsuccessful due to invasive plants, the invasive plant species will be removed from the unsuccessful area and the localized area will be replanted by seeding with the same native vegetation previously planted. Consideration should be given to the use of a pre-emergent herbicide if repopulation with a dominance of invasive species is a concern. Consideration should also be given to whether the species to be planted needs to be changed from the original planting plan followed. If plant species are proposed other than previously planted, the Authorizing Agencies need to be consulted.

10.6 Security – PAR Elements D.1 – D.4

10.6.1 Site Access Security (PAR Element D.1)

Frequency: Annually after wetland soils dry (concurrently with PAR Elements C.1, D.2, D.3, & D.4).
Responsibility: Land Manager / Landowner

Objective: Monitor for and document the presence of unauthorized access. Make necessary repairs.

Adjacent properties are not under the control of the Landowner / Land Manager. Annual maintenance visits will include inspection for any evidence of vandalism or other encroachment. Because the area is fenced, vandalism is not anticipated. However, the mitigation site will be monitored for signs of (1) excessive human disturbance such as heavy foot traffic and/or illegal encampments, (2) removal of plantings, (3) off-road vehicle use, (4)

gardening, (5) evidence of waste dumping, (6) sagging fencing wires as evidence of human access by climbing over fencing, (7) cut fence, and (8) cut gate chain and/or lock.

Disturbances will be documented on monitoring forms along with remedial action being taken (e.g.,; fill tire ruts to original grade, remove garden plots, remove trash, and replanting).

Note: *Research and/or other educational programs or efforts consistent with the goals of LTMP and Conservation Easement may be allowed as deemed appropriate by the Land Manager in consultation with the Conservation Easement Grantee but are not to be funded by this management plan.*

Task – Conduct Annual Land Use Inspection for Evidence of Unauthorized Access and Encroachment. During each site visit for management and monitoring purposes, inspect the mitigation site for signs of encroachment. Document and mitigate any problems identified as follows.

1. Complete Maintenance Monitoring Field Form (Appendix G) documenting conditions observed.
2. Photo-document any problems discovered.
3. Document location with a GIS grade GPS instrument.
4. Using GPS data, map location on a mitigation site base map.
5. Remove any accumulated debris, trash or litter and dispose of at an appropriate county-approved disposal location.
6. For tire ruts or other types of depressional and elevated areas, fill and level soil surface back to original grade.
7. If necessary, take appropriate actions with the assistance of the County, the Corps, USFWS, CDFW, and RWQCB to prevent future encroachment or vandalism.

10.6.2 Fences, Gates, Locks, and Signs (PAR Element D.2)

Frequency: Annually (concurrently with PAR Elements C.1, D.1, D.3 & D.4).
Responsibility: Land Manager / Landowner

Objective: Maintain fencing to preserve mitigation site integrity, preclude public access, prevent damage to habitat and associated biota, and facilitate the ongoing management of the mitigation site. The entire site is currently fenced. To preserve the integrity of the mitigation site, the Land Manager will inspect all perimeter fencing, the gate(s), lock(s), and signs for the entire site.

Inspection and maintenance protocols are presented below.

Task a – Conduct annual property maintenance inspection. Inspect property annually to evaluate integrity of fences, gates, locks, and signs. Document and mitigate any problems identified as follows.

- Complete Maintenance Monitoring Field Form (Appendix G) documenting conditions observed.
- Photo-document any problems discovered.
- Document location by obtaining GPS coordinates using a GIS-grade GPS instrument.
- Using GPS data, map location(s) on base map of the mitigation site.
- Initiate any necessary maintenance as described below to correct problems observed and photo document (before and after) maintenance activity and describe on the Maintenance Monitoring Field Form.

Fencing & Gates. Inspect fencing and gates to ensure they are maintained in good condition to prevent unauthorized access. Check to see that there is proper tension in the wire or fencing / gate parts, the wire or metal grill work is not broken, and appropriate post alignment and stability is maintained. Maintenance actions taken may include splicing broken wire, reattachment of wire or gate to fence posts, replacing fence posts, replacing gate parts, and replacing gate, (e.g., steel gate, wire gap).

Replace existing fencing and gates sitewide when it is no longer functional; assume that all wire fencing and posts will need to be replaced every 30 years.

Locks. Replace chain and locks, as necessary.

Signs. Replace signs found to be damaged or illegible or if information on them needs updating.

10.6.3 Fuel Management (PAR Element D.3)

Frequency: (If Required) Annually, after wetland soils dry (concurrently with PAR Elements C.1, D.1, D.2 & D.4).
Responsibility: Land Manager / Landowner.

Objective: Maintain mitigation site as required by local fire marshal for fire prevention, while limiting impacts to mitigation site biological resources from excessive vegetation fuel load.

***Task a - Fire Breaks*.** If the local Fire Marshal requires fuel breaks, they will be maintained through mowing or focused livestock grazing when the ground surface is dry. Prior to creating fuel breaks, areas will be searched for nesting migratory birds. Areas where nesting migratory birds are found will be handled in accordance with the requirements of the Migratory Bird Treaty Act and Fish and Game Code section 3500 et seq. Disking is not permitted for fuel management.

***Task b – Conduct Annual Inspection for Excessive Vegetation Fuel Load*.** In coordination with the local fire marshal, inspect the mitigation site after the end of the rainy season and before grasses dry up (typically by June 1) for signs of excessive vegetation fuel load within designated fire break areas. Document and mitigate any problems identified as follows.

- Complete Maintenance Monitoring Field Form (Appendix G) documenting conditions observed.

- Photo-document any problems discovered.
- Document location with a GIS grade GPS instrument.
- Using GPS data, map location(s) on a base map of the mitigation site.
- Mow or conduct focused livestock grazing if needed

10.6.4 Mosquito Control (PAR Element D.4)

Frequency: (If required by County or City) Once annually during mosquito breeding season. (concurrently with PAR Elements C.1, D.1, D.2 & D.3)
Responsibility: Land Manager / Landowner

Objective: Work with City of Suisun City and/or Solano County Mosquito Abatement District to monitor mosquito populations and mitigate if necessary.

Task a – Conduct Annual Inspection to Assess Mosquito Breeding Potential in Coordination with the Solano County Mosquito Abatement District. Inspect mitigation site annually during the rainy season when air temperatures and a recent rainfall event (typically > 1 inch) are conducive to mosquito breeding in standing water.

- Conduct site visit with County mosquito control staff.
- Complete Maintenance Monitoring Field Form (Appendix G) documenting conditions observed.
- Document location of potential problem(s) with a GIS-grade GPS instrument.
- Using GPS data, map location(s) on the mitigation site base map.
- Eliminate or reduce potential mosquito problem following the vector control plan developed by the mosquito control district.
- Describe actions taken in maintenance section of annual monitoring report.

If vector control becomes necessary, the County would identify and implement mosquito control practices that are protective of wetlands, state special status species, and other federally protected species. The plan shall be approved by Landowner, and Conservation Easement Grantee, If requested by the agencies the plan will also be provided to and approved by USFWS and/or CDFW prior to implementation by the mosquito control district.

10.7 Prepare Annual Accounting and Management Report (PAR Element E.1)

Frequency: Annually.
Responsibility: Land Manager / Landowner

Objective: Prepare annual accounting and management report.

Task a - Provide an accounting of all Endowment funds expended in the management of the Property during the previous year.

Task b - Provide a general summary description of the status of the Property based on analysis of Tasks c and d. below. The report shall describe status of the Property, positives and negatives

with references to accounting, biological and management report sections of the accounting and management report.

Task c - Review biological data (B.1 & B.2) for comparative trends and potential need for adaptive management if objectives of MMP / LTMP are not being met. Prepare biological section of the accounting and management report based on analysis of data from biological monitoring as scheduled and described for Elements B.1 and B.2. Assess changes in biological resources by comparing current data with baseline and previous years' data. Include illustrative figures & maps for comparative purposes. Make recommendations, as necessary.

Task d - Review and analyze management and maintenance data (Elements C.1 - D.4) for comparative trends and potential need for adaptive management if objectives of MMP / LTMP are not being met. Review data (analyze data using GIS mapping analysis, if necessary) and comparative tables. Describe previous years maintenance actions, results, describe any maintenance problems and recommendations for future actions.

Task e - Describe management actions to be undertaken in the coming year. Provide estimated costs. Review management procedures, sampling protocols to assess whether adjustments need to be made to maintain and preserve habitat. Estimate costs for upcoming year.

10.8 Adaptive Management

An adaptive management plan to be followed during long-term management of the mitigation site is provided in Section 11.0, below.

10.9 Schedule

Implementation of this LTMP will begin on year 11 assuming establishment and funding of the endowment and recording of the Deed restriction or Conservation Easement is complete. The schedule outlining the proposed frequency of monitoring and routine maintenance procedures for the mitigation site is provided in the following table.

Table 12. Long-Term Monitoring, Maintenance, and Reporting Schedule

Monitoring / PAR Element	Frequency	Responsibility
A. Conservation Easement		
A.1. Conservation Easement On-site Consistency Inspection	Yearly	Conservation Easement Grantee with Land Manager
B. Biological Monitoring		
B.1. Vegetation Monitoring	Every 5 years following LTMP implementation	Land Manager
B.2. Wetland Monitoring	Every 5 years following LTMP implementation	Land Manager
B.3. Biological Resources Monitoring Report to Resource Agencies	Every 5 years following LTMP implementation	Land Manager
C. Vegetation Management		

Table 12. Long-Term Monitoring, Maintenance, and Reporting Schedule		
Monitoring / PAR Element	**Frequency**	**Responsibility**
C.1. Vegetation Management	Annually after wetland soils dry (concurrently with Elements D.1, D.2, D.3, & D.4)	Land Manager
C.2. Invasive Species Research	Annually	Land Manager
C.3. Managed Grazing	Annually	Livestock Lessee or Contractor under contract with Land Manager or Landowner
D. Security		
D.1. Site Access Security	Annually (concurrently with Elements C.1, D.2, D.3, & D.4)	Land Manager
D.2. Fences, Gates, Locks, Signs, & Monuments	Annually (concurrently with Elements C.1, D.1, D.3, & D.4)	Land Manager
D.3. Fuel Management	Currently not required; if required likely annually after wetland soils dry (concurrently with Elements C.1, D.1, D.2, & D.4)	Land Manager
D.4. Mosquito Abatement	Annually during mosquito breeding season (concurrently with Elements C.1, D.1, D.2, & D.3).	Land Manager
E. Reporting		
E.1. Prepare Annual Accounting and Management Report	Annually	Land Manager

10.10 Recordkeeping and Reporting

Task a – Annual Work Plan and Budget Preparation and Funding. Annually by September 1, prepare a work plan and budget for the next calendar year. Submit the work plan / budget to the endowment holder by October 1. Discuss the plan with the endowment holder and agree upon the endowment distribution amount. Funding should be received by January 1 of the new year.

Task b. - Maintain Periodic Inspection Documentation and Annual Report. The Land Manager will collect, maintain, and archive in either digital or paper form: (1) completed Management Inspection Forms, including photos and maps; (2) completed Maintenance Action Forms, including photos and maps; (3) vendor invoices and receipts, (4) Resource agency contact records (letters and emails); and (5) annual accounting of endowment funds. The Land Manager will provide archived records or related information to resource agencies and/or Conservation Easement Grantee upon request.

10.11 Plan Amendments

The Land Manager**,** Landowner, Conservation Easement Grantee, and the Corps, USFWS, CDFW and / or RWQCB, may meet and confer from time to time regarding revision(s) of the LTMP as described in Section 10.0, to better meet management objectives and preserve the habitat and

conservation values of the mitigation site. Any proposed change(s) to the LTMP shall be discussed and designed with input from all parties. Amendments to the LTMP shall be approved by the Corps, USFWS, CDFW, RWQCB, and Conservation Easement Grantee in writing (letter or email). Plan amendments shall be required management components and shall be implemented by the Land Manager within the budget constraints of the endowment.

If the USFWS and / or CDFW determine, in writing (letter or email), that continued implementation of an element(s) of the LTMP would jeopardize the continued existence of a state or federally listed species, the amendment to the LTMP that is determined by the above-described review process necessary to avoid jeopardy shall be a required management component and shall be implemented by the Land Manager.

10.12 Notification

Any notices regarding the LTMP shall be directed as follows:

PERMITTEE / LANDOWNER:
Buzz Oates Construction

LANDOWNER CONTACT:
Buzz Oates Construction
555 Capitol Mall, Ninth Floor
Sacramento, CA 95814
Contact: Joe Livaich
916.379.8874
joelivaich@buzzoates.com

LAND MANAGER:
Terry Huffman, PhD
Huffman-Broadway Group, Inc.
828 Mission Avenue
San Rafael, California 94901
415.385.1045 / thuffman@h-bgroup.com

CE GRANTEE & ENDOWMENT HOLDER:
To be Determined

Corps: CLEAN WATER ACT SECTION 404 PERMIT AUTHORIZATION; CE THIRD-PARTY BENEFICIARY:
Department of the Army
San Francisco District, Corps of Engineers
Regulatory Division
450 Golden Gate Avenue, 4th Floor
San Francisco, California 94102-3404
Attn: Division Chief
415.503.6768

USFWS: ISSUES BIOLOGICAL OPINION:
US Fish & Wildlife Service
Sacramento Field Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825
Attn: Field Supervisor
916.414.6600; Fax: 916.414.6712 or 916.414.6713

CDFW: ISSUES INCIDENTIAL TAKE PERMIT:
California Department of Fish and Wildlife
Bay Delta Region
2825 Cordelia Road, Suite 100
Fairfield, CA 94534
Attn: Regional Manager
707.428.2002

RWQCB: CLEAN WATER ACT SECTION 401 WATER QUALITY CERTIFICATION
San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612
Attn: Executive Director
(510) 622-2300

10.13 Funding

The LTMP described in this Section 10.0 will be fully funded by the Landowner through an endowment held and managed by a third party or the Conservation Easement Grantee, which is a 501(c)(3) organization authorized by the USFWS and CDFW to hold endowments. A Property Analysis Record (PAR) used to determine the amount of endowment necessary for implementation of the LTMP for the mitigation site is presented in Appendix I.

10.14 Responsible Parties

Successful implementation of this LTMP is the responsibility of the following:

PERMITTEE / LANDOWNER:	**LAND MANAGER:**
Buzz Oates Construction	Terry Huffman, PhD
555 Capitol Mall, Ninth Floor	Huffman-Broadway Group, Inc.
Sacramento, CA 95814	828 Mission Avenue
Contact: Joe Livaich	San Rafael, CA 94901
916.379.8874	415.385.1045 (cell) ~ 415.925.2006 (fax)
joelivaich@buzzoates.com	thuffman@h-bgroup.com

11.0 ADAPTIVE MANAGEMENT PLAN

An integral part of a successful mitigation project is early detection of problems through periodic monitoring designed to identify problems that have the potential to prevent the mitigation project from successfully meeting or continuing to meet plan objectives. Successful problem resolution requires identification of the cause(s) of the problem, the development of a strategy for how to correct the problem, and then implementation of the strategy with follow-up monitoring to determine if the problem has been corrected.

Section 11.1 below discusses problem identification; Section 11.2 discusses identification of adaptive management approach strategy; Section 11.3 describes agency initiating procedures; Section 11.4 funding responsibility; and Section 11.5 identifies responsible parties.

11.1 Problem Identification

Periodic monitoring is key to identifying problems that would impact successfully meeting the objectives or continuing to successfully meet the objectives of the mitigation plan. Failure to meet one or more of the annual performance standards described in Section 8.0 or monitoring conducted as part of the LTMP is the primary means to determine if an adaptive management strategy needs to be developed and then implemented. However, initiation of an adaptive management process can also be anticipatory where it is judged during mitigation site inspection that if corrective action is not taken one or more performance standards may not be met or continue to be met during implementation of the LTMP. Examples include unanticipated anthropogenic problems such as large-scale trespassing and vandalism, goose predation of plantings, waterfowl congregation, and growth of invasive plant species.

11.2 Initiation of Adaptive Management Approach Strategy

Once problems are identified, a strategy for correcting the problem is developed and corrective action or actions are taken. Such measures may include, but are not limited to, part or all of the mitigation site. If problems are of a small-scale nature immediate notification of the problem to the approving agencies is not necessary and can be reported in the annual monitoring report. However large-scale problems should be reported to the Authorizing Agencies as soon as possible requesting assistance in development of a management strategy. The following subsections provides a representative summary of types of small- and large-scale problems that have been encountered by past aquatic resource mitigation projects, possible management strategies, and corrective actions. This is not meant to be an inclusive summary, but although believed unlikely, is prepared in anticipation of more common issues should they arise.

11.2.1 Small Scale Problems

Potential small-scale problems and possible management strategies and actions that may be taken are summarized in the table below.

Table 13. Example Small Scale Problem Adaptive Management Strategies and Actions		
Small Scale Problem	**Management Strategy**	**Potential Corrective Action(s)**
Trash	Litter and debris should be removed as a matter of routine maintenance. If litter and debris continue to be left at the migration site, fencing and signage should be installed to discourage access. If person or persons committing the vandalism are known, law enforcement should also be involved.	■ Remove litter and debris ■ Place fencing around the mitigation site until performance standard successfully met ■ Install sign(s) indicating to please keep out of fenced area which is an ecological restoration site ■ Involve law enforcement
Vandalism	Measures should be taken to discourage access such installing temporary fencing and signage. If person or persons committing the vandalism are known, law enforcement should also be involved. Law enforcement should be involved if problem persists.	
Heavy foot traffic	Measures should be taken to discourage access such installing temporary fencing and signage.	(2) Restore damaged areas (3) Place temporary fencing around the mitigation site until performance standard successfully met (4) Install sign(s) indicating to please keep out of fenced area which is an ecological restoration site
Isolated instances of plant mortality	Re-planting during the rainy season should occur.	(5) Re-prepare seed bed (6) Re-plant seed during rainy season (7) Continue annual monitoring.
Small-scale weed infestations	Invasive plants should be removed without the use of herbicides followed by re-planting, if necessary, during the rainy season should occur.	(8) Remove invasive species (9) Re-prepare seed bed (10) Re-plant seed during rainy season (11) Continue annual monitoring.
Goose predation of plantings	Measures should be taken to re-plant the site and then preclude access using fencing and overhead netting to discourage access.	(12) Place temporary fencing and overhead netting around the mitigation site until performance standard successfully met (13) Re-prepare seed bed (14) Re-plant seed during rainy season (15) Continue annual monitoring

11.2.2 Large Scale Problems

Potential large-scale problems and possible management strategies and actions that may be taken are summarized in the table below.

Table 14. Example Large Scale Problem Adaptive Management Strategies and Actions		
Large Scale Problem	**Management Strategy**	**Potential Corrective Action(s)**
Mitigation cannot be constructed in accordance with	Either revise mitigation construction design or provide mitigation by an alternate means.	■ Revise construction plan ■ Select an alternative mitigation site for approved plan implementation

Table 14. Example Large Scale Problem Adaptive Management Strategies and Actions		
Large Scale Problem	**Management Strategy**	**Potential Corrective Action(s)**
the approved mitigation plan		▪ Purchase mitigation bank credits
Failure to meet hydrology performance standard	Measures should be taken to understand existing soil permeability and topographic conditions as relates to surface drainage. Then, if necessary, re-grade and plant the site.	▪ Conduct soil permeability study ▪ Prepare topographic survey ▪ Re-grading to modify surface drainage ▪ Excavation and regrading after adding soil with low permeability ▪ Obtain agency approval of a revised planting plan ▪ Implement mitigation at an alternate site using initially approved performance standard ▪ Purchase mitigation bank credits
Failure to meet Vegetation performance standards (Dominance of Wetland Species)	Measures should be taken to understand existing soil permeability and topographic conditions as relates to surface drainage and hydric soil development that supports hydrophytic vegetation. Then, if necessary, re-grade to create wetter soil conditions and plant the site.	1. Obtain agency approval of a revised planting plan 2. weeding to eliminate competing non-native invasive species 3. Replanting with a different species; 4. Allowing for continued re-vegetation with naturalized non-invasive vegetation. 5. Implement mitigation at an alternate site using initially approved performance standards 6. Purchase mitigation bank credits
Failure to meet Vegetation Criteria (Control of invasive plant species)	Measures should be taken to aggressively remove invasive species and then either re-plant site and / or allow for natural revegetation. Intensify maintenance monitoring and actions, if needed, remove any invasive species as they begin to appear to minimize competition.	a) Mowing b) Focused grazing c) Pre-emergent herbicide treatment d) Seed bed preparation and re-planting (with same or different plant species after obtaining an agency approval of a revised planting plan) e) Implement mitigation at an alternate site using initially approved performance standard f) Use of mitigation bank plant species g) Allow for natural revegetation h) Intensify inspection and maintenance actions
Fire	Measures should be taken to re-plant the site if determined necessary.	i) Re-planting as before

Table 14. Example Large Scale Problem Adaptive Management Strategies and Actions		
Large Scale Problem	**Management Strategy**	**Potential Corrective Action(s)**
Failure to meet performance criteria after corrective action taken	Evaluate performance standard for appropriateness and potentially change. If appropriate, revise performance criteria to account for measures taken to address deficiencies in the compensatory mitigation project or to reflect changes in management strategies and objectives if the new criteria provide for ecological benefits that are comparable or superior to those approved.	j) Revise performance standards k) Implement mitigation at an alternate site using initially approved performance standards l) Purchase mitigation bank credits

11.3 Agency Initiating Procedures

Notification to Authorizing Agencies and Conservation Easement Grantee is required for the following adaptive management actions:

- A significant modification of the approved mitigation plan in terms of plan implementation, maintenance, performance standards, performance monitoring, long-term management, site protection, or financial assurances.
- If monitoring or other information indicates that the mitigation project is not progressing towards meeting its performance standards as anticipated, the Landowner or Land Manager must notify the Authorizing Agencies and Conservation Easement Holder as soon as possible.

Notification will consist of providing an analysis of the problem and proposed corrective strategy / action plan for approval. Scaled plan and section view drawings should be provided for site construction modifications.

If all the performance standards have not been met by Year 10, the maintenance and performance monitoring obligations will continue until the Authorizing Agencies determine the mitigation project is complete.

11.4 Funding

The Landowner has and will fund the costs associated with adaptive management actions taken to successfully achieve agency required performance standards during years 1 through 10. Actions taken during long-term management will be funded by contingency funds established as part of the endowment funding described in Section 10.0.

11.5 Responsible Parties

The following parties are responsible for identifying problems and, if needed, contacting Authorizing Agency and Conservation Easement Grantee representatives to develop appropriate adaptive management measures:

PERMITTEE / LANDOWNER:

Buzz Oates Construction
555 Capitol Mall, Ninth Floor
Sacramento, CA 95814
Contact: Joe Livaich
916.379.8874
joelivaich@buzzoates.com

LAND MANAGER:

Terry Huffman, PhD
Huffman-Broadway Group, Inc.
828 Mission Avenue
San Rafael, CA 94901
415.385.1045 (cell) ~ 415.925.2006 (fax)
thuffman@h-bgroup.com

12.0 FINANCIAL ASSURANCES

12.1 Funding

The LTMP described in Section 10.0 will be fully funded by the Permittee / Landowner through an endowment held and managed by a third party or the Conservation Easement Grantee.

Buzz Oates Construction
555 Capitol Mall, Ninth Floor
Sacramento, CA 95814
Contact: Joe Livaich
916.379.8874
joelivaich@buzzoates.com

A Property Analysis Record (PAR) used to determine the amount of endowment necessary for implementation of the LTMP for the mitigation site is presented in Appendix I (to be provided as part of the detailed Final MMP to be submitted following receipt of authorizing agency review comments provided for the Preliminary MMP / LTMP).

The purpose of the endowment is to provide a non-wasting fund designed to provide through conservative investment an annual interest amount which covers all costs associated with implementing the LTMP as described in Section 10.0, above. The LTMP will be funded immediately following recording of the Conservation Easement.

Note. *Annual costs for at least the first ten (10) years of plan implementation as part of MMP will be paid directly by the Landowner prior to funds being taken from the endowment for annual management activities. This will allow for the endowment funds to accumulate prior to the tenth year and subsequent annual draw to fund LTMP implementation activities.*

12.2 Prioritization of Annual Management Activities

Due to unforeseen circumstances, prioritization of management plan Elements A – D, including activities resulting from new requirements, may be necessary if insufficient funding is available to accomplish all management elements described in the LTMP (Section 10.0). The Land Manager, Corps, USFWS, CDFW, and Conservation Easement Grantee shall discuss management priorities and funding availability to determine which management plan elements or specific management actions will be implemented. In general, implementation of management elements is prioritized in this order: (1) management actions required by a local, state, or federal agency; (2) management actions necessary to maintain or remediate habitat quality; and (3) management actions that monitor resources, particularly if past monitoring has not shown downward trends. Equipment and materials necessary to implement priority management actions will also be considered priorities. Final determination of priorities in any given year of insufficient funding will be determined in consultation with the Corps, USFWS, CDFW, RWQCB, and Conservation Easement Grantee.

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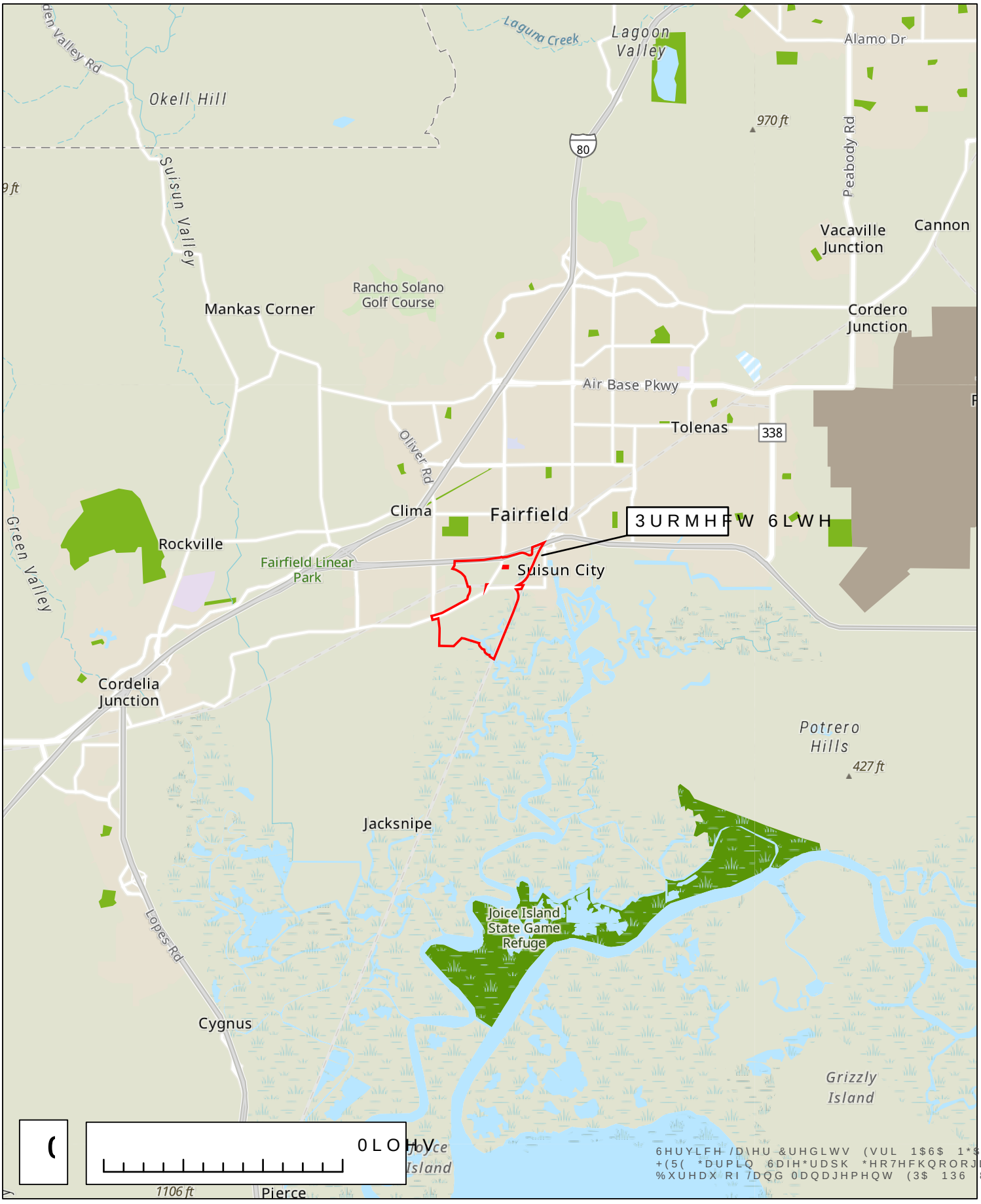
Appendix A

Figures



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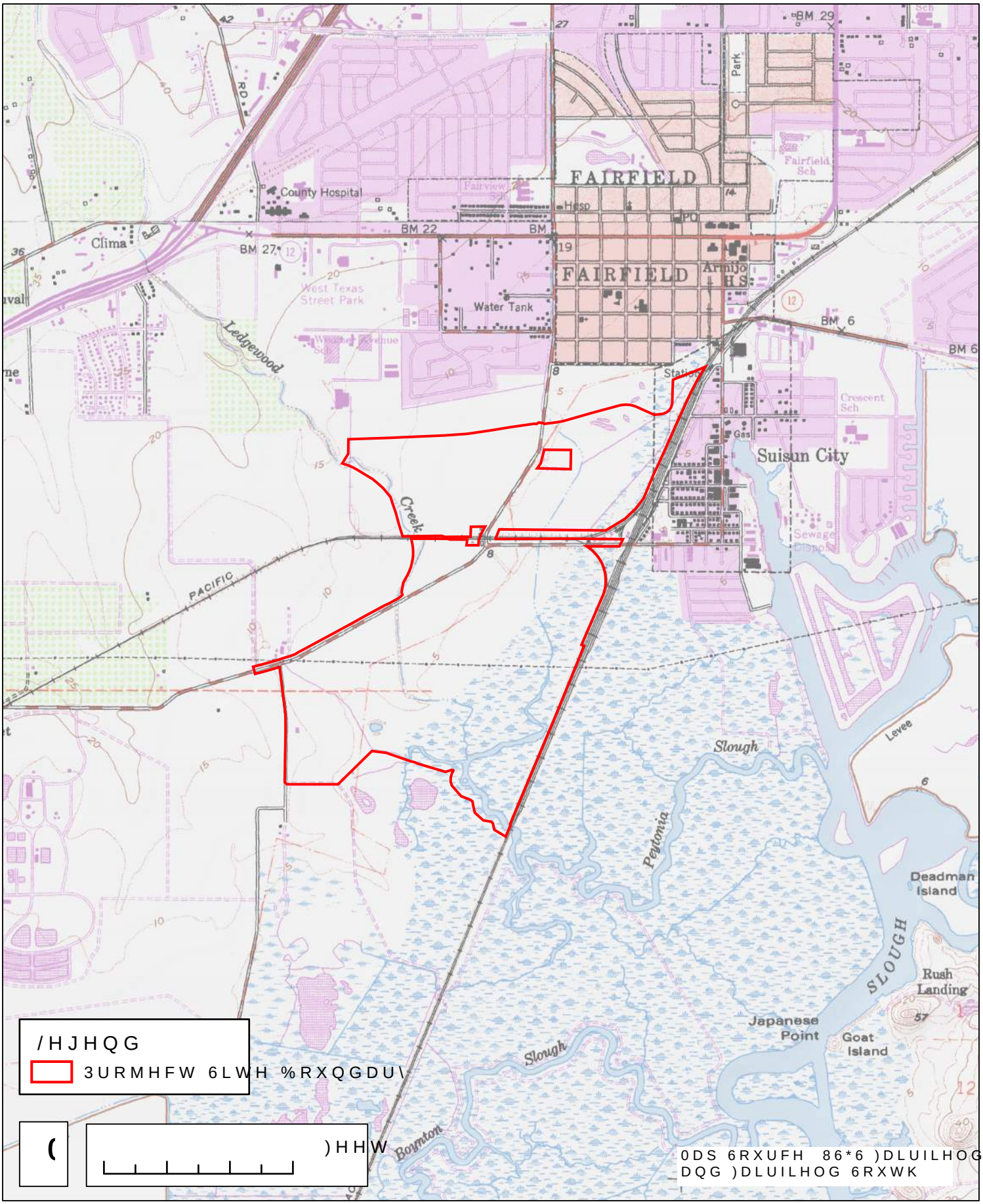

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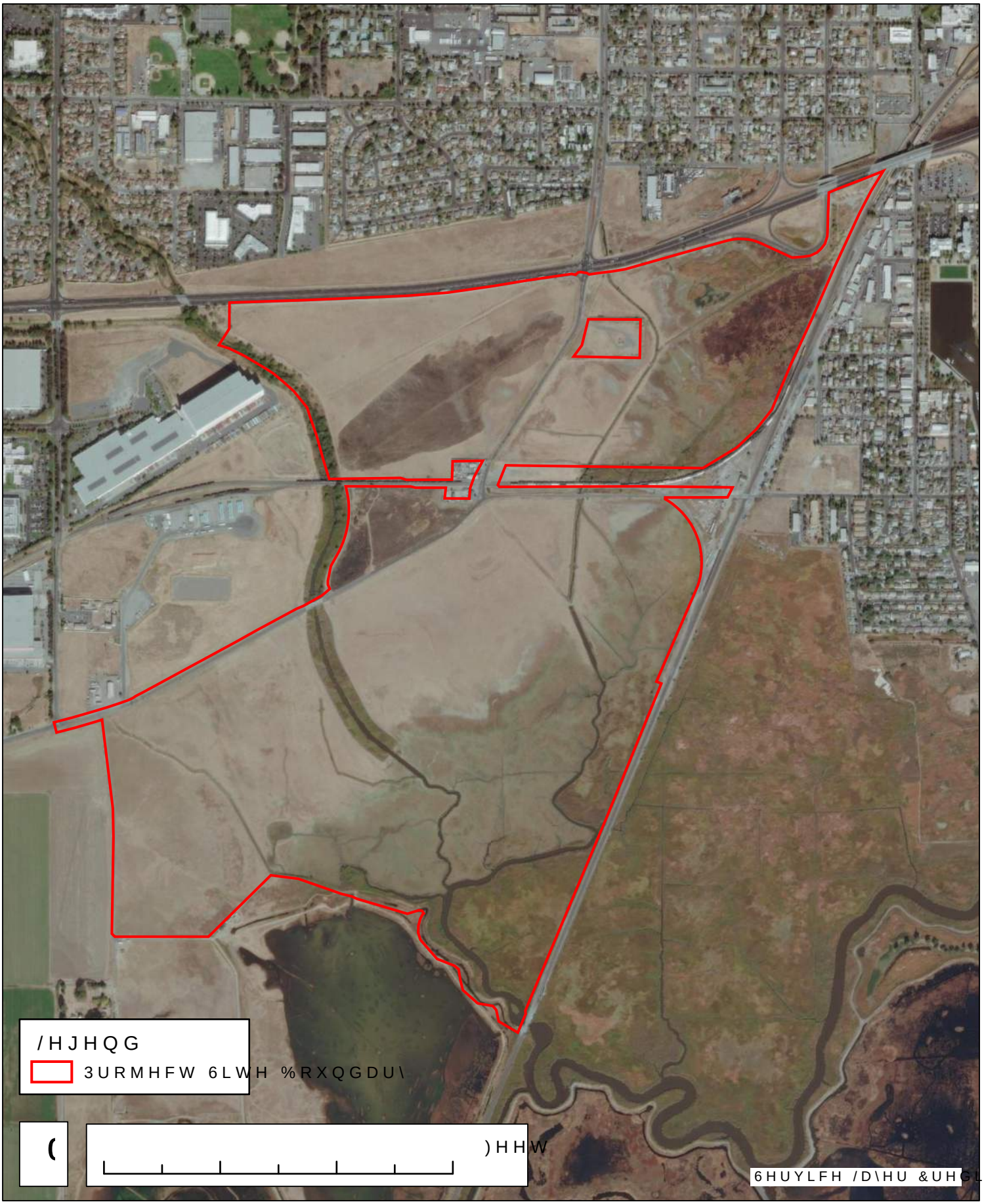

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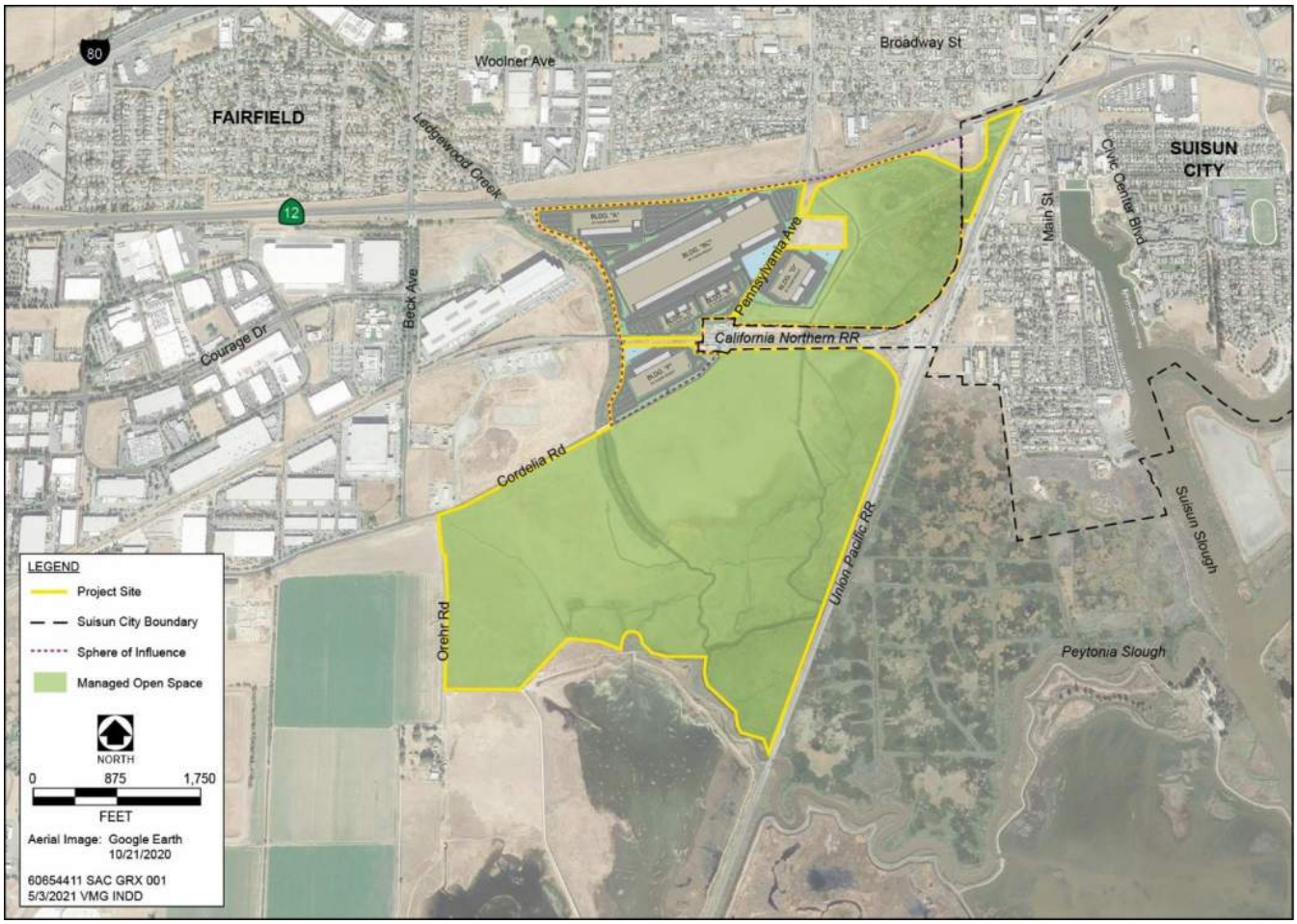

Source AECOM 2022

Figure 4. Proposed Development Site and Managed Open Space Area
Highway 12 Logistics Center Project
Solano County, California

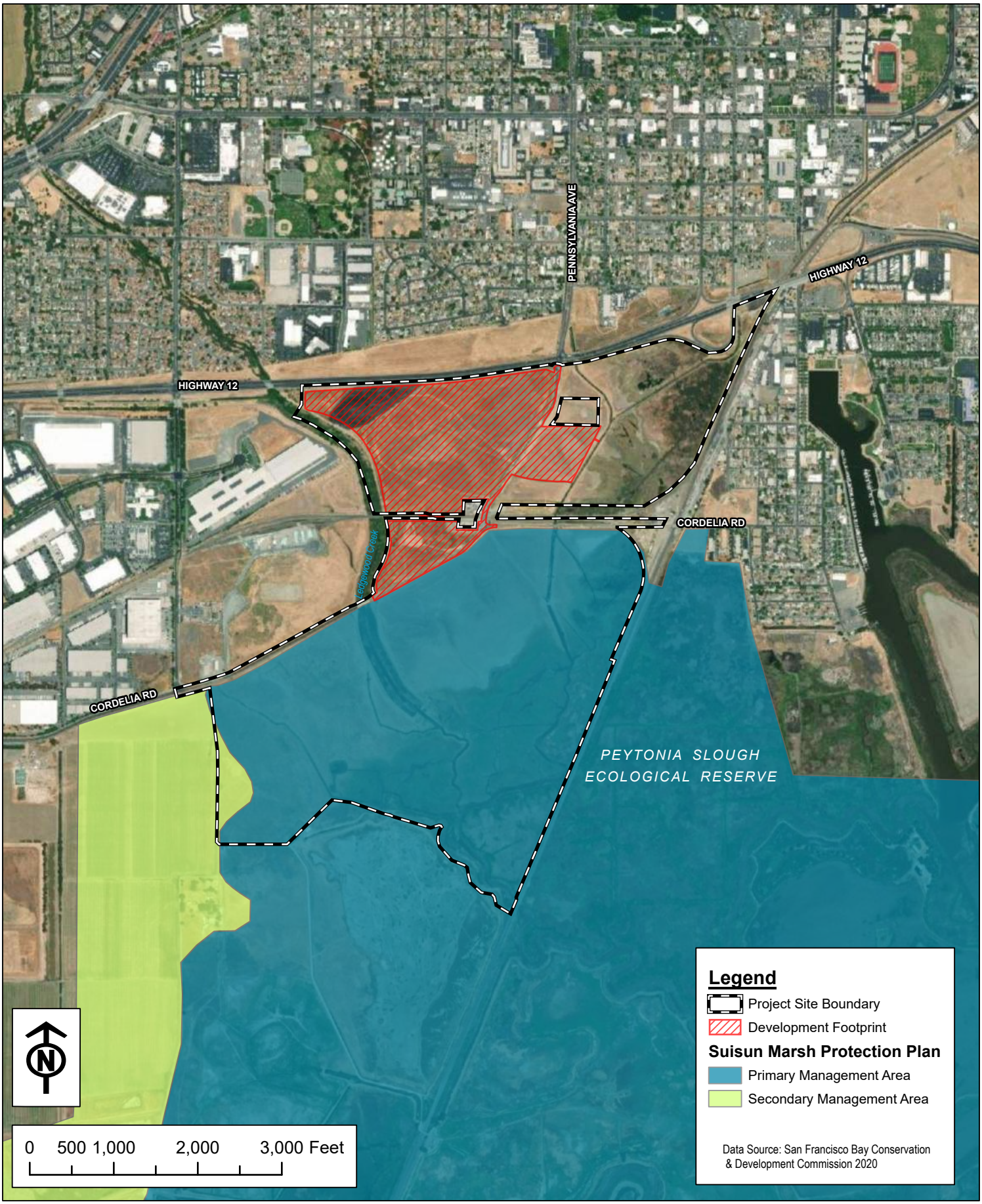

Figure 5. Suisun Marsh Primary and Secondary Management Areas

Highway 12 Logistics Center Project
Solano County, California

Huffman-Broadway Group, Inc.
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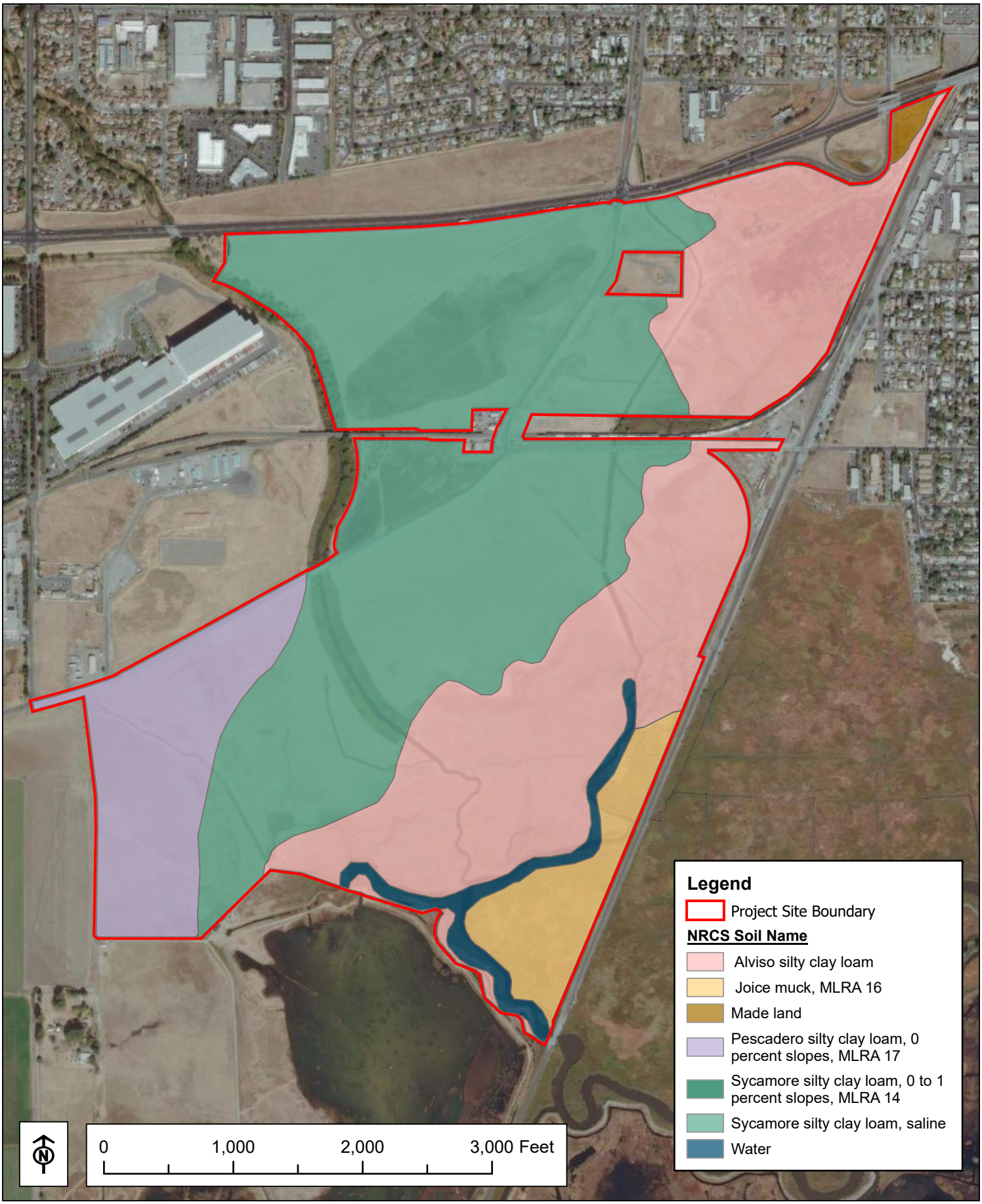

Figure 6. NRCS Soils Map
Highway 12 Logistics Center Project
Solano County, California

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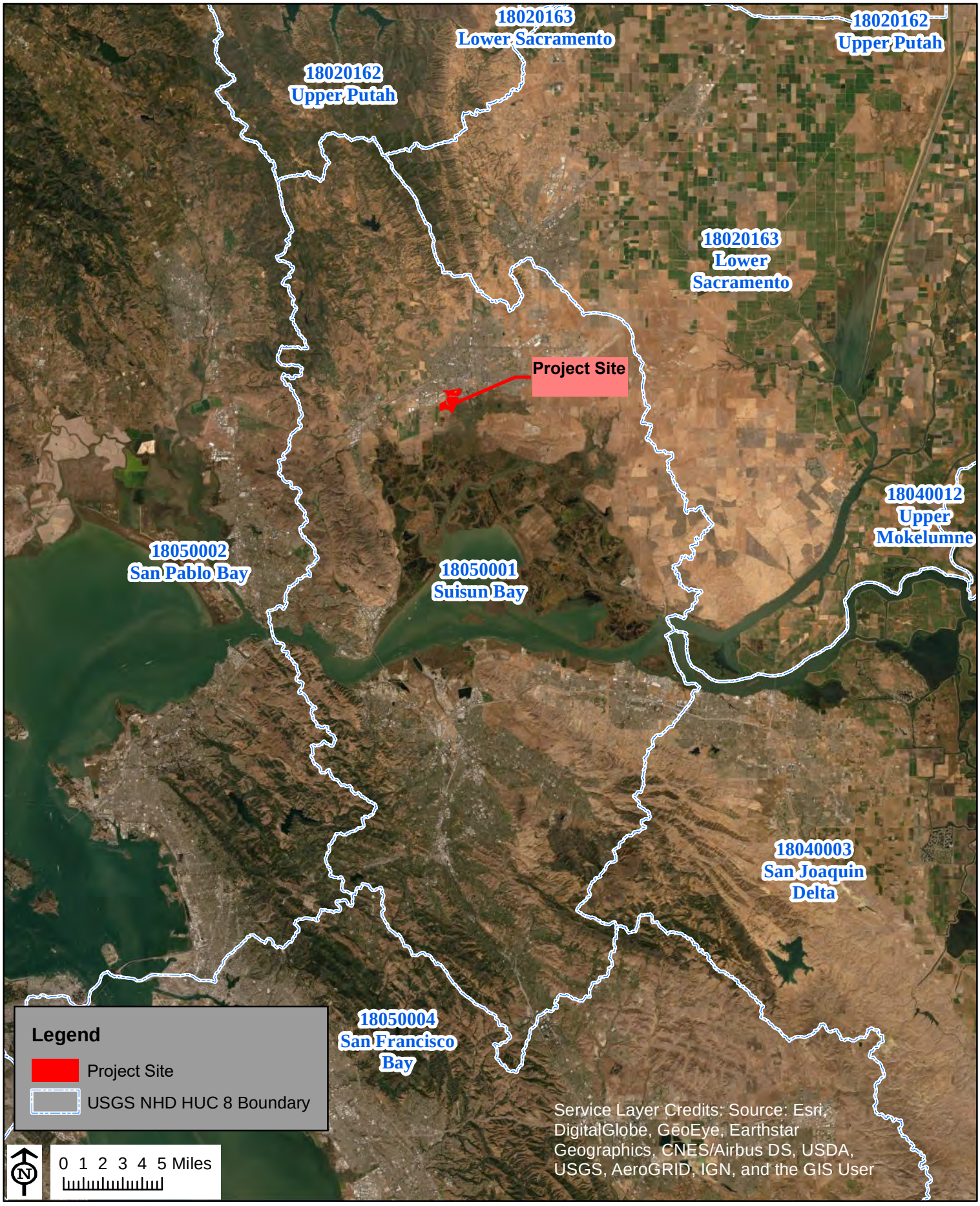

Figure 7. USGS NHD HUC 8 Map
Highway 12 Logistics Center Project
Sonoma County, California

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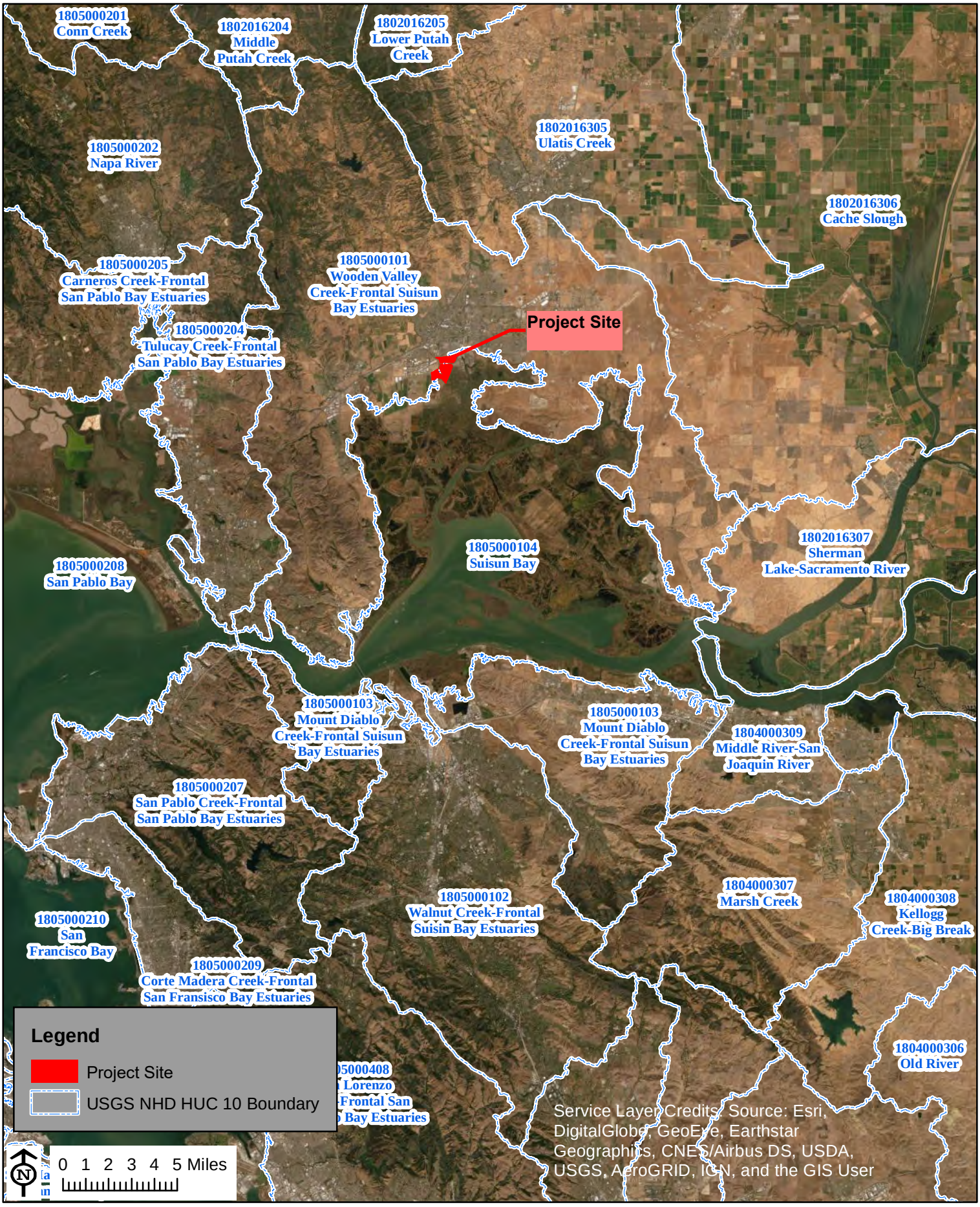

Figure 8. USGS NHD HUC 10 Map

Highway 12 Logistics Center Project
Sonoma County, California

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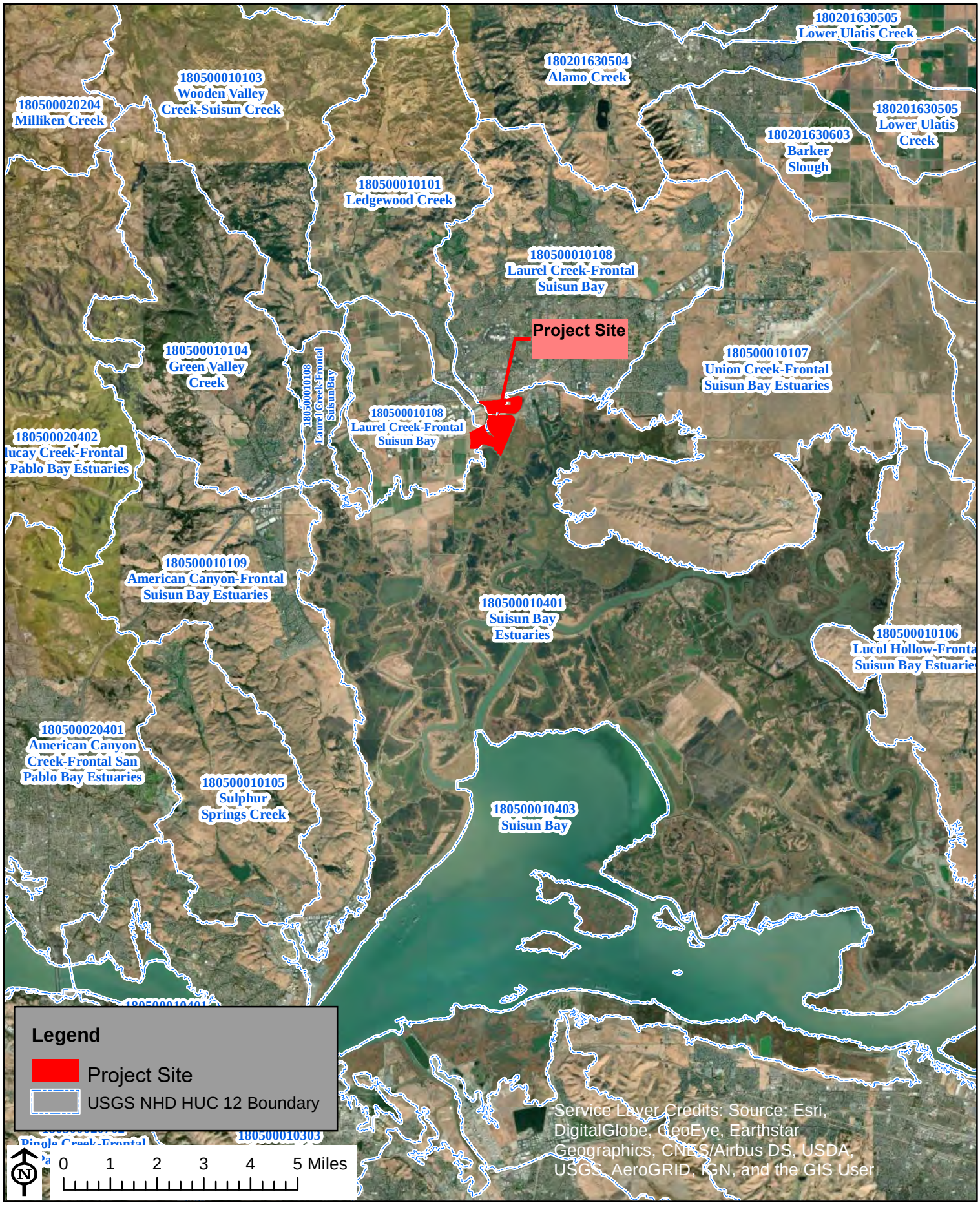

Figure 9. USGS NHD HUC 12 Map

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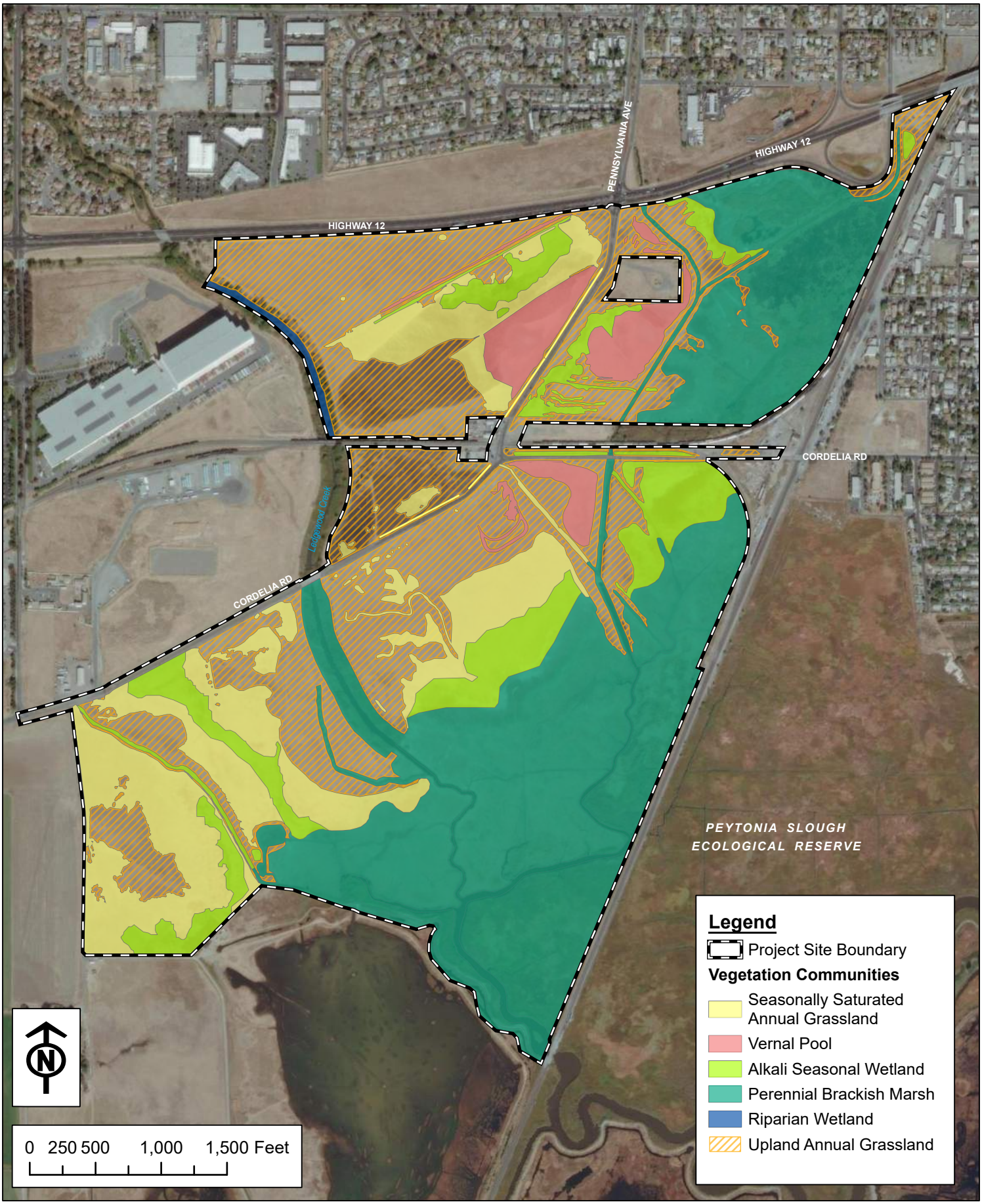

Figure 10. Vegetation Communities
Highway 12 Logistics Center Project
Solano County, California

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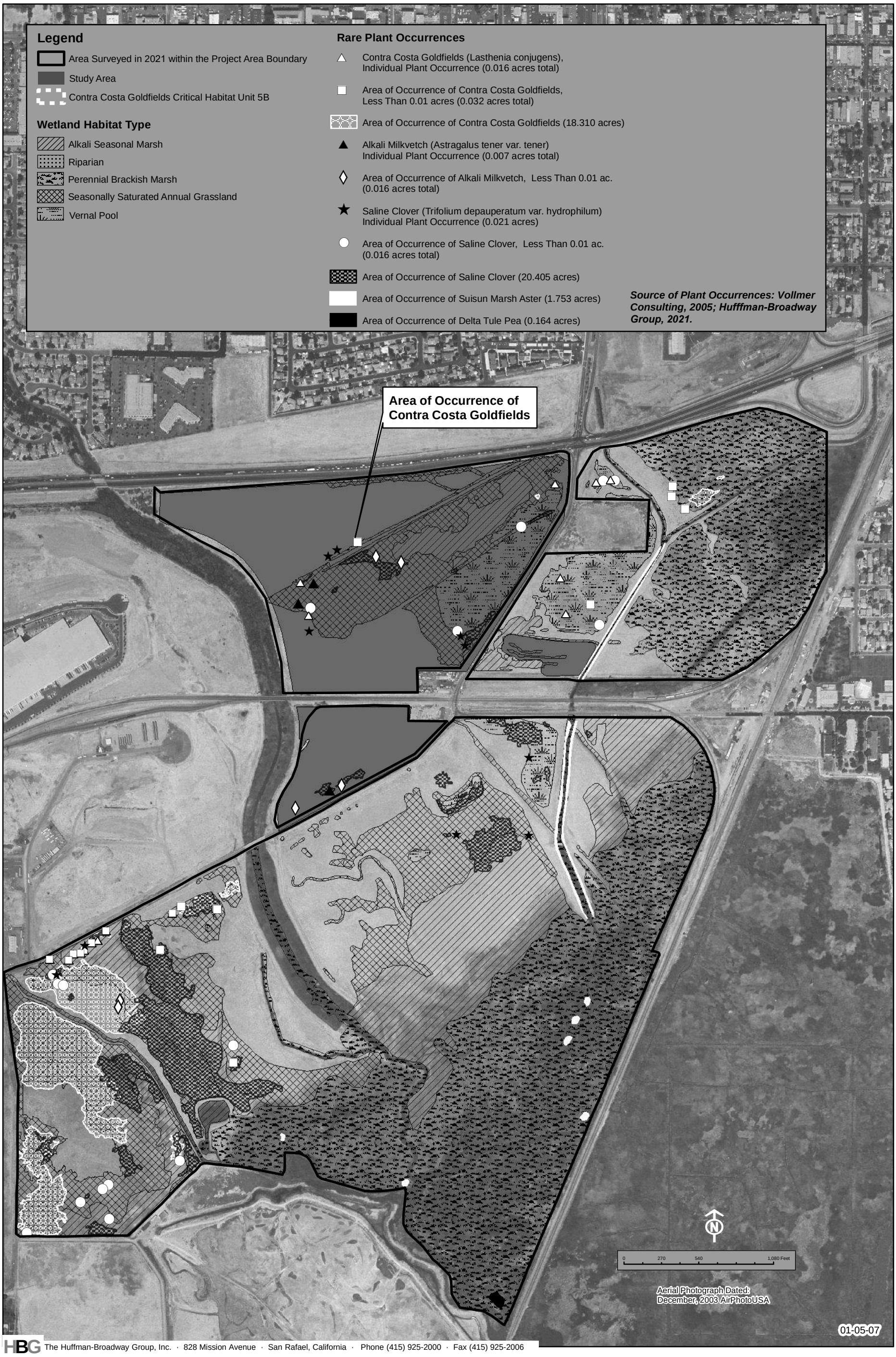

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Figure 11. 2021 Special Status Plant Locations
Highway 12 Logistics Center Project
Solano County, California

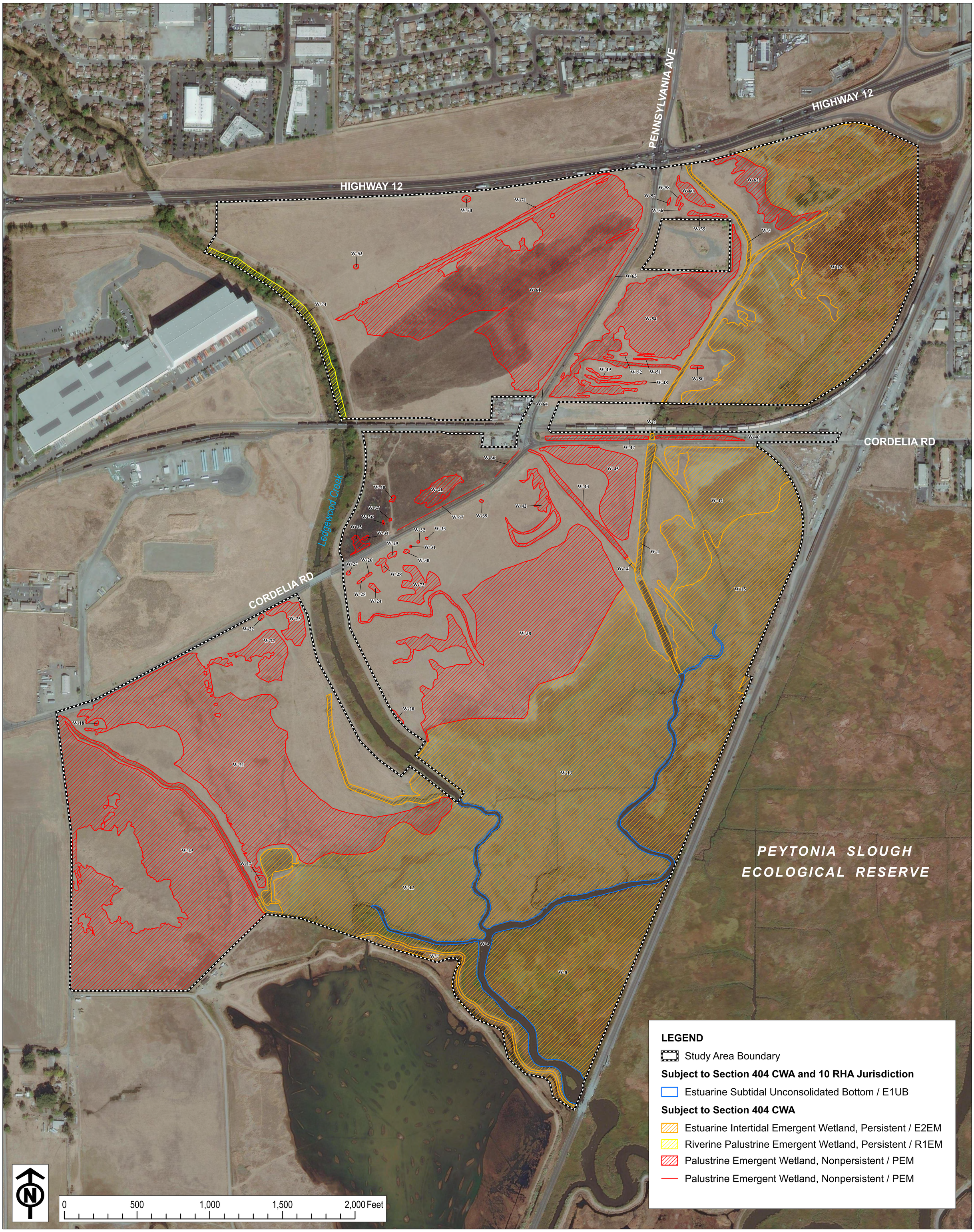

Figure 12. USACE Verified Preliminary Jurisdictional Delineation Map

Highway 12 Logistics Center Project
Solano County, California

Aerial Imagery: Maxar, 11/3/2019

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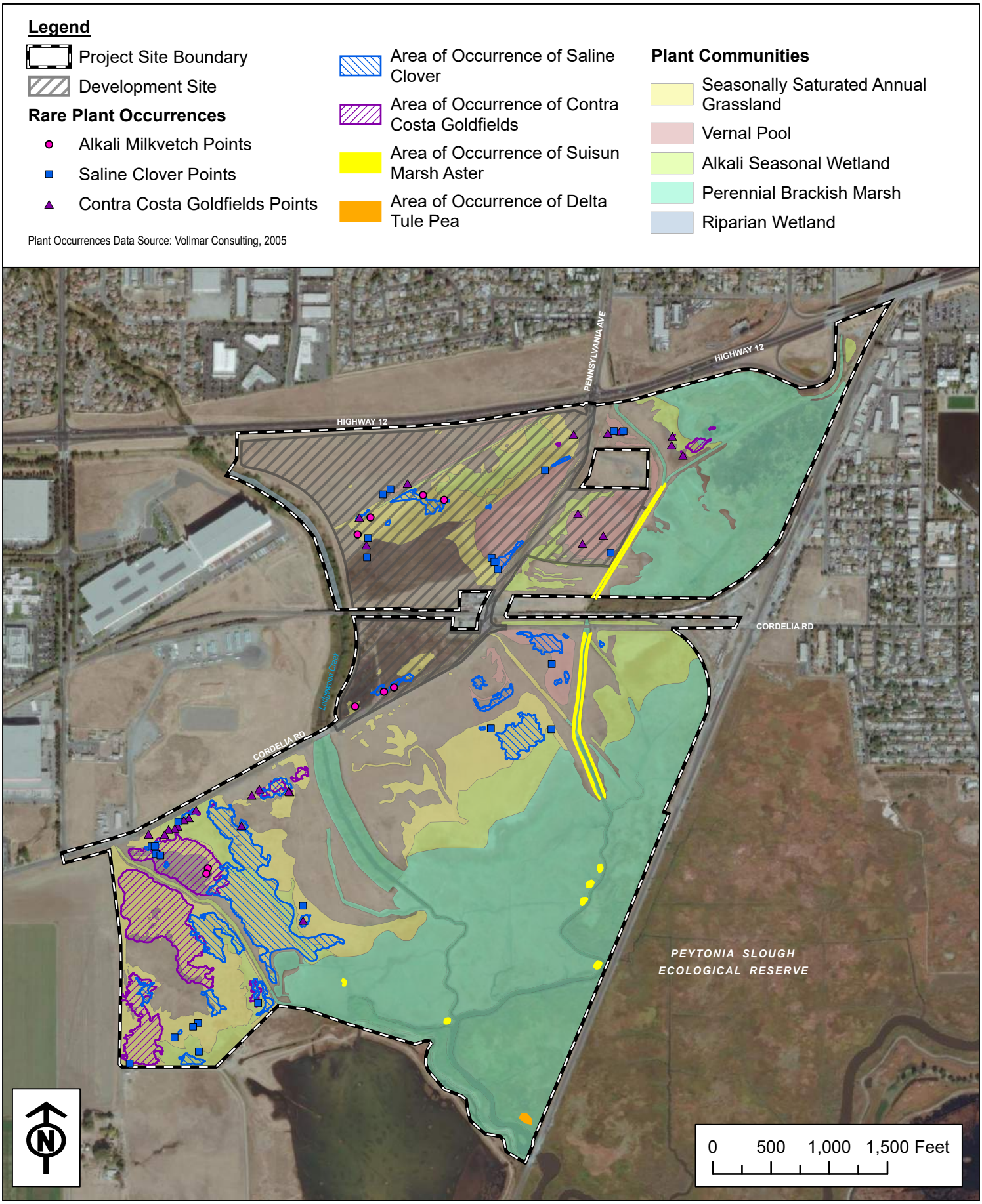

Figure 13. Wetland & Special Status Plant Impacts Associated with Development Site

Highway 12 Logistics Center Project
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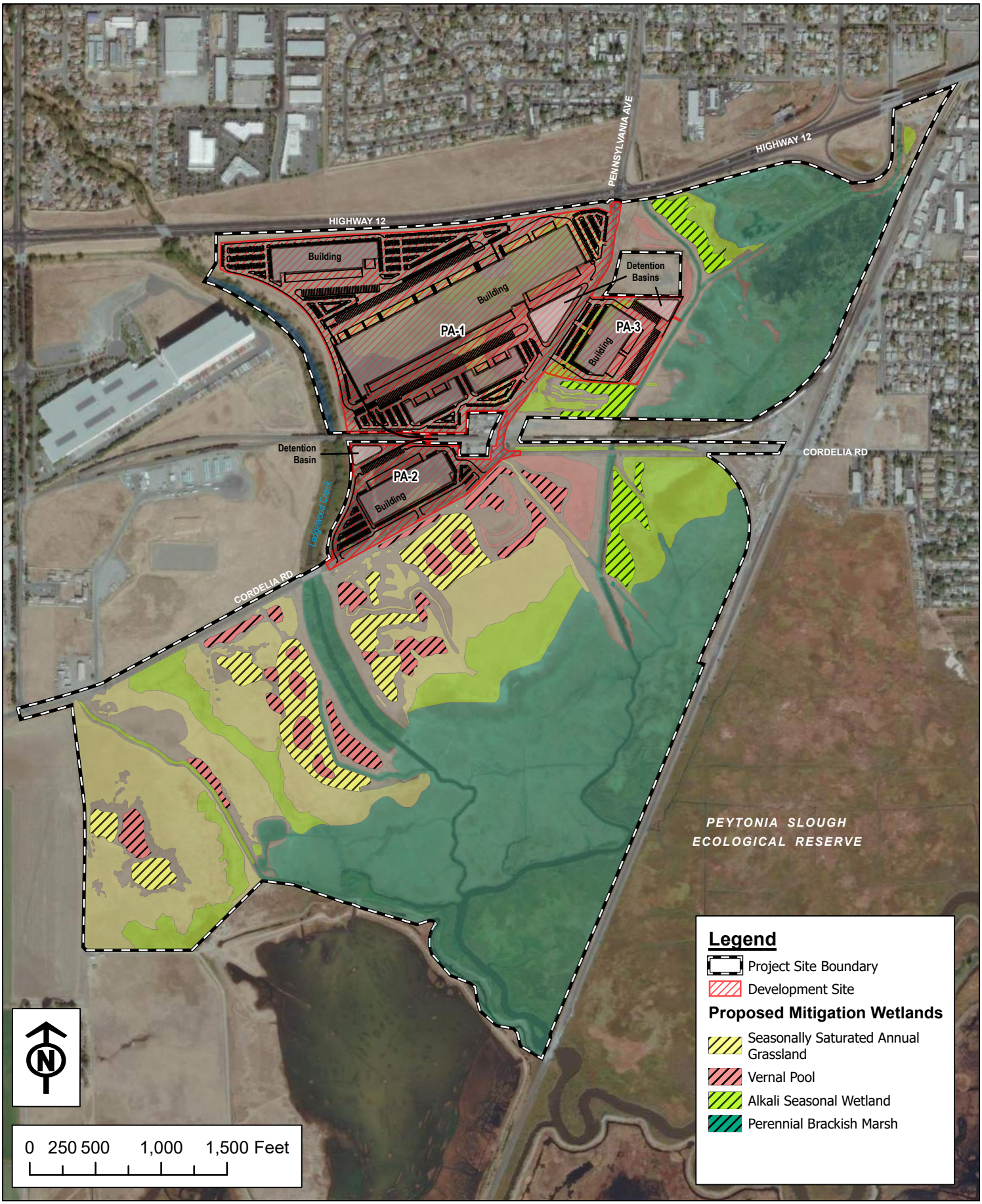

Figure 14. Wetland Establishment Mitigation Map
Highway 12 Logistics Center Project
Solano County, California

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Appendix B

WETS Table

Precipitation Data Summary, January 2020– December 2020,
and
Comparison with Normal Precipitation Range
WETS Station FAIRFIELD, CA
Gentry Logistics Project
Solano County, California

Month / Year	Total Precipitation (inches)	WETS Average precipitation for month (inches) 1971 – 2021	WETS Normal precipitation range (inches)* 1971 – 2021	Within WETS normal precipitation range?
January 2020	1.56	4.53	1.66 - 5.46	< Normal
February 2020	0.00	4.44	1.74 - 5.30	< Normal
March 2020	1.84	3.39	1.50 - 4.14	Normal
April 2020	0.83	1.32	0.47 - 1.59	Normal
May 2020	0.71	0.58	0.13 - 0.52	> Normal
June 2020	0.00	0.12	0.00 - 0.06	Normal
July 2020	0.00	0.02	0.00 - 0.00	Normal
August 2020	0.00	0.04	0.00 - 0.00	Normal
September 2020	0.00	0.20	0.00 - 0.14	Normal
October 2020	0.00	1.30	0.41 - 1.39	< Normal
November 2020	1.35	2.77	1.17 - 3.37	Normal
December 2020	2.03	4.56	1.95 - 5.48	Normal

All precipitation data from WETS Station Fairfield, CA.

* 30 percent chance precipitation will be less than the lower value or greater than the higher value.

M = Missing

WETS Table

WETS Station: FAIRFIELD, CA								
Requested years: 1971 - 2021								
Month	Avg Max Temp	Avg Min Temp	Avg Mean Temp	Avg Precip	30% chance precip less than	30% chance precip more than	Avg number days precip 0.10 or more	Avg Snowfall
Jan	56.0	38.5	47.2	4.53	1.66	5.46	7	0.0
Feb	61.8	41.5	51.6	4.44	1.74	5.30	7	0.0
Mar	66.1	44.2	55.2	3.39	1.50	4.14	7	0.0
Apr	71.5	46.6	59.1	1.32	0.47	1.59	3	0.0
May	78.3	50.9	64.6	0.58	0.13	0.52	2	0.0
Jun	85.5	54.7	70.1	0.12	0.00	0.06	0	0.0
Jul	89.5	56.7	73.1	0.02	0.00	0.00	0	0.0
Aug	88.9	56.6	72.8	0.04	0.00	0.00	0	0.0
Sep	86.7	55.1	70.9	0.21	0.00	0.14	1	0.0
Oct	78.2	50.6	64.4	1.16	0.40	1.26	2	0.0
Nov	65.3	43.6	54.4	2.79	1.17	3.39	5	0.0
Dec	56.2	38.2	47.2	4.48	1.90	5.38	7	0.0
Annual:					18.38	27.13		
Average	73.7	48.1	60.9	-	-	-	-	-
Total	-	-	-	23.07			41	0.0

GROWING SEASON DATES

Years with missing data:	24 deg = 12	28 deg = 14	32 deg = 8
Years with no occurrence:	24 deg = 36	28 deg = 20	32 deg = 4
Data years used:	24 deg = 39	28 deg = 37	32 deg = 43
Probability	24 F or higher	28 F or higher	32 F or higher
50 percent *	No occurrence	No occurrence	2/5 to 12/10: 308 days
70 percent *	No occurrence	No occurrence	1/21 to 12/26: 339 days
* Percent chance of the growing season occurring between the Beginning and Ending dates.			

STATS TABLE - total precipitation (inches)

Yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annl
1950												M3.86	3.86
1951	3.40	2.10	2.19	0.98	M0.83	0.00	0.00	0.00	MT	M1.28	4.84	8.25	23.87
1952	9.00	M1.31	2.68	0.77	0.27	0.40	M0.00	T	M0.00	M0.00	M2.08	M7.79	24.30
1953	4.31	T	M2.26	M2.58	M0.35	M0.38	0.00	0.04	M0.00	M0.00	M2.93	0.72	13.57
1954	M3.02	2.94	M2.76	1.97	0.17	M0.00	M0.00	M0.00	0.00	M0.00	M0.00	M4.96	15.82
1955	3.16	M1.61	0.53	2.21	0.32	M0.00	M0.00	0.00	0.28	M0.05	2.06	13.66	23.88
1956	7.89	2.11	M0.32	1.10	M0.08	0.04	0.00	0.00	0.55	M0.41	0.12	M0.33	12.95
1957	M2.48	4.46	M1.69	1.61	M0.73	0.00	M0.00	M0.00	M0.41	3.66	0.37	2.73	18.14

1958	M4.22	9.55	6.02	4.33	0.64	0.33	0.15	0.07	0.04	0.13	0.08	1.10	26.66
1959	5.19	5.59	1.05	0.19	T	0.00	0.00	T	2.49	0.00	T	2.34	16.85
1960	3.11	4.79	2.21	1.05	0.74	0.00	T	0.00	0.00	0.13	M3.01	1.55	16.59
1961	4.06	0.96	1.92	0.71	0.20	0.04	0.00	0.05	0.15	M0.18	4.01	2.34	14.62
1962	0.80	6.25	3.05	0.22	0.00	0.00	0.00	0.00	T	7.85	0.16	2.58	20.91
1963	5.32	2.67	3.59	5.49	0.45	0.09	0.00	T	0.40	1.77	2.80	0.48	23.06
1964	3.22	0.00	1.91	0.12	0.22	0.93	0.04	0.05	0.00	2.23	2.85	5.01	16.58
1965	4.34	0.00	1.35	2.94	0.12	0.00	0.00	0.43	0.00	0.00	4.94	M2.63	16.75
1966	4.46	2.49	0.26	0.34	0.45	0.00	0.08	0.18	0.37	0.00	5.68	4.39	18.70
1967	9.90	0.31	4.17	4.78	0.12	1.45	T	T	0.05	0.36	1.36	1.75	24.25
1968	4.93	3.11	2.31	0.29	0.40	0.00	0.00	1.18	0.00	0.75	3.55	4.44	20.96
1969	9.80	7.04	1.95	1.25	0.00	0.10	0.00	0.00	0.00	2.12	0.46	6.16	28.88
1970	11.75	1.36	1.86	0.16	0.00	0.39	0.00	0.00	0.00	0.76	5.94	6.00	28.22
1971	1.86	0.26	2.72	0.22	0.69	0.00	0.00	0.00	0.15	0.06	2.20	4.16	12.32
1972	1.30	1.54	0.19	1.00	0.02	0.20	0.00	0.00	0.98	4.60	6.73	1.67	18.23
1973	11.54	5.62	2.71	0.19	0.14	0.00	0.00	0.00	0.35	1.66	7.20	4.73	34.14
1974	3.64	1.06	4.61	1.80	0.11	0.00	0.60	0.00	0.00	1.29	0.88	3.79	17.78
1975	1.16	7.03	5.58	1.13	0.07	0.10	0.06	0.14	0.03	3.50	0.44	0.30	19.54
1976	0.52	1.31	1.89	0.86	0.00	0.01	0.00	0.66		0.33	1.02	1.26	7.86
1977	1.89	1.06	2.13	0.14	0.81	T	0.00	0.00	1.08	0.42	5.44	5.51	18.48
1978	9.73	5.25	5.12	2.02	0.05	0.05	0.00	0.00	0.23	0.00	1.67	0.84	24.96
1979	9.13	4.31	1.93	1.19	0.59	0.00	0.00	0.00	0.00	2.38	2.47	6.58	28.58
1980	6.94	10.33	3.58	1.24	0.34	0.01	0.13	0.00	0.00	0.20	0.08	M2.67	25.52
1981	M5.14	1.11	3.74	0.36	0.04	0.00	0.00	0.00	0.19	1.40	5.91	5.72	23.61
1982	8.12	3.82	6.14	5.05	0.00	0.01	T	0.00	1.11	2.79	4.32	2.51	33.87
1983	5.78	8.72	10.89	3.06	0.79	M0.00	0.00	0.01	0.74	0.30	6.51	7.48	44.28
1984	0.30	1.49	1.17	0.80	T	0.08	0.00	0.17	0.10	1.96	6.52	1.26	13.85
1985	0.68	1.95	4.14	0.06	0.06	0.02	0.00	0.00	0.30	0.65	4.32	3.05	15.23
1986	4.57	11.30	5.61	0.99	0.19	0.00	0.00	0.00	1.09	0.38	0.10	1.14	25.37
1987	3.02	4.12	3.14	0.08	0.07	0.00	0.00	0.00	0.00	0.95	2.97	5.63	19.98
1988	5.62	0.39	0.26	1.49	0.68	0.36	0.00	T	0.00	0.17	3.86	3.93	16.76
1989	1.05	1.82	5.23	0.37	0.01	0.21	0.00	0.00	1.37	1.59	1.66	0.00	13.31
1990	4.26	2.44	0.80	0.24	3.25	0.00	0.00	0.00	0.26	0.23	0.35	1.00	12.83
1991	0.47	3.21	9.17	0.31	0.09	0.02	0.00	0.02	0.00	1.99	0.67	2.42	18.37

1992	2.18	7.09	4.14	0.63	0.00	0.49	0.00	0.00	0.00	3.17	0.26	9.55	27.51
1993	10.57	5.79	3.54	M0.55	M0.86	M0.96	0.00	0.00	0.00	0.59	2.65	2.39	27.90
1994	2.71	4.48	0.14	M1.19	1.26	0.00	0.00	0.00	0.02	0.28	5.30	4.49	19.87
1995	12.47	0.14	9.21	0.88	1.21	1.83	0.00	0.00	0.00	0.07	0.01	10.02	35.84
1996	8.65	8.34	2.32	2.18	M3.03	0.00	0.00	0.00	0.00	1.61	3.58	11.67	41.38
1997	11.07	0.28	0.52	0.20	M0.47	0.27	0.00	0.41	0.00	0.81	6.73	2.30	23.06
1998	8.95	14.71	2.35	2.30	3.29	0.00	0.00	0.00	0.34	0.71	4.29	1.57	38.51
1999	2.11	6.97	2.85	1.73	0.03	0.00	0.00	0.00	0.04	0.56	2.91	0.52	17.72
2000	5.98	11.25	2.87	1.29	0.98	0.17	0.00	0.00	0.08	2.54	1.15	1.13	27.44
2001	3.36	6.35	1.37	0.62	0.00	0.08	0.00	0.00	0.20	0.50	4.47	10.23	27.18
2002	3.10	1.37	1.95	0.10	1.33	0.00	0.00	0.00	0.00	0.00	3.80	13.86	25.51
2003	2.42	1.53	2.00	2.92	1.02	0.00	0.00	0.33	0.00	0.00	1.08	6.72	18.02
2004	2.84	7.68	0.91	0.16	0.05	0.00	0.00	0.00	0.04	2.30	3.30	6.66	23.94
2005	5.52	4.24	4.28	1.43	1.46	0.28	0.00	0.00	0.01	0.24	2.16	16.69	36.31
2006	4.13	4.02	8.87	4.96	0.60	0.00	0.00	0.00	0.00	0.12	2.55	3.41	28.66
2007	0.20	4.38	0.11	2.05	0.55	0.00	0.00	0.00	0.38	2.22	0.92	4.35	15.16
2008	7.80	3.96	0.46	0.05	0.00	0.00	0.00	0.00	0.00	0.45	2.67	2.87	18.26
2009	1.55	9.31	2.39	1.10	1.13	0.00	0.00	0.00	0.04	5.71	0.69	2.13	24.05
2010	8.29	4.14	1.66	3.43	0.98	0.00	0.00	0.00	0.03	2.38	2.50	7.13	30.54
2011	0.55	4.26	5.05	0.39	0.96	1.21	0.00	0.00	0.00	1.65	1.25	0.23	15.55
2012	0.55	1.04	6.77	M2.31	M0.04	0.03	M0.00	M0.00	0.00	1.48	M4.75	7.73	24.70
2013	0.60	M0.11	1.07	1.41	M0.37	M0.00	M0.00	M0.00	M1.10	M0.00	M1.28	0.74	6.68
2014	M0.26	9.58	2.66	M2.39	0.00	0.00	0.00	0.05	0.82	0.78	2.29	M10.44	29.27
2015	0.01	1.99	0.16	1.26	0.00	0.16	0.04	0.00	M0.00	0.12	2.08	4.01	9.83
2016	9.25	0.59	6.92	0.59	0.35	0.00	0.00	0.00	0.00	2.65	2.29	5.12	27.76
2017	13.87	11.47	3.49	3.40	0.00	0.32	0.00	0.00	0.02	0.14	2.69	0.03	35.43
2018	3.43	0.32	4.79	3.32	0.04	0.00	0.00	0.00	0.00	0.07	4.52	2.87	19.36
2019	6.29	10.43	5.57	0.36	2.83	0.00	0.00	0.00	0.00	0.00	M0.57	7.37	33.42
2020	1.56	0.00	1.84	0.83	0.71	0.00	0.00	0.00	0.00	0.00	1.35	2.03	8.32
2021	4.02	2.55	1.91	0.02	0.00	0.00	0.00	0.00					8.50

Notes: Data missing in any month have an "M" flag. A "T" indicates a trace of precipitation.

Data missing for all days in a month or year is blank.

Creation date: 2021-10-01

Climatological Data for FAIRFIELD, CA - January 2020

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2020-01-01	64	41	52.5	13	3	0.00	0.0	0
2020-01-02	64	42	53.0	13	3	0.00	0.0	0
2020-01-03	57	35	46.0	6	0	0.00	0.0	0
2020-01-04	61	43	52.0	12	2	0.00	0.0	0
2020-01-05	61	44	52.5	13	3	0.00	0.0	0
2020-01-06	56	40	48.0	8	0	0.00	0.0	0
2020-01-07	56	34	45.0	5	0	0.00	0.0	0
2020-01-08	56	34	45.0	5	0	0.00	0.0	0
2020-01-09	53	46	49.5	10	0	0.42	0.0	0
2020-01-10	56	37	46.5	7	0	0.00	0.0	0
2020-01-11	58	45	51.5	12	2	0.00	0.0	0
2020-01-12	54	39	46.5	7	0	0.00	0.0	0
2020-01-13	56	39	47.5	8	0	0.06	0.0	0
2020-01-14	55	43	49.0	9	0	0.18	0.0	0
2020-01-15	51	36	43.5	4	0	0.00	0.0	0
2020-01-16	49	40	44.5	5	0	0.67	0.0	0
2020-01-17	50	37	43.5	4	0	0.00	0.0	0
2020-01-18	55	35	45.0	5	0	0.00	0.0	0
2020-01-19	49	37	43.0	3	0	0.00	0.0	0
2020-01-20	52	36	44.0	4	0	0.00	0.0	0
2020-01-21	54	42	48.0	8	0	0.21	0.0	0
2020-01-22	61	44	52.5	13	3	0.00	0.0	0
2020-01-23	57	42	49.5	10	0	0.00	0.0	0
2020-01-24	65	44	54.5	15	5	0.00	0.0	0
2020-01-25	62	50	56.0	16	6	0.02	0.0	0
2020-01-26	64	54	59.0	19	9	0.00	0.0	0
2020-01-27	62	46	54.0	14	4	0.00	0.0	0
2020-01-28	62	48	55.0	15	5	0.00	0.0	0
2020-01-29	69	46	57.5	18	8	0.00	0.0	0
2020-01-30	65	46	55.5	16	6	0.00	0.0	0
2020-01-31	66	45	55.5	16	6	0.00	0.0	0
Average|Sum	58.1	41.6	49.8	313	65	1.56	0.0	0.0

Climatological Data for FAIRFIELD, CA - February 2020

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2020-02-01	65	44	54.5	15	5	0.00	0.0	0
2020-02-02	58	48	53.0	13	3	0.00	0.0	0
2020-02-03	55	35	45.0	5	0	0.00	0.0	0
2020-02-04	58	40	49.0	9	0	0.00	0.0	0
2020-02-05	63	38	50.5	11	1	0.00	0.0	0
2020-02-06	64	37	50.5	11	1	0.00	0.0	0
2020-02-07	66	38	52.0	12	2	0.00	0.0	0
2020-02-08	63	40	51.5	12	2	0.00	0.0	0
2020-02-09	63	50	56.5	17	7	0.00	0.0	0
2020-02-10	76	54	65.0	25	15	0.00	0.0	0
2020-02-11	77	51	64.0	24	14	0.00	0.0	0
2020-02-12	70	40	55.0	15	5	0.00	0.0	0
2020-02-13	60	42	51.0	11	1	0.00	0.0	0
2020-02-14	65	40	52.5	13	3	0.00	0.0	0
2020-02-15	66	43	54.5	15	5	0.00	0.0	0
2020-02-16	68	47	57.5	18	8	0.00	0.0	0
2020-02-17	73	45	59.0	19	9	0.00	0.0	0
2020-02-18	67	48	57.5	18	8	0.00	0.0	0
2020-02-19	67	42	54.5	15	5	0.00	0.0	0
2020-02-20	67	41	54.0	14	4	0.00	0.0	0
2020-02-21	74	45	59.5	20	10	0.00	0.0	0
2020-02-22	67	47	57.0	17	7	0.00	0.0	0
2020-02-23	65	42	53.5	14	4	0.00	0.0	0
2020-02-24	76	41	58.5	19	9	0.00	0.0	0
2020-02-25	77	48	62.5	23	13	0.00	0.0	0
2020-02-26	73	43	58.0	18	8	0.00	0.0	0
2020-02-27	76	46	61.0	21	11	0.00	0.0	0
2020-02-28	74	48	61.0	21	11	0.00	0.0	0
2020-02-29	66	47	56.5	17	7	0.00	0.0	0
Average|Sum	67.6	43.8	55.7	462	178	0.00	0.0	0.0

Climatological Data for FAIRFIELD, CA - March 2020

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2020-03-01	60	44	52.0	12	2	0.00	0.0	0
2020-03-02	73	51	62.0	22	12	0.00	0.0	0
2020-03-03	79	47	63.0	23	13	0.00	0.0	0
2020-03-04	77	44	60.5	21	11	0.00	0.0	0
2020-03-05	69	46	57.5	18	8	0.00	0.0	0
2020-03-06	60	50	55.0	15	5	0.00	0.0	0
2020-03-07	58	46	52.0	12	2	0.16	0.0	0
2020-03-08	58	38	48.0	8	0	0.02	0.0	0
2020-03-09	66	47	56.5	17	7	0.00	0.0	0
2020-03-10	76	44	60.0	20	10	0.00	0.0	0
2020-03-11	73	47	60.0	20	10	0.00	0.0	0
2020-03-12	77	47	62.0	22	12	0.00	0.0	0
2020-03-13	73	46	59.5	20	10	0.00	0.0	0
2020-03-14	55	46	50.5	11	1	0.41	0.0	0
2020-03-15	54	44	49.0	9	0	0.51	0.0	0
2020-03-16	49	39	44.0	4	0	0.17	0.0	0
2020-03-17	57	41	49.0	9	0	0.00	0.0	0
2020-03-18	55	45	50.0	10	0	0.05	0.0	0
2020-03-19	62	40	51.0	11	1	0.00	0.0	0
2020-03-20	63	39	51.0	11	1	0.00	0.0	0
2020-03-21	66	42	54.0	14	4	0.00	0.0	0
2020-03-22	68	43	55.5	16	6	0.00	0.0	0
2020-03-23	69	40	54.5	15	5	0.00	0.0	0
2020-03-24	61	43	52.0	12	2	0.09	0.0	0
2020-03-25	58	37	47.5	8	0	0.12	0.0	0
2020-03-26	59	38	48.5	9	0	0.15	0.0	0
2020-03-27	61	37	49.0	9	0	0.00	0.0	0
2020-03-28	57	43	50.0	10	0	0.06	0.0	0
2020-03-29	61	46	53.5	14	4	0.10	0.0	0
2020-03-30	65	47	56.0	16	6	0.00	0.0	0
2020-03-31	70	50	60.0	20	10	0.00	0.0	0
Average|Sum	64.2	43.8	54.0	438	142	1.84	0.0	0.0

Climatological Data for FAIRFIELD, CA - April 2020

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2020-04-01	67	43	55.0	15	5	0.00	0.0	0
2020-04-02	69	43	56.0	16	6	0.00	0.0	0
2020-04-03	67	40	53.5	14	4	0.00	0.0	0
2020-04-04	62	44	53.0	13	3	0.26	0.0	0
2020-04-05	55	48	51.5	12	2	0.52	0.0	0
2020-04-06	58	39	48.5	9	0	0.05	0.0	0
2020-04-07	66	40	53.0	13	3	0.00	0.0	0
2020-04-08	66	40	53.0	13	3	0.00	0.0	0
2020-04-09	62	52	57.0	17	7	0.00	0.0	0
2020-04-10	71	50	60.5	21	11	0.00	0.0	0
2020-04-11	66	49	57.5	18	8	0.00	0.0	0
2020-04-12	71	51	61.0	21	11	0.00	0.0	0
2020-04-13	76	49	62.5	23	13	0.00	0.0	0
2020-04-14	82	50	66.0	26	16	0.00	0.0	0
2020-04-15	82	50	66.0	26	16	0.00	0.0	0
2020-04-16	72	53	62.5	23	13	0.00	0.0	0
2020-04-17	64	51	57.5	18	8	0.00	0.0	0
2020-04-18	66	53	59.5	20	10	0.00	0.0	0
2020-04-19	66	46	56.0	16	6	0.00	0.0	0
2020-04-20	67	52	59.5	20	10	0.00	0.0	0
2020-04-21	75	45	60.0	20	10	0.00	0.0	0
2020-04-22	82	49	65.5	26	16	0.00	0.0	0
2020-04-23	83	57	70.0	30	20	0.00	0.0	0
2020-04-24	88	65	76.5	37	27	0.00	0.0	0
2020-04-25	87	59	73.0	33	23	0.00	0.0	0
2020-04-26	82	55	68.5	29	19	0.00	0.0	0
2020-04-27	83	54	68.5	29	19	0.00	0.0	0
2020-04-28	87	58	72.5	33	23	0.00	0.0	0
2020-04-29	77	56	66.5	27	17	0.00	0.0	0
2020-04-30	78	53	65.5	26	16	0.00	0.0	0
Average|Sum	72.6	49.8	61.2	644	345	0.83	0.0	0.0

Climatological Data for FAIRFIELD, CA - May 2020

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2020-05-01	79	46	62.5	23	13	0.00	0.0	0
2020-05-02	72	52	62.0	22	12	0.00	0.0	0
2020-05-03	76	50	63.0	23	13	0.00	0.0	0
2020-05-04	82	47	64.5	25	15	0.00	0.0	0
2020-05-05	80	50	65.0	25	15	0.00	0.0	0
2020-05-06	87	50	68.5	29	19	0.00	0.0	0
2020-05-07	92	52	72.0	32	22	0.00	0.0	0
2020-05-08	95	56	75.5	36	26	0.00	0.0	0
2020-05-09	M	53	M	M	M	0.00	0.0	0
2020-05-10	76	52	64.0	24	14	0.00	0.0	0
2020-05-11	67	53	60.0	20	10	0.10	0.0	0
2020-05-12	68	54	61.0	21	11	0.12	0.0	0
2020-05-13	64	49	56.5	17	7	0.02	0.0	0
2020-05-14	69	51	60.0	20	10	0.00	0.0	0
2020-05-15	79	51	65.0	25	15	0.00	0.0	0
2020-05-16	77	55	66.0	26	16	0.00	0.0	0
2020-05-17	73	58	65.5	26	16	0.28	0.0	0
2020-05-18	69	51	60.0	20	10	0.19	0.0	0
2020-05-19	73	51	62.0	22	12	0.00	0.0	0
2020-05-20	76	48	62.0	22	12	0.00	0.0	0
2020-05-21	82	53	67.5	28	18	0.00	0.0	0
2020-05-22	79	51	65.0	25	15	0.00	0.0	0
2020-05-23	87	53	70.0	30	20	0.00	0.0	0
2020-05-24	92	53	72.5	33	23	0.00	0.0	0
2020-05-25	98	63	80.5	41	31	0.00	0.0	0
2020-05-26	101	64	82.5	43	33	0.00	0.0	0
2020-05-27	99	67	83.0	43	33	0.00	0.0	0
2020-05-28	96	58	77.0	37	27	0.00	0.0	0
2020-05-29	88	57	72.5	33	23	0.00	0.0	0
2020-05-30	77	61	69.0	29	19	0.00	0.0	0
2020-05-31	76	56	66.0	26	16	0.00	0.0	0
Average|Sum	81.0	53.7	67.4	826	526	0.71	0.0	0.0

Climatological Data for FAIRFIELD, CA - June 2020

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2020-06-01	86	57	71.5	32	22	0.00	M	M
2020-06-02	95	61	78.0	38	28	0.00	M	M
2020-06-03	101	64	82.5	43	33	0.00	M	M
2020-06-04	100	61	80.5	41	31	0.00	M	M
2020-06-05	91	56	73.5	34	24	0.00	M	M
2020-06-06	M	53	M	M	M	0.00	M	M
2020-06-07	M	52	M	M	M	0.00	M	M
2020-06-08	84	55	69.5	30	20	0.00	M	M
2020-06-09	92	55	73.5	34	24	0.00	M	M
2020-06-10	96	58	77.0	37	27	0.00	M	M
2020-06-11	92	58	75.0	35	25	0.00	M	M
2020-06-12	85	57	71.0	31	21	0.00	M	M
2020-06-13	76	54	65.0	25	15	0.00	M	M
2020-06-14	83	56	69.5	30	20	0.00	M	M
2020-06-15	82	59	70.5	31	21	0.00	M	M
2020-06-16	88	57	72.5	33	23	0.00	M	M
2020-06-17	91	60	75.5	36	26	0.00	M	M
2020-06-18	97	59	78.0	38	28	0.00	M	M
2020-06-19	92	60	76.0	36	26	0.00	M	M
2020-06-20	85	56	70.5	31	21	0.00	M	M
2020-06-21	92	60	76.0	36	26	0.00	M	M
2020-06-22	94	59	76.5	37	27	0.00	M	M
2020-06-23	92	60	76.0	36	26	0.00	M	M
2020-06-24	93	58	75.5	36	26	0.00	M	M
2020-06-25	91	59	75.0	35	25	0.00	M	M
2020-06-26	94	57	75.5	36	26	0.00	M	M
2020-06-27	M	57	M	M	M	0.00	M	M
2020-06-28	79	55	67.0	27	17	0.00	M	M
2020-06-29	89	53	71.0	31	21	0.00	M	M
2020-06-30	90	59	74.5	35	25	0.00	M	M
Average|Sum	90.0	57.5	73.9	924	654	0.00	M	M

Climatological Data for FAIRFIELD, CA - July 2020

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2020-07-01	86	56	71.0	31	21	0.00	0.0	0
2020-07-02	M	55	M	M	M	0.00	0.0	0
2020-07-03	85	55	70.0	30	20	0.00	0.0	0
2020-07-04	95	55	75.0	35	25	0.00	0.0	0
2020-07-05	93	61	77.0	37	27	0.00	0.0	0
2020-07-06	87	61	74.0	34	24	0.00	0.0	0
2020-07-07	89	54	71.5	32	22	0.00	0.0	0
2020-07-08	92	59	75.5	36	26	0.00	0.0	0
2020-07-09	96	56	76.0	36	26	0.00	0.0	0
2020-07-10	97	61	79.0	39	29	0.00	0.0	0
2020-07-11	103	59	81.0	41	31	0.00	0.0	0
2020-07-12	101	60	80.5	41	31	0.00	0.0	0
2020-07-13	95	60	77.5	38	28	0.00	0.0	0
2020-07-14	95	56	75.5	36	26	0.00	0.0	0
2020-07-15	88	57	72.5	33	23	0.00	0.0	0
2020-07-16	85	58	71.5	32	22	0.00	0.0	0
2020-07-17	85	56	70.5	31	21	0.00	0.0	0
2020-07-18	85	56	70.5	31	21	0.00	0.0	0
2020-07-19	M	59	M	M	M	0.00	0.0	0
2020-07-20	82	56	69.0	29	19	0.00	0.0	0
2020-07-21	84	57	70.5	31	21	0.00	0.0	0
2020-07-22	81	57	69.0	29	19	0.00	0.0	0
2020-07-23	86	56	71.0	31	21	0.00	0.0	0
2020-07-24	86	59	72.5	33	23	0.00	0.0	0
2020-07-25	91	55	73.0	33	23	0.00	0.0	0
2020-07-26	92	58	75.0	35	25	0.00	0.0	0
2020-07-27	90	58	74.0	34	24	0.00	0.0	0
2020-07-28	93	57	75.0	35	25	0.00	0.0	0
2020-07-29	97	55	76.0	36	26	0.00	0.0	0
2020-07-30	93	56	74.5	35	25	0.00	0.0	0
2020-07-31	91	56	73.5	34	24	0.00	0.0	0
Average|Sum	90.4	57.2	73.8	988	698	0.00	0.0	0.0

Climatological Data for FAIRFIELD, CA - August 2020

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2020-08-01	92	59	75.5	36	26	0.00	0.0	0
2020-08-02	92	58	75.0	35	25	0.00	0.0	0
2020-08-03	95	62	78.5	39	29	0.00	0.0	0
2020-08-04	87	59	73.0	33	23	0.00	0.0	0
2020-08-05	78	57	67.5	28	18	0.00	0.0	0
2020-08-06	86	59	72.5	33	23	0.00	0.0	0
2020-08-07	89	58	73.5	34	24	0.00	0.0	0
2020-08-08	92	60	76.0	36	26	0.00	0.0	0
2020-08-09	97	61	79.0	39	29	0.00	0.0	0
2020-08-10	92	62	77.0	37	27	0.00	0.0	0
2020-08-11	83	60	71.5	32	22	0.00	0.0	0
2020-08-12	96	57	76.5	37	27	0.00	0.0	0
2020-08-13	101	60	80.5	41	31	0.00	0.0	0
2020-08-14	106	72	89.0	49	39	0.00	0.0	0
2020-08-15	107	73	90.0	50	40	0.00	0.0	0
2020-08-16	104	76	90.0	50	40	0.00	0.0	0
2020-08-17	103	74	88.5	49	39	0.00	0.0	0
2020-08-18	105	72	88.5	49	39	0.00	0.0	0
2020-08-19	102	71	86.5	47	37	0.00	0.0	0
2020-08-20	96	61	78.5	39	29	0.00	0.0	0
2020-08-21	99	61	80.0	40	30	0.00	0.0	0
2020-08-22	99	63	81.0	41	31	0.00	0.0	0
2020-08-23	M	62	M	M	M	0.00	0.0	0
2020-08-24	90	62	76.0	36	26	0.00	0.0	0
2020-08-25	91	69	80.0	40	30	0.00	0.0	0
2020-08-26	88	62	75.0	35	25	0.00	0.0	0
2020-08-27	85	58	71.5	32	22	0.00	0.0	0
2020-08-28	85	56	70.5	31	21	0.00	0.0	0
2020-08-29	90	56	73.0	33	23	0.00	0.0	0
2020-08-30	87	57	72.0	32	22	0.00	0.0	0
2020-08-31	89	56	72.5	33	23	0.00	0.0	0
Average|Sum	93.5	62.4	78.0	1146	846	0.00	0.0	0.0

Climatological Data for FAIRFIELD, CA - September 2020

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2020-09-01	82	59	70.5	31	21	0.00	0.0	0
2020-09-02	83	59	71.0	31	21	0.00	0.0	0
2020-09-03	86	57	71.5	32	22	0.00	0.0	0
2020-09-04	96	56	76.0	36	26	0.00	0.0	0
2020-09-05	103	67	85.0	45	35	0.00	0.0	0
2020-09-06	110	71	90.5	51	41	0.00	0.0	0
2020-09-07	111	73	92.0	52	42	0.00	0.0	0
2020-09-08	103	69	86.0	46	36	0.00	0.0	0
2020-09-09	83	64	73.5	34	24	0.00	0.0	0
2020-09-10	74	56	65.0	25	15	0.00	0.0	0
2020-09-11	87	54	70.5	31	21	0.00	0.0	0
2020-09-12	92	57	74.5	35	25	0.00	0.0	0
2020-09-13	M	56	M	M	M	0.00	0.0	0
2020-09-14	83	53	68.0	28	18	0.00	0.0	0
2020-09-15	89	53	71.0	31	21	0.00	0.0	0
2020-09-16	91	56	73.5	34	24	0.00	0.0	0
2020-09-17	88	59	73.5	34	24	0.00	0.0	0
2020-09-18	80	60	70.0	30	20	0.00	0.0	0
2020-09-19	87	57	72.0	32	22	0.00	0.0	0
2020-09-20	91	60	75.5	36	26	0.00	0.0	0
2020-09-21	90	59	74.5	35	25	0.00	0.0	0
2020-09-22	84	59	71.5	32	22	0.00	0.0	0
2020-09-23	87	58	72.5	33	23	0.00	0.0	0
2020-09-24	86	60	73.0	33	23	0.00	0.0	0
2020-09-25	86	55	70.5	31	21	0.00	0.0	0
2020-09-26	91	62	76.5	37	27	0.00	0.0	0
2020-09-27	98	63	80.5	41	31	0.00	0.0	0
2020-09-28	101	75	88.0	48	38	0.00	0.0	0
2020-09-29	95	63	79.0	39	29	0.00	0.0	0
2020-09-30	98	58	78.0	38	28	0.00	0.0	0
Average|Sum	90.9	60.3	75.6	1041	751	0.00	0.0	0.0

Climatological Data for FAIRFIELD, CA - October 2020

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2020-10-01	93	68	80.5	41	31	0.00	0.0	0
2020-10-02	92	64	78.0	38	28	0.00	0.0	0
2020-10-03	92	63	77.5	38	28	0.00	0.0	0
2020-10-04	94	59	76.5	37	27	0.00	0.0	0
2020-10-05	95	55	75.0	35	25	0.00	0.0	0
2020-10-06	93	56	74.5	35	25	0.00	0.0	0
2020-10-07	90	53	71.5	32	22	0.00	0.0	0
2020-10-08	71	56	63.5	24	14	0.00	0.0	0
2020-10-09	76	53	64.5	25	15	0.00	0.0	0
2020-10-10	72	57	64.5	25	15	0.00	0.0	0
2020-10-11	83	54	68.5	29	19	0.00	0.0	0
2020-10-12	87	55	71.0	31	21	0.00	0.0	0
2020-10-13	90	57	73.5	34	24	0.00	0.0	0
2020-10-14	97	62	79.5	40	30	0.00	0.0	0
2020-10-15	95	62	78.5	39	29	0.00	0.0	0
2020-10-16	97	65	81.0	41	31	0.00	0.0	0
2020-10-17	95	59	77.0	37	27	0.00	0.0	0
2020-10-18	92	62	77.0	37	27	0.00	0.0	0
2020-10-19	90	59	74.5	35	25	0.00	0.0	0
2020-10-20	89	56	72.5	33	23	0.00	0.0	0
2020-10-21	89	58	73.5	34	24	0.00	0.0	0
2020-10-22	84	56	70.0	30	20	0.00	0.0	0
2020-10-23	76	45	60.5	21	11	0.00	0.0	0
2020-10-24	67	51	59.0	19	9	0.00	0.0	0
2020-10-25	74	54	64.0	24	14	0.00	0.0	0
2020-10-26	77	58	67.5	28	18	0.00	0.0	0
2020-10-27	76	49	62.5	23	13	0.00	0.0	0
2020-10-28	76	45	60.5	21	11	0.00	0.0	0
2020-10-29	78	47	62.5	23	13	0.00	0.0	0
2020-10-30	79	46	62.5	23	13	0.00	0.0	0
2020-10-31	81	48	64.5	25	15	0.00	0.0	0
Average|Sum	85.2	55.9	70.5	957	647	0.00	0.0	0.0

Climatological Data for FAIRFIELD, CA - November 2020

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2020-11-01	82	50	66.0	26	16	0.00	0.0	0
2020-11-02	82	50	66.0	26	16	0.00	0.0	0
2020-11-03	78	49	63.5	24	14	0.00	0.0	0
2020-11-04	78	49	63.5	24	14	0.00	0.0	0
2020-11-05	82	52	67.0	27	17	0.00	0.0	0
2020-11-06	69	52	60.5	21	11	0.00	0.0	0
2020-11-07	63	43	53.0	13	3	0.00	0.0	0
2020-11-08	59	43	51.0	11	1	0.00	0.0	0
2020-11-09	61	40	50.5	11	1	0.00	0.0	0
2020-11-10	64	37	50.5	11	1	0.00	0.0	0
2020-11-11	59	49	54.0	14	4	0.00	0.0	0
2020-11-12	63	35	49.0	9	0	0.00	0.0	0
2020-11-13	59	45	52.0	12	2	0.53	0.0	0
2020-11-14	62	41	51.5	12	2	0.00	0.0	0
2020-11-15	70	40	55.0	15	5	0.00	0.0	0
2020-11-16	70	43	56.5	17	7	0.00	0.0	0
2020-11-17	65	48	56.5	17	7	0.34	0.0	0
2020-11-18	64	48	56.0	16	6	0.48	0.0	0
2020-11-19	64	44	54.0	14	4	0.00	0.0	0
2020-11-20	66	40	53.0	13	3	0.00	0.0	0
2020-11-21	63	38	50.5	11	1	0.00	0.0	0
2020-11-22	64	39	51.5	12	2	0.00	0.0	0
2020-11-23	65	42	53.5	14	4	0.00	0.0	0
2020-11-24	68	41	54.5	15	5	0.00	0.0	0
2020-11-25	63	45	54.0	14	4	0.00	0.0	0
2020-11-26	64	44	54.0	14	4	0.00	0.0	0
2020-11-27	63	39	51.0	11	1	0.00	0.0	0
2020-11-28	65	36	50.5	11	1	0.00	0.0	0
2020-11-29	64	37	50.5	11	1	0.00	0.0	0
2020-11-30	62	37	49.5	10	0	0.00	0.0	0
Average|Sum	66.7	43.2	55.0	456	157	1.35	0.0	0.0

Climatological Data for FAIRFIELD, CA - December 2020

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2020-12-01	65	40	52.5	13	3	0.00	0.0	0
2020-12-02	66	37	51.5	12	2	0.00	0.0	0
2020-12-03	65	38	51.5	12	2	0.00	0.0	0
2020-12-04	68	40	54.0	14	4	0.00	0.0	0
2020-12-05	64	39	51.5	12	2	0.00	0.0	0
2020-12-06	65	41	53.0	13	3	0.00	0.0	0
2020-12-07	74	M	M	M	M	0.00	0.0	0
2020-12-08	67	43	55.0	15	5	0.00	0.0	0
2020-12-09	69	38	53.5	14	4	0.00	0.0	0
2020-12-10	68	41	54.5	15	5	0.00	0.0	0
2020-12-11	55	40	47.5	8	0	0.00	0.0	0
2020-12-12	57	46	51.5	12	2	0.33	0.0	0
2020-12-13	55	45	50.0	10	0	0.92	0.0	0
2020-12-14	58	44	51.0	11	1	0.00	0.0	0
2020-12-15	55	39	47.0	7	0	0.00	0.0	0
2020-12-16	55	37	46.0	6	0	0.00	0.0	0
2020-12-17	59	48	53.5	14	4	0.48	0.0	0
2020-12-18	61	38	49.5	10	0	0.00	0.0	0
2020-12-19	58	34	46.0	6	0	0.00	0.0	0
2020-12-20	60	36	48.0	8	0	0.00	0.0	0
2020-12-21	M	32	M	M	M	0.00	0.0	0
2020-12-22	59	32	45.5	6	0	0.00	0.0	0
2020-12-23	54	31	42.5	3	0	0.00	0.0	0
2020-12-24	55	36	45.5	6	0	0.00	0.0	0
2020-12-25	53	39	46.0	6	0	0.07	0.0	0
2020-12-26	60	49	54.5	15	5	0.11	0.0	0
2020-12-27	57	41	49.0	9	0	0.00	0.0	0
2020-12-28	56	45	50.5	11	1	0.08	0.0	0
2020-12-29	64	37	50.5	11	1	0.00	0.0	0
2020-12-30	58	35	46.5	7	0	0.00	0.0	0
2020-12-31	62	41	51.5	12	2	0.04	0.0	0
Average|Sum	60.7	39.4	50.0	298	46	2.03	0.0	0.0

Precipitation Data Summary, January 2021– December 2021,
and
Comparison with Normal Precipitation Range
WETS Station FAIRFIELD, CA
Gentry Logistics Project
Solano County, California

Month / Year	Total Precipitation (inches)	WETS Average precipitation for month (inches) 1971 – 2021	WETS Normal precipitation range (inches)* 1971 – 2021	Within WETS normal precipitation range?
January 2021	4.02	4.53	1.66 - 5.46	< Normal
February 2021	2.55	4.44	1.74 - 5.30	< Normal
March 2021	1.91	3.39	1.50 - 4.14	Normal
April 2021	0.02	1.32	0.47 - 1.59	Normal
May 2021	0.00	0.58	0.13 - 0.52	< Normal
June 2021	0.00	0.12	0.00 - 0.06	Normal
July 2021	0.00	0.02	0.00 - 0.00	Normal
August 2021	0.00	0.04	0.00 - 0.00	Normal
September 2021	0.00	0.20	0.00 - 0.14	Normal
October 2021	8.45	1.30	0.41 - 1.39	> Normal
November 2021	1.86	2.77	1.17 - 3.37	Normal
December 2021	8.89	4.56	1.95 - 5.48	> Normal

All precipitation data from WETS Station Fairfield, CA.

* 30 percent chance precipitation will be less than the lower value or greater than the higher value.

M = Missing

Climatological Data for FAIRFIELD, CA - January 2021

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2021-01-01	56	38	47.0	7	0	0.00	0.0	0
2021-01-02	56	38	47.0	7	0	0.18	0.0	0
2021-01-03	60	43	51.5	12	2	0.00	0.0	0
2021-01-04	59	40	49.5	10	0	0.27	0.0	0
2021-01-05	59	39	49.0	9	0	0.00	0.0	0
2021-01-06	55	40	47.5	8	0	0.07	0.0	0
2021-01-07	59	43	51.0	11	1	0.00	0.0	0
2021-01-08	64	42	53.0	13	3	0.10	0.0	0
2021-01-09	61	36	48.5	9	0	0.00	0.0	0
2021-01-10	54	37	45.5	6	0	0.00	0.0	0
2021-01-11	59	30	44.5	5	0	0.00	0.0	0
2021-01-12	60	43	51.5	12	2	0.00	0.0	0
2021-01-13	66	48	57.0	17	7	0.00	0.0	0
2021-01-14	66	46	56.0	16	6	0.00	0.0	0
2021-01-15	66	40	53.0	13	3	0.00	0.0	0
2021-01-16	73	46	59.5	20	10	0.00	0.0	0
2021-01-17	72	47	59.5	20	10	0.00	0.0	0
2021-01-18	78	52	65.0	25	15	0.00	0.0	0
2021-01-19	71	53	62.0	22	12	0.00	0.0	0
2021-01-20	68	45	56.5	17	7	0.00	0.0	0
2021-01-21	63	38	50.5	11	1	0.00	0.0	0
2021-01-22	54	43	48.5	9	0	0.14	0.0	0
2021-01-23	59	39	49.0	9	0	0.00	0.0	0
2021-01-24	56	38	47.0	7	0	0.50	0.0	0
2021-01-25	55	40	47.5	8	0	0.00	0.0	0
2021-01-26	51	30	40.5	1	0	0.12	0.0	0
2021-01-27	49	41	45.0	5	0	1.50	0.0	0
2021-01-28	53	44	48.5	9	0	0.87	0.0	0
2021-01-29	55	44	49.5	10	0	0.27	0.0	0
2021-01-30	59	42	50.5	11	1	0.00	0.0	0
2021-01-31	64	45	54.5	15	5	0.00	0.0	0
Average|Sum	60.6	41.6	51.1	354	85	4.02	0.0	0.0

Climatological Data for FAIRFIELD, CA - February 2021

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2021-02-01	63	43	53.0	13	3	0.00	0.0	0
2021-02-02	62	52	57.0	17	7	0.44	0.0	0
2021-02-03	56	39	47.5	8	0	0.00	0.0	0
2021-02-04	67	39	53.0	13	3	0.00	0.0	0
2021-02-05	67	41	54.0	14	4	0.00	0.0	0
2021-02-06	67	40	53.5	14	4	0.00	0.0	0
2021-02-07	63	40	51.5	12	2	0.00	0.0	0
2021-02-08	64	50	57.0	17	7	0.00	0.0	0
2021-02-09	66	44	55.0	15	5	0.00	0.0	0
2021-02-10	66	44	55.0	15	5	0.62	0.0	0
2021-02-11	M	M	M	M	M	0.62	0.0	0
2021-02-12	M	M	M	M	M	0.32	0.0	0
2021-02-13	64	50	57.0	17	7	0.00	0.0	0
2021-02-14	64	M	M	M	M	0.05	0.0	0
2021-02-15	61	47	54.0	14	4	0.35	0.0	0
2021-02-16	61	40	50.5	11	1	0.00	0.0	0
2021-02-17	63	42	52.5	13	3	0.00	0.0	0
2021-02-18	63	38	50.5	11	1	0.00	0.0	0
2021-02-19	60	47	53.5	14	4	0.00	0.0	0
2021-02-20	60	41	50.5	11	1	0.15	0.0	0
2021-02-21	68	45	56.5	17	7	0.00	0.0	0
2021-02-22	69	45	57.0	17	7	0.00	0.0	0
2021-02-23	79	47	63.0	23	13	0.00	0.0	0
2021-02-24	70	48	59.0	19	9	0.00	0.0	0
2021-02-25	68	44	56.0	16	6	0.00	0.0	0
2021-02-26	68	40	54.0	14	4	0.00	0.0	0
2021-02-27	68	40	54.0	14	4	0.00	0.0	0
2021-02-28	66	43	54.5	15	5	0.00	0.0	0
Average|Sum	65.1	43.6	54.4	364	116	2.55	0.0	0.0

Climatological Data for FAIRFIELD, CA - March 2021

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2021-03-01	67	38	52.5	13	3	0.00	0.0	0
2021-03-02	71	41	56.0	16	6	0.00	0.0	0
2021-03-03	67	44	55.5	16	6	0.00	0.0	0
2021-03-04	62	39	50.5	11	1	0.00	0.0	0
2021-03-05	67	39	53.0	13	3	0.00	0.0	0
2021-03-06	63	39	51.0	11	1	0.14	0.0	0
2021-03-07	66	39	52.5	13	3	0.00	0.0	0
2021-03-08	58	43	50.5	11	1	0.00	0.0	0
2021-03-09	57	42	49.5	10	0	0.13	0.0	0
2021-03-10	56	42	49.0	9	0	0.36	0.0	0
2021-03-11	60	39	49.5	10	0	0.02	0.0	0
2021-03-12	69	39	54.0	14	4	0.00	0.0	0
2021-03-13	69	39	54.0	14	4	0.00	0.0	0
2021-03-14	69	39	54.0	14	4	0.13	0.0	0
2021-03-15	53	40	46.5	7	0	0.22	0.0	0
2021-03-16	61	35	48.0	8	0	0.00	0.0	0
2021-03-17	57	37	47.0	7	0	0.00	0.0	0
2021-03-18	54	47	50.5	11	1	0.66	0.0	0
2021-03-19	M	M	M	M	M	0.25	0.0	0
2021-03-20	64	43	53.5	14	4	0.00	0.0	0
2021-03-21	69	44	56.5	17	7	0.00	0.0	0
2021-03-22	67	42	54.5	15	5	0.00	0.0	0
2021-03-23	66	49	57.5	18	8	0.00	0.0	0
2021-03-24	72	49	60.5	21	11	0.00	0.0	0
2021-03-25	67	46	56.5	17	7	0.00	0.0	0
2021-03-26	74	47	60.5	21	11	0.00	0.0	0
2021-03-27	77	44	60.5	21	11	0.00	0.0	0
2021-03-28	79	44	61.5	22	12	0.00	0.0	0
2021-03-29	77	45	61.0	21	11	0.00	0.0	0
2021-03-30	77	45	61.0	21	11	0.00	0.0	0
2021-03-31	80	47	63.5	24	14	0.00	0.0	0
Average|Sum	66.5	42.2	54.4	440	149	1.91	0.0	0.0

Climatological Data for FAIRFIELD, CA - April 2021

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2021-04-01	85	49	67.0	27	17	0.00	0.0	0
2021-04-02	85	48	66.5	27	17	0.00	0.0	0
2021-04-03	71	46	58.5	19	9	0.00	0.0	0
2021-04-04	M	45	M	M	M	0.00	0.0	0
2021-04-05	65	46	55.5	16	6	0.00	0.0	0
2021-04-06	72	44	58.0	18	8	0.00	0.0	0
2021-04-07	68	46	57.0	17	7	0.00	0.0	0
2021-04-08	74	42	58.0	18	8	0.00	0.0	0
2021-04-09	71	46	58.5	19	9	0.00	0.0	0
2021-04-10	75	43	59.0	19	9	0.00	0.0	0
2021-04-11	80	46	63.0	23	13	0.00	0.0	0
2021-04-12	80	44	62.0	22	12	0.00	0.0	0
2021-04-13	76	47	61.5	22	12	0.00	0.0	0
2021-04-14	71	43	57.0	17	7	0.00	0.0	0
2021-04-15	73	42	57.5	18	8	0.00	0.0	0
2021-04-16	75	42	58.5	19	9	0.00	0.0	0
2021-04-17	86	45	65.5	26	16	0.00	0.0	0
2021-04-18	89	48	68.5	29	19	0.00	0.0	0
2021-04-19	80	52	66.0	26	16	0.00	0.0	0
2021-04-20	73	51	62.0	22	12	0.00	0.0	0
2021-04-21	73	51	62.0	22	12	0.00	0.0	0
2021-04-22	73	49	61.0	21	11	0.00	0.0	0
2021-04-23	71	50	60.5	21	11	0.00	0.0	0
2021-04-24	71	49	60.0	20	10	0.00	0.0	0
2021-04-25	62	50	56.0	16	6	0.02	0.0	0
2021-04-26	66	39	52.5	13	3	0.00	0.0	0
2021-04-27	79	49	64.0	24	14	0.00	0.0	0
2021-04-28	86	49	67.5	28	18	0.00	0.0	0
2021-04-29	88	52	70.0	30	20	0.00	0.0	0
2021-04-30	82	52	67.0	27	17	0.00	0.0	0
Average|Sum	75.9	46.8	61.4	626	336	0.02	0.0	0.0

Climatological Data for FAIRFIELD, CA - May 2021

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2021-05-01	78	50	64.0	24	14	0.00	0.0	0
2021-05-02	85	51	68.0	28	18	0.00	0.0	0
2021-05-03	91	58	74.5	35	25	0.00	0.0	0
2021-05-04	90	59	74.5	35	25	0.00	0.0	0
2021-05-05	92	55	73.5	34	24	0.00	0.0	0
2021-05-06	81	50	65.5	26	16	0.00	0.0	0
2021-05-07	78	51	64.5	25	15	0.00	0.0	0
2021-05-08	89	60	74.5	35	25	0.00	0.0	0
2021-05-09	88	58	73.0	33	23	0.00	0.0	0
2021-05-10	93	54	73.5	34	24	0.00	0.0	0
2021-05-11	92	55	73.5	34	24	0.00	0.0	0
2021-05-12	89	53	71.0	31	21	0.00	0.0	0
2021-05-13	83	49	66.0	26	16	0.00	0.0	0
2021-05-14	76	50	63.0	23	13	0.00	0.0	0
2021-05-15	69	51	60.0	20	10	0.00	0.0	0
2021-05-16	69	51	60.0	20	10	0.00	0.0	0
2021-05-17	71	49	60.0	20	10	0.00	0.0	0
2021-05-18	81	50	65.5	26	16	0.00	0.0	0
2021-05-19	74	48	61.0	21	11	0.00	0.0	0
2021-05-20	71	50	60.5	21	11	0.00	0.0	0
2021-05-21	75	53	64.0	24	14	0.00	0.0	0
2021-05-22	76	47	61.5	22	12	0.00	0.0	0
2021-05-23	75	50	62.5	23	13	0.00	0.0	0
2021-05-24	84	52	68.0	28	18	0.00	0.0	0
2021-05-25	80	59	69.5	30	20	0.00	0.0	0
2021-05-26	86	52	69.0	29	19	0.00	0.0	0
2021-05-27	83	51	67.0	27	17	0.00	0.0	0
2021-05-28	83	56	69.5	30	20	0.00	0.0	0
2021-05-29	79	52	65.5	26	16	0.00	0.0	0
2021-05-30	93	51	72.0	32	22	0.00	0.0	0
2021-05-31	100	58	79.0	39	29	0.00	0.0	0
Average|Sum	82.4	52.7	67.5	861	551	0.00	0.0	0.0

Climatological Data for FAIRFIELD, CA - June 2021

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2021-06-01	96	63	79.5	40	30	0.00	0.0	0
2021-06-02	88	53	70.5	31	21	0.00	0.0	0
2021-06-03	92	55	73.5	34	24	0.00	0.0	0
2021-06-04	88	59	73.5	34	24	0.00	0.0	0
2021-06-05	88	55	71.5	32	22	0.00	0.0	0
2021-06-06	84	56	70.0	30	20	0.00	0.0	0
2021-06-07	80	53	66.5	27	17	0.00	0.0	0
2021-06-08	71	50	60.5	21	11	0.00	0.0	0
2021-06-09	M	63	M	M	M	0.00	0.0	0
2021-06-10	76	46	61.0	21	11	0.00	0.0	0
2021-06-11	79	52	65.5	26	16	0.00	0.0	0
2021-06-12	89	52	70.5	31	21	0.00	0.0	0
2021-06-13	84	60	72.0	32	22	0.00	0.0	0
2021-06-14	81	63	72.0	32	22	0.00	0.0	0
2021-06-15	88	52	70.0	30	20	0.00	0.0	0
2021-06-16	98	60	79.0	39	29	0.00	0.0	0
2021-06-17	107	65	86.0	46	36	0.00	0.0	0
2021-06-18	107	67	87.0	47	37	0.00	0.0	0
2021-06-19	95	64	79.5	40	30	0.00	0.0	0
2021-06-20	94	57	75.5	36	26	0.00	0.0	0
2021-06-21	86	57	71.5	32	22	0.00	0.0	0
2021-06-22	79	58	68.5	29	19	0.00	0.0	0
2021-06-23	82	57	69.5	30	20	0.00	0.0	0
2021-06-24	83	56	69.5	30	20	0.00	0.0	0
2021-06-25	89	55	72.0	32	22	0.00	0.0	0
2021-06-26	93	56	74.5	35	25	0.00	0.0	0
2021-06-27	89	57	73.0	33	23	0.00	0.0	0
2021-06-28	88	58	73.0	33	23	0.00	0.0	0
2021-06-29	92	60	76.0	36	26	0.00	0.0	0
2021-06-30	84	59	71.5	32	22	0.00	0.0	0
Average|Sum	87.9	57.3	72.5	951	661	0.00	0.0	0.0

Climatological Data for FAIRFIELD, CA - July 2021

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2021-07-01	80	58	69.0	29	19	0.00	0.0	0
2021-07-02	87	57	72.0	32	22	0.00	0.0	0
2021-07-03	87	55	71.0	31	21	0.00	0.0	0
2021-07-04	87	57	72.0	32	22	0.00	0.0	0
2021-07-05	90	57	73.5	34	24	0.00	0.0	0
2021-07-06	86	55	70.5	31	21	0.00	0.0	0
2021-07-07	88	55	71.5	32	22	0.00	0.0	0
2021-07-08	101	56	78.5	39	29	0.00	0.0	0
2021-07-09	104	69	86.5	47	37	0.00	0.0	0
2021-07-10	107	62	84.5	45	35	0.00	0.0	0
2021-07-11	102	60	81.0	41	31	0.00	0.0	0
2021-07-12	85	55	70.0	30	20	0.00	0.0	0
2021-07-13	78	55	66.5	27	17	0.00	0.0	0
2021-07-14	82	54	68.0	28	18	0.00	0.0	0
2021-07-15	80	55	67.5	28	18	0.00	0.0	0
2021-07-16	86	55	70.5	31	21	0.00	0.0	0
2021-07-17	94	55	74.5	35	25	0.00	0.0	0
2021-07-18	98	60	79.0	39	29	0.00	0.0	0
2021-07-19	94	62	78.0	38	28	0.00	0.0	0
2021-07-20	87	57	72.0	32	22	0.00	0.0	0
2021-07-21	91	58	74.5	35	25	0.00	0.0	0
2021-07-22	90	57	73.5	34	24	0.00	0.0	0
2021-07-23	96	55	75.5	36	26	0.00	0.0	0
2021-07-24	95	58	76.5	37	27	0.00	0.0	0
2021-07-25	92	56	74.0	34	24	0.00	0.0	0
2021-07-26	82	56	69.0	29	19	0.00	0.0	0
2021-07-27	98	62	80.0	40	30	0.00	0.0	0
2021-07-28	98	61	79.5	40	30	0.00	0.0	0
2021-07-29	98	63	80.5	41	31	0.00	0.0	0
2021-07-30	98	60	79.0	39	29	0.00	0.0	0
2021-07-31	92	60	76.0	36	26	0.00	0.0	0
Average|Sum	91.4	57.9	74.6	1082	772	0.00	0.0	0.0

Climatological Data for FAIRFIELD, CA - August 2021

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2021-08-01	89	59	74.0	34	24	0.00	0.0	0
2021-08-02	93	58	75.5	36	26	0.00	0.0	0
2021-08-03	97	55	76.0	36	26	0.00	0.0	0
2021-08-04	93	57	75.0	35	25	0.00	0.0	0
2021-08-05	82	56	69.0	29	19	0.00	0.0	0
2021-08-06	94	57	75.5	36	26	0.00	0.0	0
2021-08-07	89	61	75.0	35	25	0.00	0.0	0
2021-08-08	86	59	72.5	33	23	0.00	0.0	0
2021-08-09	90	58	74.0	34	24	0.00	0.0	0
2021-08-10	98	57	77.5	38	28	0.00	0.0	0
2021-08-11	95	62	78.5	39	29	0.00	0.0	0
2021-08-12	94	61	77.5	38	28	0.00	0.0	0
2021-08-13	87	59	73.0	33	23	0.00	0.0	0
2021-08-14	97	63	80.0	40	30	0.00	0.0	0
2021-08-15	97	62	79.5	40	30	0.00	0.0	0
2021-08-16	96	62	79.0	39	29	0.00	0.0	0
2021-08-17	90	61	75.5	36	26	0.00	0.0	0
2021-08-18	82	56	69.0	29	19	0.00	0.0	0
2021-08-19	83	60	71.5	32	22	0.00	0.0	0
2021-08-20	83	55	69.0	29	19	0.00	0.0	0
2021-08-21	72	59	65.5	26	16	0.00	0.0	0
2021-08-22	82	55	68.5	29	19	0.00	0.0	0
2021-08-23	79	56	67.5	28	18	0.00	0.0	0
2021-08-24	81	51	66.0	26	16	0.00	0.0	0
2021-08-25	85	54	69.5	30	20	0.00	0.0	0
2021-08-26	94	54	74.0	34	24	0.00	0.0	0
2021-08-27	100	61	80.5	41	31	0.00	0.0	0
2021-08-28	102	64	83.0	43	33	0.00	0.0	0
2021-08-29	101	62	81.5	42	32	0.00	0.0	0
2021-08-30	95	58	76.5	37	27	0.00	0.0	0
2021-08-31	87	59	73.0	33	23	0.00	0.0	0
Average|Sum	90.1	58.4	74.3	1070	760	0.00	0.0	0.0

Climatological Data for FAIRFIELD, CA - September 2021

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2021-09-01	87	55	71.0	31	21	0.00	0.0	0
2021-09-02	78	53	65.5	26	16	0.00	0.0	0
2021-09-03	88	51	69.5	30	20	0.00	0.0	0
2021-09-04	94	52	73.0	33	23	0.00	0.0	0
2021-09-05	99	55	77.0	37	27	0.00	0.0	0
2021-09-06	102	59	80.5	41	31	0.00	0.0	0
2021-09-07	99	64	81.5	42	32	0.00	0.0	0
2021-09-08	106	67	86.5	47	37	0.00	0.0	0
2021-09-09	94	65	79.5	40	30	0.00	0.0	0
2021-09-10	85	61	73.0	33	23	0.00	0.0	0
2021-09-11	91	58	74.5	35	25	0.00	0.0	0
2021-09-12	95	58	76.5	37	27	0.00	0.0	0
2021-09-13	94	59	76.5	37	27	0.00	0.0	0
2021-09-14	96	59	77.5	38	28	0.00	0.0	0
2021-09-15	86	56	71.0	31	21	0.00	0.0	0
2021-09-16	75	55	65.0	25	15	0.00	0.0	0
2021-09-17	79	53	66.0	26	16	0.00	0.0	0
2021-09-18	73	56	64.5	25	15	0.00	0.0	0
2021-09-19	83	55	69.0	29	19	0.00	0.0	0
2021-09-20	92	55	73.5	34	24	0.00	0.0	0
2021-09-21	94	58	76.0	36	26	0.00	0.0	0
2021-09-22	94	63	78.5	39	29	0.00	0.0	0
2021-09-23	97	54	75.5	36	26	0.00	0.0	0
2021-09-24	95	61	78.0	38	28	0.00	0.0	0
2021-09-25	86	55	70.5	31	21	0.00	0.0	0
2021-09-26	77	55	66.0	26	16	0.00	0.0	0
2021-09-27	77	56	66.5	27	17	0.00	0.0	0
2021-09-28	82	56	69.0	29	19	0.00	0.0	0
2021-09-29	83	50	66.5	27	17	0.00	0.0	0
2021-09-30	89	53	71.0	31	21	0.00	0.0	0
Average|Sum	89.0	56.9	73.0	997	697	0.00	0.0	0.0

Climatological Data for FAIRFIELD, CA - October 2021

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2021-10-01	88	55	71.5	32	22	0.00	0.0	0
2021-10-02	92	58	75.0	35	25	0.00	0.0	0
2021-10-03	90	58	74.0	34	24	0.00	0.0	0
2021-10-04	92	57	74.5	35	25	0.00	0.0	0
2021-10-05	88	54	71.0	31	21	0.00	0.0	0
2021-10-06	74	56	65.0	25	15	0.00	0.0	0
2021-10-07	71	53	62.0	22	12	0.00	0.0	0
2021-10-08	69	50	59.5	20	10	0.00	0.0	0
2021-10-09	76	48	62.0	22	12	0.00	0.0	0
2021-10-10	80	50	65.0	25	15	0.00	0.0	0
2021-10-11	75	55	65.0	25	15	0.00	0.0	0
2021-10-12	72	54	63.0	23	13	0.00	0.0	0
2021-10-13	72	46	59.0	19	9	0.00	0.0	0
2021-10-14	79	47	63.0	23	13	0.00	0.0	0
2021-10-15	81	49	65.0	25	15	0.00	0.0	0
2021-10-16	83	49	66.0	26	16	0.00	0.0	0
2021-10-17	78	54	66.0	26	16	0.00	0.0	0
2021-10-18	65	43	54.0	14	4	0.03	0.0	0
2021-10-19	67	42	54.5	15	5	0.00	0.0	0
2021-10-20	64	51	57.5	18	8	0.18	0.0	0
2021-10-21	66	56	61.0	21	11	0.51	0.0	0
2021-10-22	66	55	60.5	21	11	0.19	0.0	0
2021-10-23	64	51	57.5	18	8	0.01	0.0	0
2021-10-24	61	56	58.5	19	9	6.10	0.0	0
2021-10-25	64	53	58.5	19	9	1.43	0.0	0
2021-10-26	67	49	58.0	18	8	0.00	0.0	0
2021-10-27	74	53	63.5	24	14	0.00	0.0	0
2021-10-28	77	54	65.5	26	16	0.00	0.0	0
2021-10-29	74	53	63.5	24	14	0.00	0.0	0
2021-10-30	68	56	62.0	22	12	0.00	0.0	0
2021-10-31	65	53	59.0	19	9	0.00	0.0	0
Average|Sum	74.3	52.2	63.2	726	416	8.45	0.0	0.0

Climatological Data for FAIRFIELD, CA - November 2021

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2021-11-01	61	56	58.5	19	9	0.25	0.0	0
2021-11-02	68	54	61.0	21	11	0.07	0.0	0
2021-11-03	72	53	62.5	23	13	0.00	0.0	0
2021-11-04	69	58	63.5	24	14	0.04	0.0	0
2021-11-05	65	48	56.5	17	7	0.00	0.0	0
2021-11-06	65	52	58.5	19	9	0.00	0.0	0
2021-11-07	63	47	55.0	15	5	0.00	0.0	0
2021-11-08	62	41	51.5	12	2	0.00	0.0	0
2021-11-09	58	50	54.0	14	4	1.48	0.0	0
2021-11-10	66	51	58.5	19	9	0.00	0.0	0
2021-11-11	69	51	60.0	20	10	0.00	0.0	0
2021-11-12	63	47	55.0	15	5	0.00	0.0	0
2021-11-13	60	49	54.5	15	5	0.00	0.0	0
2021-11-14	60	51	55.5	16	6	0.02	0.0	0
2021-11-15	56	51	53.5	14	4	0.00	0.0	0
2021-11-16	67	50	58.5	19	9	0.00	0.0	0
2021-11-17	64	42	53.0	13	3	0.00	0.0	0
2021-11-18	58	46	52.0	12	2	0.00	0.0	0
2021-11-19	69	46	57.5	18	8	0.00	0.0	0
2021-11-20	69	46	57.5	18	8	0.00	0.0	0
2021-11-21	69	40	54.5	15	5	0.00	0.0	0
2021-11-22	65	39	52.0	12	2	0.00	0.0	0
2021-11-23	63	41	52.0	12	2	0.00	0.0	0
2021-11-24	67	43	55.0	15	5	0.00	0.0	0
2021-11-25	63	38	50.5	11	1	0.00	0.0	0
2021-11-26	65	42	53.5	14	4	0.00	0.0	0
2021-11-27	65	42	53.5	14	4	0.00	0.0	0
2021-11-28	67	44	55.5	16	6	0.00	0.0	0
2021-11-29	69	47	58.0	18	8	0.00	0.0	0
2021-11-30	69	45	57.0	17	7	0.00	0.0	0
Average|Sum	64.9	47.0	55.9	487	187	1.86	0.0	0.0

Climatological Data for FAIRFIELD, CA - December 2021

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2021-12-01	69	42	55.5	16	6	0.00	0.0	0
2021-12-02	67	44	55.5	16	6	0.00	0.0	0
2021-12-03	72	53	62.5	23	13	0.00	0.0	0
2021-12-04	M	M	M	M	M	0.00	0.0	0
2021-12-05	50	43	46.5	7	0	0.00	0.0	0
2021-12-06	49	44	46.5	7	0	0.00	0.0	0
2021-12-07	59	47	53.0	13	3	0.05	0.0	0
2021-12-08	53	45	49.0	9	0	0.00	0.0	0
2021-12-09	59	47	53.0	13	3	0.02	0.0	0
2021-12-10	57	37	47.0	7	0	0.00	0.0	0
2021-12-11	56	35	45.5	6	0	0.00	0.0	0
2021-12-12	50	45	47.5	8	0	0.85	0.0	0
2021-12-13	55	48	51.5	12	2	3.30	0.0	0
2021-12-14	51	37	44.0	4	0	0.51	0.0	0
2021-12-15	52	36	44.0	4	0	0.04	0.0	0
2021-12-16	55	45	50.0	10	0	0.80	0.0	0
2021-12-17	54	35	44.5	5	0	0.02	0.0	0
2021-12-18	46	31	38.5	0	0	0.00	0.0	0
2021-12-19	46	39	42.5	3	0	0.00	0.0	0
2021-12-20	47	41	44.0	4	0	0.00	0.0	0
2021-12-21	47	38	42.5	3	0	0.08	0.0	0
2021-12-22	47	42	44.5	5	0	0.06	0.0	0
2021-12-23	58	46	52.0	12	2	0.92	0.0	0
2021-12-24	55	48	51.5	12	2	0.10	0.0	0
2021-12-25	55	46	50.5	11	1	0.86	0.0	0
2021-12-26	48	35	41.5	2	0	0.05	0.0	0
2021-12-27	51	44	47.5	8	0	0.65	0.0	0
2021-12-28	45	37	41.0	1	0	0.05	0.0	0
2021-12-29	44	41	42.5	3	0	0.50	0.0	0
2021-12-30	54	42	48.0	8	0	0.03	0.0	0
2021-12-31	55	33	44.0	4	0	0.00	0.0	0
Average|Sum	53.5	41.5	47.5	236	38	8.89	0.0	0.0

Appendix C

Corps Jurisdictional Determination

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
450 GOLDEN GATE AVENUE
SAN FRANCISCO, CALIFORNIA 94102

February 1, 2022

Regulatory Division

Subject: File No. SPN-2005-298180

Mr. Robert Perrera
Huffman-Broadway Group, Inc.
828 Mission Avenue
San Rafael, California 94901
Rperrera@h-bgroup.com

Dear Mr. Pererra:

This correspondence is in reference to your submittal of August 23, 2021, on behalf of Buzz Oates Construction and Tom Gentry California Company, requesting a preliminary jurisdictional determination of the extent of navigable waters of the United States and waters of the United States occurring on a Highway 12 Logistics Center site located near the City of Suisun City, Solano County, California; Latitude 38.2333°, Longitude -122.0541°.

All proposed discharges of dredged or fill material occurring below the plane of ordinary high water in non-tidal waters of the United States; or below the high tide line in tidal waters of the United States; and within the lateral extent of wetlands adjacent to these waters, typically require Department of the Army authorization and the issuance of a permit under Section 404 of the Clean Water Act of 1972, as amended, 33 U.S.C. § 1344 *et seq*.

All proposed structures and work, including excavation, dredging, and discharges of dredged or fill material, occurring below the plane of mean high water in tidal waters of the United States; in former diked baylands currently below mean high water; outside the limits of mean high water but affecting the navigable capacity of tidal waters; or below the plane of ordinary high water in non-tidal waters designated as navigable waters of the United States, typically require Department of the Army authorization and the issuance of a permit under Section 10 of the Rivers and Harbors Act of 1899, as amended, 33 U.S.C. § 403 *et seq*.

The enclosed delineation map titled "Preliminary Jurisdictional Determination pursuant to Section 404 Clean Water Act and Section 10 Rivers and Harbors Act, Highway 12 Logistics Center, Solano County, California," in one sheet and date certified January 19, 2022, depicts the extent and location of wetlands, and other waters of the United States, and navigable waters of the United States within the Study Area Boundary of the site that **may be** subject to U.S. Army Corps of Engineers' regulatory authority under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. This preliminary jurisdictional determination is based on the current conditions of the site, as verified during a field investigation of October 28, 2021, a review of available digital photographic imagery, and a review of other data included in your submittal. While this preliminary jurisdictional determination was conducted pursuant to Regulatory Guidance Letter No. 16-01, *Jurisdictional Determinations*, it may be subject to future

revision if new information or a change in field conditions becomes subsequently apparent. The basis for this preliminary jurisdictional determination is fully explained in the enclosed *Preliminary Jurisdictional Determination Form.* You are requested to sign and date this form and return it to this office within two weeks of receipt.

You are advised that the preliminary jurisdictional determination may **not** be appealed through the U.S. Army Corps of Engineers' *Administrative Appeal Process*, as described in 33 C.F.R. pt. 331 (65 Fed. Reg. 16,486; Mar. 28, 2000). Under the provisions of 33 C.F.R Section 331.5(b)(9), non-appealable actions include preliminary jurisdictional determinations since they are considered to be only advisory in nature and make no definitive conclusions on the jurisdictional status of the water bodies in question. However, you may request this office to provide an approved jurisdictional determination that precisely identifies the scope of jurisdictional waters on the site; an approved jurisdictional determination may be appealed through the *Administrative Appeal Process*. If you anticipate requesting an approved jurisdictional determination at some future date, you are advised not to engage in any on-site grading or other construction activity in the interim to avoid potential violations and penalties under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. Finally, you may provide this office new information for further consideration and request a reevaluation of this preliminary jurisdictional determination.

You may refer any questions on this matter to Bryan Matsumoto by telephone at (415) 503-6786 or by e-mail at Bryan.T.Matsumoto@usace.army.mil. All correspondence should be addressed to the Regulatory Division, North Branch, referencing the file number at the head of this letter. The San Francisco District is committed to improving service to our customers. The Regulatory staff seeks to achieve the goals of the Regulatory Program in an efficient and cooperative manner while preserving and protecting our nation's aquatic resources. If you would like to provide comments on our Regulatory Program, please complete the Customer Service Survey Form available on our website: https://www.spn.usace.army.mil/Missions/Regulatory.aspx.

Sincerely,

Bryan Matsumoto
Senior Project Manager
Regulatory Division

Enclosures

cc (w/ encls):
RWQCB, Erin Fairley, erin.fairley@waterboards.ca.gov
Buzz Oates Construction, Joe Livaich, joelivaich@buzzoates.com

Appendix D.

Flora and Fauna Species Tables

TABLES

Table 1. Plant species observed on the Project Site				
FAMILY	**SCIENTIFIC NAME**	**COMMON NAME**	**California Native? (Y / N)**	**Invasive Status ****
Alismataceae	*Alisma plantago aquatica*	Water-plantain	Y	
Apiaceae	*Eryngium vaseyi*	Vasey's coyote-thistle	Y	
	Foeniculum vulgare	Fennel	N	Moderate
	Hydrocotyle verticillata	Whorled marsh pennywort	Y	
	Oenanthe sarmentosa	Water parsley	Y	
Asteraceae	*Achyrachaena mollis*	Blow wives	Y	
	Ambrosia psilostachya	Ragweed	Y	
	Artemisia douglasiana	California Mugwort	Y	
	+ Symphyotrichum lentum	Suisun marsh aster	Y	
	Symphyotrichum subulatum	Eastern annual saltmarsh aster	Y	
	Baccharis douglasii	Saltmarsh baccharis	Y	
	Baccharis pilularis	Coyote brush	Y	
	Bidens sp.	Beggar ticks	Y	
	Carduus pycnocephalus	Italian thistle	N	Moderate
	Centaurea solstitialis	Yellow star thistle	N	High
	Centaurea calcitrapa	Purple star thistle	N	Moderate
	Cichorium intybus	Chicory	N	-
	Cirsium vulgare	Bull thistle	N	Moderate
	Erigeron canadensis	Canada horseweed	Y	
	Cotula coronopifolia	Brass buttons	N	Limited
	Euthamia occidentalis	Western goldenrod	Y	
	Gnaphalium palustre	Lowland cudweed	Y	
	Centromadia pungens	Common spikeweed	Y	
	Holocarpha virgota ssp. Virgata	Narrow tarplant	Y	
	Hypochaeris glabra	Smooth cat's-ear	N	Limited
	Jaumea carnosa	Marsh jaumea	Y	
	Lactuca serriola	Prickly Lettuce	N	-
	Lasthenia californica	California goldfields	Y	
	+Lasthenia conjugens	Contra Costa goldfields	Y	
	Lasthenia ferrisiae	Ferris' goldfields	Y	

Table 1. Plant species observed on the Project Site				
FAMILY	**SCIENTIFIC NAME**	**COMMON NAME**	**California Native? (Y / N)**	**Invasive Status ****
	Lasthenia glaberrima	Smooth lasthenia	Y	
	Leontodon saxatilis	Hawkbit	N	-
	Microseris campestris	San joaquin microseris	Y	
	Helminthotheca echioides	Bristly ox-tongue	N	Limited
	Psilocarphus brevissimus var. brevissimus	Woolly heads	Y	
	Psilocarphus oregonus	Woolly marbles	Y	
	Senecio vulgaris	Common grounsel	N	-
	Sonchus oleraceus	Sow thistle	N	-
	Xanthium spinosum	Spiny cocklebur	N	-
	Xanthium strumarium	Cocklebur	Y	-
Boraginaceae	*Plagiobothrys austiniae*	Rebecca austin's allocarya	Y	
	Plagiobothrys humistratus	Dwarf allocarya	Y	
	Plagiobothrys leptocladus	Alkali plagiobothrys	Y	
	Plagiobothrys stipitatus var. micranthus	Vernal pool allocarya	Y	
Brassicaceae	*Lepidium latifolium*	Perennial pepperweed	N	High
	Lepidium nitidum var. nitidum	Shining peppergrass	Y	
	Hirschfeldia incana	Field mustard	N	Moderate
	Raphanus sativus	Wild radish	N	Limited
	Rorippa nasturtium-aquaticum	Water cress	Y	
Callitrichaceae	*Callitriche marginata*	Water-starwort	Y	
Campanulaceae	*Downingia pulchella*	Flat-faced downingia	Y	
Carophyllaceae	*Cerastium glomeratum*	Mouse-eared chickweed	N	-
	Silene gallica	Windmill pink	N	
	Spergularia marina	Saltmarsh sand spurry	Y	
	Spergularia macrotheca	Large-flowered sand spurry	Y	
Chenopodiaceae	*Atriplex prostrata*	Fat-hen	N	-
	Chenopodium album	Lamb's quarters	N	-
	Salicornia pacifica	Pickleweed	Y	
Convolvulaceae	*Calystegia sepium spp. Limnophila*	Hedge bindweed	Y	

Table 1. Plant species observed on the Project Site				
FAMILY	**SCIENTIFIC NAME**	**COMMON NAME**	**California Native? (Y / N)**	**Invasive Status ****
	Convolulus arvensis	Field bindweed	Y	
	Cressa truxillensis	Alkali weed	Y	
Crassulaceae	*Crassula aquatica*	Pygmy-weed	Y	
Cyperaceae	*Carex rostrata*	Beaked sedge	Y	
	Cyperus	Tall nutsedge	Y	
	Eragrostis	Pale spikerush	Y	
	Eleocharis macrostachya	Common spikerush	Y	
	Schoenoplectus acutus var. occidentalis	Tule	Y	
	Schoenoplectus californicus	Olney's bulrush	Y	
	Schoenoplectus americanus	Chairmaker's bulrush	Y	
Euphorbiaceae	*Eremocarpus setigerius*	Dove weed	Y	
Fabaceae	*+Astragalus tener var. tener*	Alkali milkvetch	Y	
	+Lathyrus jepsonii var. jepsonii	Delta tule pea	Y	
	Lotus corniculatus	Bird's-foot trefoil	N	-
	Lupinis bicolor	Miniature lupine	Y	
	Medicago polymorpha	Bur-clover	N	Limited
	Melilotus albus	White sweetclover	N	-
	Melilotus indica	Yellow sweetclover	N	-
	Trifolium barbigerum	Bearded clover	Y	
	Trifolium campestre	Hop clover	Y	
	Trifolium depauperatum var. amplectens	Pale sack clover	Y	
	Trifolium depauperatum var. depauperatum	Dwarf bladder clover	Y	
	+Trifolium depauperatum var. hydrophilum	Saline clover	Y	
	Trifolium fucatum	Sour clover	Y	
	Trifolium microcephalum	Small-headed clover	Y	
	Trifolium subterraneum	Subterranean clover	Y	
	Trifolium variegatum	White-tipped clover	Y	
	Trifolium willdenovii	Tomcat clover	Y	
	Vicia sativa	Spring Vetch	N	-
	Vicia villosa	Hairy vetch	N	-
Frankeniaceae	*Frankenia salina*	Alkali heath		
Geraniaceae	*Erodium botrys*	Big heron bill	N	-
	Erodium cicutarium	Filaree	N	Limited
	Geranium carolinianum	Carolina geranium	Y	
Juncaceae	*Juncus balticus*	Baltic rush	Y	

Table 1. Plant species observed on the Project Site				
FAMILY	**SCIENTIFIC NAME**	**COMMON NAME**	**California Native? (Y / N)**	**Invasive Status ****
	Juncus bufonius	Toad rush	Y	
	Juncus effusus var. pacificus	Soft rush	Y	
	Juncus mexicanus	Mexican rush	Y	
Juncaginaceae	*Lillaea scilloides*	Flowering quillwort	Y	
	Triglochin concinna var. concinna	Arrow-grass seaside	Y	
	Triglochin maritima	Arrow-grass	Y	
Lamiaceae	*Mentha x piperita*	Spearmint	N	-
Lilaeaceae	*Asparagus officinalis*	Asparagus	N	-
	Brodiaea minor	Dwarf brodiaea	Y	
	Dipterostemon capitatus	Blue dicks	Y	
	Muilla maritima	Common muilla	Y	
	Triteleia hyacinthina	White triteleia	Y	
Lythraceae	*Lythrum hyssopifolium*	Hyssop loosestrife	N	Moderate
Malvaceae	*Malva neglecta*	Dwarf mallow	N	-
	Malvella leprosa	Alkali mallow	Y	
Onagraceae	*Epilobium brachycarpum*	Panicled willow herb	Y	
	Epilobium cleistogamum	Cleistogamous spike-primrose	Y	
Plantaginaceae	*Plantago elongata*	Slender plantain	Y	
	Plantago lanceolata	English plantain	N	Limited
	Plantago major	Common plantain	N	-
Primulaceae	*Lysimachia arvensis*	Scarlet pimpernel	N	-
Poaceae	*Avena fatua*	Wild oats	N	Moderate
	Briza minor	Little quaking grass	N	-
	Bromus diandrus	Ripgut brome	N	Moderate
	Bromus hordeaceus	Soft chess	N	Limited
	Crypsis vaginaflora	Prickle grass	Y	
	Deschampsia danthonioides	Annual hairgrass	Y	
	Distichlis spicata	Saltgrass	Y	
	Echinochloa muricata	Barnyard grass	N	-
	Hainardia cylindrica	Thintail	N	-
	Hordeum branchyantherum	Meadow barley	Y	
	Hordeum depressum	Alkali barley	Y	
	Hordeum marinum ssp. Gussoneanum	Mediterranean Barley	N	Moderate
	Hordeum murinum	Foxtail barley	N	Moderate
	Elymus triticoides	Perennial	Y	

Table 1. Plant species observed on the Project Site				
FAMILY	**SCIENTIFIC NAME**	**COMMON NAME**	**California Native? (Y / N)**	**Invasive Status ****
		ryegrass		
	Festuca perennis	Italian ryegrass	N	Moderate
	Parapholis incurva	Sickle grass	N	-
	Paspalum dilatatum	Dallis grass	N	-
	Paspalum distichum	Joint Paspalum	Y	
	Phalaris paradoxa	Paradox canary grass	N	-
	Pleuropogon californicus	California semaphore grass	Y	
	Poa annua	Annual bluegrass	N	-
	Polypogon monspeliensis	Rabbit's-foot grass	N	Limited
	Schismus arabicus	Mediterranean grass	N	Limited
	Elymus caput-medusae	Medusa head	N	High
	Festuca bromoides	Brome fescue	N	
	Festuca myuros	Rattail fescue	N	Moderate
Polygonaceae	*Persicaria punctata*	Dotted smartweed	Y	
	Rumex crispus	Curly dock	N	Limited
	Rumex conglomeratus	Clustered dock	N	-
Ranunculaceae	*Myosurus minimus*	Little mouse tail	Y	
	Myosurus sessilis	Mouse tail	Y	
	Ranunculus sceleratus	Prickle-pod buttercup	Y	
	Ranunculus muricatus	Celery-leaf buttercup	N	-
Rosaceae	*Potentilla anserina ssp.*	Pacific silverweed	Y	
	Pacifica Rosa californica	California rose	Y	
	Rubus armeniacus	Himalayan blackberry	N	High
	Rubus ursinus	California blackberry	Y	
Scrophulariaceae	*Bellardia trixago*	Bellardia	N	Limited
	Castilleja attenuata	Valley tassels	Y	
	Limosella aquatica	Mudwort	Y	
	Triphysaria eriantha ssp. eriantha	Butter-and-eggs	Y	
	Triphysaria versicolor ssp. faucibarbata	Yellow owl's-clover	Y	
	Triphysaria pusilla	Dwarf owl's-clover	Y	
	Verbascum thapsus	Wooly mullein	N	Limited
	Veronica peregrina ssp. xalapensis	Purslane speedwell	Y	
Salicaceae	*Salix gooddingii*	Gooding's	Y	

Table 1. Plant species observed on the Project Site				
FAMILY	**SCIENTIFIC NAME**	**COMMON NAME**	**California Native? (Y / N)**	**Invasive Status ****
		black willow		
	Salix lasiolepis	Arroyo willow	Y	
Typhaceae	*Typha angustifolia*	Narrow-leaved cattail	N	-
	Typha latifolia	Broad-leaved cattail	Y	
Verbenaceae	*Phyla nodiflora var. nodiflora*	Common frog fruit	Y	

* Plant species observed on the project site based on surveys conducted spring and summer, 2000, 2001, and 2002, and spring, 2005 and summer of 2019 and summer/fall of 2020 and Spring of 2021.
\+ **State or Federal Special status species**.
**** Invasive Species.** An inventory with ranking of invasives (High, Moderate, and Limited) can be found at https://www.cal-ipc.org/

Invasive Plant Rating Terminology:

High. These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.

Moderate. These species have substantial and apparent—but generally not severe—ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.

Limited. High risk of becoming invasive. These species are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

1. Scientific names from Hickman (1993)
2. Common names from Abrams (1940), Hickman (1993), and Reed (1988).

Table 2. Animal Species Known to Occur of Expected to Occur on the Project Site.

REPTILES AND AMPHIBIANS

Pacific Chorus Frog	*Pseudacris regilla*
Bullfrog	*Rana catesbeiana*
Western Toad	*Bufo boreas*
Western Fence Lizard	*Sceloporus occidentalis*
Coast Horned Lizard	*Phrynosoma coronatum*
Gilbert's Skink	*Eumeces gilberti*
Western Whiptail	*Cnemidophorus tigris*
Southern Alligator Lizard	*Gerrhonotus multicarinatus*
Racer	*Coluber constrictor*
Coachwhip	*Masticophis flagellum*
Glossy Snake	*Arizona elegans*
Gopher Snake	*Pituophis melanoleucus*
Common Kingsnake	*Lampropeltis getulus*
Long-nosed Snake	*Rhinocheilus lecontei*
Common Garter Snake	*Thamnophis sirtalis*
Western Terrestrial Garter Snake	*Thamnophis elegans*
Western Rattlesnake	*Crotalis viridis*

BIRDS

Pied-billed Grebe	*Podilymbus podceaps*
Eared Grebe	*Podiceps nigricollis*
Western Grebe	*Aechmophorus occidentalis*
Clark's Grebe	*Aechmophorus clarkii*
American White Pelican	*Pelecanus erythrorhynchos*
Double-crested Cormorant	*Phalacrocorax auritus*
American Bittern	*Botaurus lentiginosus*
Great Blue Heron	*Ardea herodias*
Green Heron	*Butorides virescens*
Black-crowned Night Heron	*Nycticorax nycticorax*
Great Egret	*Ardea albus*
Snowy Egret	*Egretta thula*
Cattle Egret	*Bubulcus ibis*
Canada Goose	*Branta Canadensis*
Green-Winged Teal	*Anas crecca*
Mallard	*Anas platyrhyncos*
Northern Pintail	*Anas acuta*
Cinnamon Teal	*Anas cyanoptera*
Northern Shoveler	*Anas clyeata*
Gadwall	*Anas strepera*

American Wigeon	*Anas americana*
Canvasback	*Aythya valisineria*
Redhead	*Aythya americana*
Ring-necked Duck	*Aythya collaris*
Lesser Scaup	*Aythya affinis*
Common Goldeneye	*Bucephala clangula*
Bufflehead	*Bucephala albeola*
Ruddy Duck	*Oxyura jamaicensis*
Turkey Vulture	*Cathartes aura*
Osprey	*Pandion haliaetus*
White-tailed Kite	*Elanus leucurus*
Northern Harrier	*Circus hudsonius*
Sharp-shinned Hawk	*Accipiter striatus*
Cooper's Hawk	*Accipiter cooperi*
Red-tailed Hawk	*Buteo jamaicensis*
Red-shouldered Hawk	*Buteo lineatus*
Golden Eagle	*Aquila chrysaetos*
American Kestrel	*Falco sparverius*
Prairie Falcon	*Falco mexicanus*
Merlin	*Falco columbarius*
Ring-necked Pheasant	*Phasianus colchicus*
California Quail	*Callipepla californica*
Virginia Rail	*Rallus limicola*
Sora	*Porzana carolina*
Common Gallinule	*Gallinula galeata*
American Coot	*Fulica Americana*
Black-bellied Plover	*Pluvialis squatarola*
Killdeer	*Charadrius vociferous*
Black-necked Stilt	*Himantopus mexicanus*
American Avocet	*Recurvirostra americana*
Greater Yellowlegs	*Tringa melanoleuca*
Spotted Sandpiper	*Actitus macularia*
Long-billed Curlew	*Numenius americanus*
Least Sandpiper	*Calidris minutilla*
Western Sandpiper	*Calidris mauri*
Dunlin	*Calidris alpina*
Long-billed Dowitcher	*Limnodromus scolopaceus*
Wilson’s Snipe	*Gallinago delicata*
Ring-billed Gull	*Larus delawarensis*
California Gull	*Larus californicus*
Herring Gull	*Larus argentatus*
Forster's Tern	*Sterna forsteri*
Caspian Tern	*Sterna caspia*
Rock Dove	*Columba livia*

Mourning Dove	*Zenaida macroura*
Barn Owl	*Tyto alba*
Great Horned Owl	*Bubo virginianus*
Burrowing Owl	*Athene cunicularia*
Short-eared Owl	*Asio flammeus*
Vaux's Swift	*Chaetura vauxi*
Anna's Hummingbird	*Calypte annas*
Belted Kingfisher	*Ceryle alcyon*
Northern Flicker	*Colaptes auratus*
Nuttall's Woodpecker	*Picoides nuttallii*
Downy Woodpecker	*Dryobates pubescens*
Black Phoebe	*Sayornis nigricans*
Say's Phoebe	*Sayornis saya*
Pacific-slope Flycatcher	*Empidonax difficilus*
Ash-throated Flycatcher	*Myiarchus cinerascens*
Western Kingbird	*Tyrannus verticalis*
California Horned Lark	*Eremophila alpestris actica*
Barn Swallow	*Hirundo rustica*
Cliff Swallow	*Petrochelidon pyrrhonota*
Tree Swallow	*Tachicineta bicolor*
Violet-green swallow	*Tachycineta thalassina*
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*
California Scrub-jay	*Aphelocoma californica*
American Crow	*Corvus brachyrhynchos*
Common Bushtit	*Psaltriparus minimus*
Bewick's Wren	*Thryomanes bewickii*
House Wren	*Troglodytes aedon*
Marsh Wren	*Cistothorus palustris*
American Robin	*Turdus migratorius*
Hermit Thrush	*Hylocichla guttata*
Western Bluebird	*Sialia mexicana*
Ruby-crowned Kinglet	*Regulus calendula*
Northern Mockingbird	*Mimus polyglottos*
American Pipit	*Anthus rubescens*
Cedar Waxwing	*Bombycilla cedrorum*
Loggerhead Shrike	*Lanius ludovicianus*
European Starling	*Sturnus vulgaris*
Warbling Vireo	*Vireo gilvusi*
Orange-crowned Warbler	*Vermivora celata*
Yellow Warbler	*Setophaga petechia*
Yellow-rumped Warbler	*Setophaga coronata*
Townsend's Warbler	*Setophaga townsendi*
Common Yellowthroat	*Geothlypis trichas*
Wilson's Warbler	*Cardellina pusilla*

Western Tanager	*Piranga ludoviciana*
Black-headed Grosbeak	*Pheucticus melanocephalus*
Lazuli Bunting	*Passerina amoena*
Spotted Towhee	*Pipilo maculatus*
Savannah Sparrow	*Passerculus sandwichensis*
Lark Sparrow	*Chondestes grammacus*
White-crowned Sparrow	*Zonotrichia leucophrys*
Golden-crowned Sparrow	*Zonotrichia atricapilla*
Fox Sparrow	*Passerella iliaca*
Suisun Song Sparrow	*Melospiza melodia maxillaris*
Lincoln's Sparrow	*Melospiza lincolnii*
Dark-eyed Junco	*Junco hyemalis*
Western Meadowlark	*Sturnella neglecta*
Red-winged Blackbird	*Agelaius phoeniceus*
Tri-colored Blackbird	*Agelaius tricolor*
Brewer's Blackbird	*Euphagus cyanocephalus*
Brown-headed Cowbird	*Molothrus ater*
Bullock's Oriole	*Icterus bullockii*
Purple Finch	*Haemorhous purpureus*
House Finch	*mexicanus*
Pine Siskin	*Carduelis pinus*
American Goldfinch	*Spinus tristis*
Lesser Goldfinch	*Spinus psaltria*
House Sparrow	*Passer domesticus*

MAMMALS

Virginia Opossum	*Didelphis virginiana*
Suisun Shrew	*Sorex ornatus sinuosus*
Broad-footed Mole	*Scapanus latimanus*
California Myotis	*Myotis californicus*
Western Pipistrelle	*Pipistrellus hesperus*
Big Brown Bat	*Eptesicus fuscus*
Red Bat	*Lasiurus borealis*
Pallid Bat	*Antrozous pallidus*
Brazilian Free-tailed Bat	*Tadarida brasiliensis*
Black-tailed Hare	*Lepus californicus*
Desert Cottontail	*Sylvilagus audubonii*
California Ground Squirrel	*Otospermophilus beecheyi*
Botta's Pocket Gopher	*Thomomys bottae*
Western Harvest Mouse	*Reithrodontomys megalotis*
Deer Mouse	*Peromyscus maniculatus*
California Vole	*Microtus californicus*

Muskrat	*Ondatra zibethicus*
Norway Rat	*Rattus norvegicus*
House Mouse	*Mus musculus*
Coyote	*Canis latrans*
Red Fox	*Vulpes fulva*
Gray Fox	*Urocyon cinereoargenteus*
Raccoon	*Procyon lotor*
Long-tailed Weasel	*Mustela frenata*
Striped Skunk	*Mephitis mephitis*
Mule Deer	*Odocoileus hemionus*

Mayer and Laudenslayer (1988)
National Geographic Society (2017)
Reid (2006)
Stebbins (2003)
Zeiner, et al. (1990)

TABLE 3. SPECIAL STATUS PLANTS KNOWN TO OCCUR WITHIN A 10-MILE RADIUS OF THE PROJECT SITE			
SPECIES	**STATUS[2]**	**HABITAT/RANGE**	**OCCURRENCE AT THE SITE**
Alkali milk-vetch (*Ashort-eared owlstragalus tener* var. *tener*)	--/--/1B.2	Inhabits low ground, alkali flats and flooded land in valley and foothill grasslands or in playas or vernal pools. 1-170m.	Present. There are CNDDB records north and east of the property and CNPS records in Fairfield South quad. Special status plant surveys indicated this species is present in central areas of the Development Site and well as in the area south of Cordelia Road.
Heartscale (*Atriplex cordulata* var. *cordulata*)	--/--/1B.2	Inhabits alkaline flats and scalds with sandy soils. 0-560m.	Unlikely. There is a historic CNDDB record several miles north of the property and several CNPS records several miles north and east of the property. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting or by HBG in 2021.
Brittlescale (*Atriplex depressa*)	--/--/1B.2	Chenopod scrub, meadows, playas, valley and foothill grassland and vernal pools. Usually in alkali scalds in alkaline clay soils. Rarely in riparian marshes or vernal pools. 1-320m.	Unlikely. There is a recorded CNDDB occurrence 5 miles east of the property near Potrero Hills Landfill (Denverton quad). Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting or by HBG in 2021.
Sacramento saltbush (*Atriplex persistens*)	--/--/1B.2	Inhabits alkali vernal pools; known from scattered locations in the Delta and Central Valley basin. 10-115m.	Unlikely. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting or by HBG in 2021.
Big-scale (California) balsamroot (*Balsamorhiza macrolepis var. macrolepis*)	--/--/1B.2	Chaparral, cismontane woodland, valley and foothill grassland, sometimes on serpentinite. 90-1555m.	Unlikely. Suitable habitat is not present on the site. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting or by HBG in 2021.
Lyngbye's sedge (*Carex lyngbyei*)	-/-/2B.2	Marshes and swamps (brackish or freshwater) at sea level.	Unlikely. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting or by HBG in 2021.
Tiburon paintbrush (*Castilleja affinis* ssp. *neglecta*)	FE/ST/1B.2	Rocky serpentine sites within valley and foothill grassland. 75-400m.	Not present. Suitable habitat is not found at the site.
Holly-leaved ceanothus (*Ceanothus purpureus)*	--/--/1B.2	Rocky volcanic slopes in chaparral. 120-640m.	Not present. Suitable habitat is not found at the project site
Round-leaved filaree (*California macrophylla*)	--/--/1B.1	Found on clay soils in cismontane woodland and valley and foothill grasslands. 15-1200m.	Not present. Suitable habitat is not found at the project site

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SPECIES	**STATUS[2]**	**HABITAT/RANGE**	**OCCURRENCE AT THE SITE**
Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*)	--/--/1B.1	Found in alkaline soils in valley and foothill grasslands. 1-230m.	Unlikely. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting or by HBG in 2021.
Pappose tarplant (*Centromadia parryi ssp. parryi*)	--/--/1B.2	Found in mesic and often alkaline site in coastal prairie, meadows and seeps, coastal salt marsh and valley and foothill grasslands. 2-420m	Unlikely. Suitable habitat is not present on the Project Site. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting or by HBG in 2021.
Hispid salty bird's-beak (*Chloropyron molle* ssp. *hispidum*)	--/--/.11B	Found in meadows and seeps, playas, and valley and foothill grasslands. Alkaline soils in alkaline meadows and alkali sinks with *Distichlis*. 1-155m.	Unlikely. There is a CNDDB record 5 miles east northeast of the property at Dozier vernal pools (Denverton quadrangle). Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting or by HBG in 2021.
Soft bird's-beak (*Chloropyron molle* ssp. *molle*)	FE/CR/ 1B.2	Coastal salt marsh with *Distichlis*, *Salicornia*, *Frankenia*, etc. 0-3m.	Unlikely. CNDDB records along Suisun Slough and Hwy 12 (5 miles east of the property). CNPS records in Fairfield South quad on the property. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting or by HBG in 2021.
Bolander's water-hemlock (*Cicuta maculata* var. *bolanderi*)	--/--/2B.1	Found in fresh or brackish water. 0-200m.	Unlikely. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting or by HBG in 2021.
Suisun thistle (*Cirsium hydrophilum* var. *hydrophilum*)	FE/--/1B.1	Found with *Scirpus* and *Distichlis* near small watercourses within salt marsh 0-1m; only two known locations (Grizzly Island and lower Peytonia Slough), both in Solano, Co.	Unlikely. Potential habitat near southern tip of the project site along Peytonia Slough. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting or by HBG in 2021.
Recurved larkspur (*Delphinium recurvatum*)	--/--/1B.2	On alkaline soils in chenopod scrub, cismontane woodland and valley and foothill grassland.	Not likely to occur. There are historic CNDDB record (1902) near Vacaville. No CNPS records near the property. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting or by HBG in 2021.

TABLE 3. SPECIAL STATUS PLANTS KNOWN TO OCCUR WITHIN A 10-MILE RADIUS OF THE PROJECT SITE			
SPECIES	**STATUS[2]**	**HABITAT/RANGE**	**OCCURRENCE AT THE SITE**
Dwarf downingia (*Downingia pusilla*)	--/--/2B.2	Inhabits vernal pools and vernal lake margins. 1-445m.	Unlikely. No CNDDB records in the vicinity of the property. CNPS occurrence in Denverton quad. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting or by HBG in 2021.
Greene's narrow-leaved daisy (*Erigeron greenei*)	--/--/1B.2	Serpentine and volcanic substrates in chaparral. 75-1060m.	Not present. Suitable habitat not found at the site.
Mt. Diablo buckwheat (*Eriogonum truncatum*)	FSC/--/ CNPS 1A	On dry, exposed clay or sandy substrates in chaparral, coastal scrub and valley and foothill grasslands. 3-350m.	Not present. Suitable habitat is not found at the site.
Jepson's coyote-thistle *(Eryngium jepsonii)*	--/--/1B.2	On clay soils in vernal pools and valley and foothill grassland. 3-305 m.	Unlikely. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting or by HBG in 2021.
San Joaquin spearscale (*Etriplex joaquiniana*)	--/--/1B.2	Chenopod scrub, meadows, playas, valley and foothill grassland and vernal pools. Usually in seasonal alkali wetlands or alkali sink scrub with *Distichlis*, *Frankenia*, etc. 1-835m.	Unlikely. There are CNDDB records at Travis AFB, and Potrero Hills Landfill and CNPS occurrence in Fairfield South quad. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 or by HBG in 2021.
Adobe-lily (*Fritillaria pluriflora*)	--/--/1B.2	Clay soils in valley and foothill grasslands, chaparral or cismontane woodland. 60-705m.	Unlikely. There is a historic CNPS record northeast of the property (Elmira quad). No CNDDB records in vicinity. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting or by HBG in 2021.
Brewer's western flax (*Hesperolinon breweri*)	--/--/1B,2	Chaparral, cismontane woodland and valley and foothill grassland; often found in rocky serpentine soil in serpentine chaparral and serpentine grassland at 30-885 meters.	Not present. Suitable habitat is not found at the site.
Carquinez goldenbush (*Isocoma arguta*)	--/--/1B.1	Found in valley and foothill grasslands on alkaline soils, on low benches near drainages and on the tops and sides of mounds in swale areas. 1-20m.	Unlikely. There are three CNDDB records several miles east of the property (Denverton quad: Dozier vernal pools, near Creed Road, near Highway 12). Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting or by HBG in 2021.

TABLE 3. SPECIAL STATUS PLANTS KNOWN TO OCCUR WITHIN A 10-MILE RADIUS OF THE PROJECT SITE			
SPECIES	**STATUS[2]**	**HABITAT/RANGE**	**OCCURRENCE AT THE SITE**
Contra Costa goldfields (*Lasthenia conjugens*)	FE/--/1B.1	Inhabits vernal pools, swales and low depressions in open grassy areas. Most remaining occurrences restricted to the Fairfield region. 1-470m.	Present onsite. Observed onsite in special status species surveys conducted by Vollmar consulting in 2000, 2001, 2002 and 2005 and by HBG in 2021.
Delta tule pea (*Lathyrus jepsonii* var. *jepsonii*)	--/--/1B.2	Freshwater and brackish marshes with *Typha*, *Rosa*, *Juncus*, *Scirpus* etc. Usually on the marsh the slough edges.	Present onsite. Observed onsite in the southern portion of the property during Vollmar Consulting special status plant surveys conducted in 2000. Not expected in the annexation area (including Development Site) due to a lack of perennial brackish marsh habitat. Also, there are numerous known occurrences south of the property on Suisun Slough, Peytonia Slough, and Suisun Marsh.
Legenere (*Legenere limosa*)	--/--/1B.1	Inhabits the beds of vernal pools. 1-880m.	Unlikely. CNDDB records occurrences east of the property. CNPS records in Denverton and Elmira quads. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting or by HBG in 2021.
Heckard's pepper-grass (*Lepidium latipes var. heckardii*)	--/--/1B.2	Valley and foothill grassland. In grassland or vernal pool edges on alkaline soils. 2-200 m.	Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting or by HBG in 2021. Was observed on parcel south of Cordelia Road during the spring 2022 rare plant survey currently underway.
Jepson's leptosiphon (*Leptosiphon jepsonii*)	--/--/1B.2	Found on volcanics or the periphery of serpentine substrates in chaparral, cismontane woodland, and open to partially shaded grassy slopes. 55-855 m.	Not present. Suitable habitat not found at the site.
Mason's lilaeopsis (*Lilaeopsis masonii*)	--/CR/1B.1	Found in the tidal zone in muddy or silty soils with freshwater and brackish marshes and riparian scrub. 1-10m.	Unlikely. There are CNDDB records southeast of the property along Montezuma Slough, Grizzly Island and CNPS records in Fairfield South quad. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting or by HBG in 2021.
Delta mudwort (*Limosella australis*)	--/--/2B.1	Found in riparian scrub and in freshwater and brackish marshes. On mud banks in marsh and riparian associations. Often with Mason's lilaeopsis. 0-3m.	Not present. Suitable habitat is not found at the project site

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SPECIES	**STATUS[2]**	**HABITAT/RANGE**	**OCCURRENCE AT THE SITE**
Marsh microseris (*Microseris paludosa*)	-/-/1B.2	Closed-cone coniferous forest, cismontane woodland, coastal scrub, valley and foothill grassland. 5-300m.	Not present. Suitable habitat is not found at the site.
Baker's navarretia (*Navarretia leucocephala ssp. bakeri*)	--/--/.11B	Cismontane woodland, meadows and seeps, vernal pools, valley and foothill grassland, lower montane coniferous forest. Vernal pools and swales; adobe or alkaline soils at 5-1740m.	Unlikely. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting or by HBG in 2021.
Colusa grass (*Neostapfia colusana*)	FT/CE/ 1B.1	Inhabits pool bottoms in adobe soils in large vernal pools and vernal lakes. 5-200m.	Unlikely. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting or by HBG in 2021.
San Joaquin Valley Orcutt grass (*Orcuttia inaequalis*)	FT/CE/ 1B.1	Vernal pools 15-660 m.	Unlikely. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting or by HBG in 2021.
Bearded popcorn flower (*Plagiobothrys hystriculus*)	--/--/1B.1	Vernal pools, valley and foothill grassland in wet sites. 0-275m.	Unlikely. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting or by HBG in 2021.
California alkali grass *(Puccinellia simplex)*	--/--/1B.2	Found in meadows and seeps, chenopod scrub, and vernal pools in foothill grasslands. Found in alkaline, vernally mesic sinks, flats, and lake margins. 1-915 m.	Not present. Suitable habitat not found at the site.
Keck's checkerbloom (*Sidalcea keckii*)	FE/--/1B.1	Found on grassy slopes in blue oak woodland. 75-650m.	Not present. Suitable habitat is not found at the project site
Long-styled sand-spurrey *(Spergularia macrotheca* var. *longistyla)*	--/--/1B.2	Found in alkaline marshes and swamps, meadows and seeps. 0-220 m.	Unlikely. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting or by HBG in 2021.
Northern slender pondweed (*Stuckenia filiformis* ssp. *alpina*)	--/--/2B.2	Found in marshes and swamps, in shallow, clear water of lakes and drainage channels. 300-2150m.	Unlikely. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting or by HBG in 2021.

TABLE 3. SPECIAL STATUS PLANTS KNOWN TO OCCUR WITHIN A 10-MILE RADIUS OF THE PROJECT SITE			
SPECIES	**STATUS[2]**	**HABITAT/RANGE**	**OCCURRENCE AT THE SITE**
Suisun Marsh aster (*Symphyotrichum lentum*)	--/--/1B.2	Found in freshwater and brackish marshes and swamps, often along sloughs with *Phragmites*, *Scirpus*, *Typha*, etc. 0-3m.	Present onsite. There are several CNDDB records east and south of the property along sloughs draining to Suisun Bay and CNPS has records in the Fairfield South quad. Surveys found this species in the southern portion of the project site and in the eastern portion of the proposed annexation area adjacent to the perennial brackish marsh ditch (not the Development Site).
Napa bluecurls (*Trichostema ruygtii*)	--/--/1B.2	Open sunny areas in cismontane woodland, chaparral, valley and foothill grassland, vernal pools and lower montane coniferous forest. 30-590 m.	Not present. Suitable habitat not found at the site.
Two-fork clover (*Trifolium amoenum*)	FE/--/1B.1	Open, sunny sites and swales, sometimes on serpentine soil, within valley and foothill grassland and coastal buff scrub. Recently found on an eroding cliff face on a roadside. 5-415m.	Unlikely. Historic records in Solano County (type locality), 4 miles northeast of the property. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting or by HBG in 2021.
Saline clover (*Trifolium depauperatum* var. *hydrophilum*)	--/--/1B.2	Marshes and swamps, mesic alkaline sites, vernal pools in valley and foothill grassland. 0-300m.	Present onsite. A total of 49 occurrences of saline clover were located during surveys within the project site: 14 occurrences within the Development Site, three occurrences in the eastern portion of the annexation area, and 32 occurrences were south of Cordelia Road.
Crampton's tuctoria (*Tuctoria mucronata*)	FE/CE/ 1B.1	Clay bottoms of drying vernal pools and lakes in valley grassland. 5-10m.	Unlikely. There are two populations in and adjacent to Jepson Prairie. Not likely to occur on the property due to a lack of suitable habitat. Not observed during special status plant surveys conducted in 2000, 2001, 2002 and 2005 by Vollmar Consulting or by HBG in 2021.
Oval-leaved viburnum (*Viburnum ellipticum*)	--/--/2B.3	Chaparral, cismontane woodland and lower montane coniferous forest. 215-1400m.	Not present. Suitable habitat not found at the site.

1. Source: California Natural Diversity Data Base, Natural Heritage Division, California Department of Fish and Wildlife for the Fairfield North and Fairfield South 7.5 Minute Quadrangle Map and surrounding areas, information dated February 2022.

2. Status Codes:

FE	Federally listed Endangered
FT	Federally listed Threatened
FPE	Federally Proposed Endangered
FPT	Federally Proposed Threatened
CE	California State-listed Endangered
CT	California State-listed Threatened
CR	California Rare
FP	California Fully Protected
CSC	California Species of Special Concern

California Rare Plant Rank 1A: Plants presumed extirpated in California and either rare or extinct elsewhere.
California Rare Plant Rank 1B: Plants rare, threatened, or endangered in California and elsewhere.
California Rare Plant Rank 2A: Plants presumed extirpated in California, but more common elsewhere.
California Rare Plant Rank 2B: Plants rare, threatened, or endangered in California, but more numerous elsewhere.
California Rare Plant Rank 3: Plants about which more information is needed – a review list.
California Rare Plant Rank 4: Plants of limited distribution – a watch list.
CNPS Threat Ranks
0.1-Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
0.2-Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)
0.3-Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

Table 4. SPECIAL STATUS ANIMAL SPECIES KNOWN TO OCCUR WITHIN A 10-MILE RADIUS OF THE PROJECT SITE			
SCIENTIFIC NAME	**STATUS[2]**	**HABITAT/RANGE**	**OCCURRENCE**
Invertebrates			
Conservancy fairy shrimp (*Branchinecta conservatio*)	FE/--	Inhabits large vernal pools, often with turbid water; known from fewer than 15 occurrences in the Delta (Jepson Prairie) and Central Valley.	Not present. Nearest known occurrence several miles to the east (Jepson Prairie). Protocol level wet season (2000 and 2020) and dry season (2002, 2005 and 2021) sampling for vernal pool large brachiopods was conducted by Brent Helm. Results were negative.
Longhorn fairy shrimp (*Branchinecta longiantenna*)	FE/--	Inhabits vernal pools; known from fewer than 15 occurrences along western edge of the mid Central Valley (including Contra Costa, Alameda Counties)	Not present. Nearest known occurrence approximately 50 miles to the south (west of Tracy) in pools on sandstone outcrops. Protocol level wet season (2000 and 2020) and dry season (2002, 2005 and 2021) sampling for vernal pool large brachiopods was conducted by Brent Helm. Results were negative.
Vernal Pool fairy shrimp (*Branchinecta lynchi*)	FT/--	Inhabits vernal pools; occurs throughout the Delta and Central Valley.	Not present. Known from sites a couple of miles north and east of the property. Protocol level wet season (2000 and 2020) and dry season (2002, 2005 and 2021) sampling for vernal pool large brachiopods was conducted by Brent Helm. Results were negative.
Midvalley fairy shrimp (*Branchinecta mesovallensis*)	--/--	Vernal pools, swales, and ephemeral freshwater habitat.	Not present. Protocol level wet season (2000 and 2020) and dry season (2002, 2005 and 2021) sampling for vernal pool large Brachiopods was conducted by Brent Helm. Results were negative.
Vernal Pool tadpole shrimp (*Lepidurus packardi*)	FE/--	Inhabits vernal pools; known from scattered locations in the Delta and Central Valley.	Not present. Known CNDDB records a couple miles east of the study site at Potrero Hill landfill and along Highway 12. Protocol level wet season (2000 and 2020) and dry season (2002, 2005 and 2021) sampling for vernal pool large brachiopods was conducted by Brent Helm. Results were negative.

Table 4. SPECIAL STATUS ANIMAL SPECIES KNOWN TO OCCUR WITHIN A 10-MILE RADIUS OF THE PROJECT SITE			
SCIENTIFIC NAME	**STATUS[2]**	**HABITAT/RANGE**	**OCCURRENCE**
California Linderiella (*Linderiella occidentalis*)	--/--	Seasonal pools in unplowed grasslands with old alluvial soils underlain by hardpan or in sandstone depressions.	Not present. Protocol level wet season (2000 and 2020) and dry season (2002, 2005 and 2021) sampling for vernal pool large brachiopods was conducted by Brent Helm. Results were negative.
California freshwater shrimp (*Syncaris pacifica*)	FE/CE	Found in low-elevation (less than 53-foot) and low gradient (generally less than 1%) streams.	Not present. Suitable habitat is not present at the site. Brackish waters in Ledgewood Creek would not be considered suitable habitat for California freshwater shrimp.
Wilbur Springs shore bug (*Saldula usingeri)*	--/--	Found only on wet substrate of spring outflows. Requires springs/creeks with high concentrations of sodium, chlorine and lithium.	Not present. Suitable habitat not found at the site.
Hairy water flea (*Dumontia oregonensis*)	--/--	Vernal pools. In California, known only from Mather Field.	Not present. Outside the range of the species.
Western bumble bee *(Bombus occidentalis)*	--/--	This species was once common and widespread, but the species has declined precipitously from Central California to Southern British Columbia, perhaps from disease.	This widespread and once common species could occur almost anywhere in the general area of the site and is included in the CNDDB due to a general decline in bee populations in recent years.
Crotch bumble bee (*Bombus crotchii*)	--/--	Found in coastal California east to the Sierra-Cascade Crest and south into Mexico. Food plant genera include *Antirrhinum, Phacelia, Clarkia, Dendromecon, Eschscholzia* and *Eriogonum*.	This species occurs primarily in California and is included in the CNDDB due to sharp declines over the last decade.
Valley Elderberry longhorn beetle (*Desmocerus californicus dimorphus*)	FT/--	Inhabits blue elderberry bushes (host plant); restricted to the Central Valley and adjacent foothills.	Not present. CNDDB records of elderberry bushes with exit holes along creeks northwest of Fairfield. However, no blue elderberry bushes were observed on the site, therefore no potential habitat exists for this species onsite.

Table 4. SPECIAL STATUS ANIMAL SPECIES KNOWN TO OCCUR WITHIN A 10-MILE RADIUS OF THE PROJECT SITE			
SCIENTIFIC NAME	**STATUS[2]**	**HABITAT/RANGE**	**OCCURRENCE**
Delta Green ground beetle (*Elaphrus viridis*)	FT/--	Inhabits the drying edges of large vernal pools; presently only known from Jepson Prairie area. They prefer barren areas with an abundance of their favored prey, springtails.	Not present. CNDDB records at Jepson Prairie. Unlikely to occur on the study site due to a lack of suitable habitat. Project Area boundary is not within designated critical habitat.
Ricksecker's water scavenger beetle (*Hydrochara ricksecker*i)	--/--	Aquatic beetle that lives in weedy shallow, open water associated freshwater seeps, springs, farm ponds, vernal pools (playa type pools) and slow-moving stream habitats. Occurs in Jepson Prairie preserve in Solano County.	Not present. May Consulting Services conducted dip-net surveys for this species concurrently with surveys for large brachiopods. Survey results were negative.
Curved-foot hygrotus diving beetle (*Hygrotis curvipes*)	--/--	Inhabits small seasonal water bodies, mostly alkaline.	Not present. No CNDDB records in the vicinity. May Consulting Services conducted dip-net surveys for this species concurrently with surveys for large brachiopods. Survey results were negative.
Monarch butterfly (*Danaus plexippus*) (wintering sites)	--/--	Winter roost sites located in wind-protected tree groves (eucalyptus, Monterey pine, cypress) with nectar and water sources nearby.	Not present. Suitable habitat for winter roosting sites is not present onsite.
Callippe silverspot butterfly (*Speyeria callippe callippe*)	FE/--	Habitat for this species is grassland, often with a significant component of native grasses including the host plant (*Viola pedunculata*) and characterized by shallow rocky soils and numerous rock outcrops.	Not present. Suitable habitat consisting of grassland with shallow rocky soils and the larvae host plant is not present onsite.
Fish			

Table 4. SPECIAL STATUS ANIMAL SPECIES KNOWN TO OCCUR WITHIN A 10-MILE RADIUS OF THE PROJECT SITE			
SCIENTIFIC NAME	**STATUS[2]**	**HABITAT/RANGE**	**OCCURRENCE**
River lamprey (*Lampetra ayresii*)	--/CSC	Adult lampreys spawn in gravel bottomed streams, at the upstream end of riffle habitat, typically above suitable ammocoete habitat. River lampreys are associated with large river systems such as the Fraser, Columbia, Klamath, Eel, and Sacramento Rivers.	Not present. Suitable habitat is not present onsite. Ledgewood Creek is not characteristic of the large river systems River Lampreys are associated with.
Pacific lamprey (*Lampetra tridentata*)	--/--	Spawning takes place in low gradient sections of water, with gravel and sandy bottoms. Pacific lampreys have been historically or recently documented in many streams of the San Francisco Bay area.	Not present. Suitable habitat is not present onsite.
Green sturgeon (*Acipenser medirostris*)	FT/CSC	Green Sturgeon rely on streams, rivers, and estuarine habitat as well as marine waters during their lifecycle. They prefer to spawn in lower reaches of large rivers with swift currents and large cobble. They are found spawning in the Sacramento, Klamath and Rogue Rivers.	Not present. Suitable habitat is not present onsite. Ledgewood Creek is not characteristic of the large river systems Green Sturgeon are associated with.

Table 4. SPECIAL STATUS ANIMAL SPECIES KNOWN TO OCCUR WITHIN A 10-MILE RADIUS OF THE PROJECT SITE			
SCIENTIFIC NAME	**STATUS[2]**	**HABITAT/RANGE**	**OCCURRENCE**
Coho Salmon-Central California Coast ESU (*Oncorhynchus kisutch*)	CE/FE	Coho Salmon spawn in streams that are narrow, shallow, clear, and cold with a strong upwelling of water through the gravel. This ESU encompasses the area from Punta Gorda in northern California south to and including tributaries to San Francisco Bay, excluding the Sacramento-San Joaquin river system.	Not present. This ESU is not known to occur east of Carquinez Strait.
Steelhead-Central California Coastal DPS (*Oncorhynchus mykiss*)	FT/SSC	Steelhead spawn in streams that are shallow, clear, and cold with a strong upwelling of water through the gravel. The ESU encompasses the San Pablo Bay/Napa River watersheds.	Unlikely. There is the potential for this species to occur within Ledgewood Creek south of Cordelia Road. Ledgewood Creek is not currently known to support breeding/rearing habitat for this ESU. However, it is accessible from Suisun Slough and Steelhead could migrate upstream in search of suitable breeding habitat.
Steelhead-Central Valley DPS (*Oncorhynchus mykiss*)	FT/--	Steelhead spawn in streams that are shallow, clear, and cold with a strong upwelling of water through the gravel. The ESU encompasses the Suisun Bay/Sacramento River Delta watersheds. Waterways currently known to support breeding/rearing habitat for steelhead in Solano County include Green Valley, Suisun Valley and American Canyon Creeks.	Unlikely. There is the potential for this species to occur within Ledgewood Creek south of Cordelia Road Ledgewood Creek is not currently known to support breeding/rearing habitat for this ESU. However, it is accessible from Suisun Slough and Steelhead could migrate upstream in search of suitable breeding habitat.

Table 4. SPECIAL STATUS ANIMAL SPECIES KNOWN TO OCCUR WITHIN A 10-MILE RADIUS OF THE PROJECT SITE			
SCIENTIFIC NAME	**STATUS[2]**	**HABITAT/RANGE**	**OCCURRENCE**
Chinook Salmon-Central Valley fall/late fall-run ESU (*Oncorhynchus tshawytscha*)	--/CSC	Chinook Salmon spawn in streams that are shallow, clear, and cold with a strong upwelling of water through the gravel. The ESU includes all naturally spawned populations of fall-run Chinook salmon in the Sacramento and San Joaquin River Basins and their tributaries, east of Carquinez Strait.	Unlikely. There is the potential for this species to occur within Ledgewood Creek in the southern portion of the project site. Ledgewood Creek is not currently known to support breeding/rearing habitat for this ESU. However, it is accessible from Suisun slough and Chinook salmon could migrate upstream in search of suitable breeding habitat.
Chinook Salmon Central Valley spring-run ESU (*Oncorhynchus tshawytscha*).	FT/CT	Chinook salmon choose to spawn in streams that are shallow, clear, and cold with a strong upwelling of water through the gravel. The ESU encompasses the Sacramento River and its tributaries.	Unlikely. There is the potential for this species to occur within Ledgewood Creek in the southern portion of the project site. Ledgewood Creek is not currently known to support breeding/rearing habitat for this ESU. However, it is accessible from Suisun slough and Chinook salmon could migrate upstream in search of suitable breeding habitat.
Chinook Salmon Sacramento River winter-run ESU (*Oncorhynchus tshawytscha)*	FE/CE	Chinook Salmon spawn in streams that are shallow, clear, and cold with a strong upwelling of water through the gravel. The ESU includes populations of winter-run Chinook Salmon in the Sacramento River and its tributaries.	Unlikely. There is the potential for this species to occur within Ledgewood Creek in the southern portion of the project site. Ledgewood Creek is not currently known to support breeding/rearing habitat for this ESU. However, it is accessible from Suisun slough and Chinook salmon could migrate upstream in search of suitable breeding habitat

Table 4. SPECIAL STATUS ANIMAL SPECIES KNOWN TO OCCUR WITHIN A 10-MILE RADIUS OF THE PROJECT SITE			
SCIENTIFIC NAME	**STATUS[2]**	**HABITAT/RANGE**	**OCCURRENCE**
Delta smelt (*Hypomesus transpacificus*)	FT/CE	During spawning they migrate upstream into shallow fresh or slightly brackish tidally-influenced backwater sloughs and channel edges. In Solano County, Delta Smelt are found in Suisun Bay/Suisun Marsh sloughs upstream through the delta in Contra Costa, Sacramento, San Joaquin, Solano and Yolo counties.	Unlikely. There is the potential for this species to occur in the southern portion of the project site or the eastern portion of the proposed annexation area (not the Development Site). The lower reach of Ledgewood Creek and a slough that runs through the eastern portions of the project site are hydrologically connected to Suisun slough and may provide suitable spawning habitat.
Longfin smelt (*Spirinchus thaleichthys*)	FC/CT	In California, Longfin Smelt have been commonly collected from San Francisco Bay, Eel River, Humboldt Bay and Klamath River. As they mature in the fall, adults found throughout 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 probably takes place in freshwater.	Unlikely. There is the potential for this species to occur in the southern portion of the project site or the eastern portion of the proposed annexation area (not the Development Site). The lower reach of Ledgewood Creek and a slough that runs through the eastern portions of the project site are hydrologically connected to Suisun slough and may provide suitable spawning habitat.

Table 4. SPECIAL STATUS ANIMAL SPECIES KNOWN TO OCCUR WITHIN A 10-MILE RADIUS OF THE PROJECT SITE			
SCIENTIFIC NAME	**STATUS[2]**	**HABITAT/RANGE**	**OCCURRENCE**
Sacramento splittail (*Pogonichthys macrolepidotus*)	--/CSC	Adult Sacramento Splittail migrate upstream from brackish areas to spawn in freshwater areas subject to flooding, such as the lower reaches of rivers, dead end sloughs, and in larger sloughs such as Montezuma Slough. Within Solano County, splittail are year-round residents of Suisun Marsh, concentrating in the dead-end sloughs that typically have small streams feeding into them.	Unlikely. There is the potential for this species to occur in the southern portion of the project site or the eastern portion of the proposed annexation area (not the Development Site). The lower reach of Ledgewood Creek and a slough that runs through the eastern portions of the project site are hydrologically connected to Suisun slough and may provide suitable spawning habitat.
Amphibians			
California tiger salamander *(Abystoma californiense)*	FT/CT,WL	Found in annual grasslands and grassy understory of valley-foothill hardwood habitats in central and northern California. Needs underground refuges, especially ground squirrel burrows and vernal pools or other seasonal water source for breeding.	Not present.Previous dip-netting surveys have all been negative for CTS. Lack of turbid water in deeper pools not conducive to breeding and lack of suitable small mammal burrows not conducive to use as upland habitat. Pools in the southern portion of the project area were too shallow to support breeding. Significant barriers to migration occur between the project area and known CTS occurrences which include roadways, residential, commercial, and industrial development and large tidal water bodies. Also, the proposed annexation area is within the 100-year floodplain as is 95% of the area south of Cordelia Road.
Western spadefoot toad (*Spea hammondii*)	--/CSC	Breeds in vernal pools/seasonal stock ponds in the Central Valley and southern coast.	Not present. CNDDB records in vicinity of the property. Nearest recorded occurrences more than twenty miles to the east and south. Dip-net surveys for other species did not turn up this species.

Table 4. SPECIAL STATUS ANIMAL SPECIES KNOWN TO OCCUR WITHIN A 10-MILE RADIUS OF THE PROJECT SITE			
SCIENTIFIC NAME	**STATUS[2]**	**HABITAT/RANGE**	**OCCURRENCE**
California red-legged frog *(Rana draytonii)*	FT/CSC	Mostly found in lowlands and foothills in/near permanent sources of deep water but will disperse far during and after rain. Prefers shorelines with extensive vegetation. Requires 11-20 weeks of permanent water for larval development and requires access to aestivation habitat.	Not present. The study site is considered to be outside of the current range of this species. Additionally, non-tidal wetlands onsite are seasonal and do not provide the perennial waters typically required for California red-legged frog.
Foothill yellow-legged frog *(Rana boylii)*	--/CSC	Partly shaded shallow streams with riffles, with a rocky substrate in a variety of habitats; needs at least some cobble-sized substrate for egg-laying. Needs at least 15 weeks to attain metamorphosis. Frogs are usually found on stream banks, especially near riffles.	Not present. No suitable habitat onsite. The brackish marsh habitat within Ledgewood Creek is not considered suitable habitat for Foothill Yellow-legged Frog.
Reptiles			
Western pond turtle *Emys marmorata)*	--/CSC	Inhabits freshwater ponds and sluggish streams; occurs from WA to Baja, mostly west of the Sierra crest.	Not present. No CNDDB records in the vicinity of the property. Unlikely to occur due to a lack of perennial freshwater.
California horned lizard *(Phrynosoma coronatum frontale)*	--/CSC	Occurs in valley-foothill hardwood, conifer and riparian habitats, as well as pine-cypress, juniper and annual grass habitats. Basks on low boulders or rocks. Periods of inactivity and hibernation spent burrowed in soil under logs or rocks, in mammal burrows or in crevices.	Not present. Suitable habitat is not present onsite. Brackish marsh habitat is not considered suitable habitat for California horned lizard.

Table 4. SPECIAL STATUS ANIMAL SPECIES KNOWN TO OCCUR WITHIN A 10-MILE RADIUS OF THE PROJECT SITE			
SCIENTIFIC NAME	**STATUS[2]**	**HABITAT/RANGE**	**OCCURRENCE**
Silvery legless lizard *(Anniella pulchra pulchra)*	--/CSC	Found primarily in areas with sandy or loose organic soils or where there is extensive leaf litter.	Not present. Suitable habitat of sandy or loose organic soil with leaf litter is not present onsite.
Giant garter snake *(Thamnophis gigas)*	FT/CT	Utilizes marshes, sloughs, small lakes, low gradient streams, ponds, agricultural wetlands (irrigation and drainage canals) and adjacent uplands.	Not present. Not known to occur in Project Area.
Birds			
Great egret (*Ardea alba*) (Rookery)	-/-	Colonial nester in tall trees, cliff sides, and sequestered spots on marshes. Rookery sites in close proximity to foraging areas: marshes, lake margins, tide-flats, rivers and streams, wet meadows.	Rookery not present. Suitable habitat for a rookery is not found at the site.
Snowy Egret (*Egretta thula*) [Rookery]	--/--	Colonial nester, with nest sites situated in protected beds of dense tules. Rookery sites situated close to foraging areas: marshes, tidal-flats, streams, wet meadows, and borders of lakes.	Rookery not present. Suitable habitat for a rookery is not found at the site.
Black-crowned night-heron *(Nycticorax nycticorax)* [Nesting]	--/--	Colonial nester, usually in trees but occasionally in tule patches. Rookery sites are located adjacent to foraging areas including lake margins, mud-bordered bays and marshy spots.	Rookery not present. Suitable habitat for a rookery is not found at the site.

Table 4. SPECIAL STATUS ANIMAL SPECIES KNOWN TO OCCUR WITHIN A 10-MILE RADIUS OF THE PROJECT SITE			
SCIENTIFIC NAME	**STATUS[2]**	**HABITAT/RANGE**	**OCCURRENCE**
Great blue heron (*Ardea herodias*) (Rookery)	-/-	Colonial nester in tall trees, cliff sides, and sequestered spots on marshes. Rookery sites in close proximity to foraging areas: marshes, lake margins, tide-flats, rivers and streams, wet meadows.	Rookery not present. Suitable habitat for a rookery is not found at the site.
Golden eagle (*Aquila chrysaetos*) [nesting and wintering]	BCC/FP, WL	Typically frequents rolling foothills, mountain areas, sage-juniper flats and desert.	Not present. Suitable habitat is not found at the site.
Ferruginous hawk *(Buteo reglais)* (wintering)	BCC/WL	Inhabits open country. Winters in small numbers along California coast and inland valleys.	Possible in winter. The species may occasionally utilize the site as a winter foraging habitat.
Swainson's hawk (nesting) *(Buteo swainsoni)*	BCC/CT	Nests in trees and riparian stands; summer migrant to Central Valley. Suitable foraging areas include grasslands, pastures, alfalfa and other hay crops, and certain grain and row croplands.	Not present. No suitable nest trees occur at the site. CNDDB records nesting by this species several miles north and northeast of the study site. Use of the site for foraging is possible. Preconstruction nesting surveys are warranted.
Northern harrier *(Circus hudsonius)* (nesting)	--/CSC	Forages and nests in grasslands, marshes, and agricultural fields; occurs throughout California, concentrated in the Central Valley and coastal valleys.	Nesting possible. Observed onsite during the nesting season by HBG and Vollmar Consulting. Suitable nesting habitat may occur. Expected to use the site as a foraging area in winter. Preconstruction nesting surveys are warranted.
White-tailed kite *(Elanus leucurus)* (nesting)	--/FP	Nests in dense oaks, willows, other trees; occurs in the Central Valley and adjacent low foothills.	Not present. No suitable nest trees occur at the site. No CNDDB records in vicinity but likely to be observed foraging over the property.

Table 4. SPECIAL STATUS ANIMAL SPECIES KNOWN TO OCCUR WITHIN A 10-MILE RADIUS OF THE PROJECT SITE			
SCIENTIFIC NAME	**STATUS[2]**	**HABITAT/RANGE**	**OCCURRENCE**
Bald eagle *(Haliaeetus leucocephalus)* (nesting and wintering)	BCC/CE,FP	In winter, may be found throughout most of California at lakes, reservoirs, rivers and some rangelands and coastal wetlands. California's breeding habitats are mainly located in mountains and foothill forests near permanent water sources.	Not present. Suitable habitat not present onsite.
Peregrine falcon (*Falco peregrinus*)	BCC/FP	Nests in woodland, forest and coastal habitats, on cliffs or banks, and usually near wetlands, lakes, rivers, sometimes on human-made structure. In non-breeding seasons found in riparian areas and coastal and inland wetlands.	Not present. Occurs in the area but suitable nesting habitat is not found at the site.
Prairie falcon (*Falco mexicanus*)(Nesting)	BCC/WL	Associated primarily with perennial grasslands, savannahs, rangeland, some agricultural fields, and desert scrub. Permanent resident and migrant along inner coast and ranges. Nests on cliffs.	Possible in winter. The species may occasionally utilize the site as a winter foraging habitat.
Merlin (*Falco columbarius*) [wintering]	-/WL	Breeds in Canada, winters in a variety of California habitats, including grasslands, savannahs, wetlands, etc.	Possible in winter. The species may occasionally utilize the site as a winter foraging habitat.

Table 4. SPECIAL STATUS ANIMAL SPECIES KNOWN TO OCCUR WITHIN A 10-MILE RADIUS OF THE PROJECT SITE			
SCIENTIFIC NAME	**STATUS[2]**	**HABITAT/RANGE**	**OCCURRENCE**
California black rail *(Laterallus jamaicensis coturninculus)*	BCC/CT,FP	Inhabits tidal salt and brackish marsh bordering sloughs and large bays.	Nor present. No suitable habitat at the Development Site. CNDDB records for sloughs along edge of Suisun Bay, and may occur in the portions of the site nearest to Suisun Bay and within areas proposed as an Managed Open Space as part of the project. Preconstruction surveys are warranted if wetland construction must occur during the nesting season.
California Ridgway's rail *(Rallus obsoletus obsoletus)*	FE/CE,FP	Inhabits tidal salt marsh along larger sloughs and bays in the SF Bay and lower Delta.	Not present. CNDDB records south and east of the project site. No nesting habitat for the species found at the site; the species may occasionally utilize perennial marsh in the southern portions of the site nearest to Suisun Bay as a winter foraging habitat. Generally occurs closer to edge of Suisun Bay.
Yellow rail (*Coturnicops noveboracensis*)	BCC/CSC	Found in freshwater marshes. Summer resident in the eastern Sierra and Modoc County.	Not present. Suitable habitat is not found at the site.
Western snowy plover *(Charadrius alexandrinus nivosus)* (nesting) (coastal population)	FT,BCC/CSC	In the San Francisco Estuary, salt pond levees and exposed salt pond beds (playa-like habitat), San Francisco Bay; rare in San Pablo Bay. Typical coastal habitat is on wide, sandy beaches with scattered debris.	Not present. Suitable habitat is not found at the site.
Mountain plover *(Charadrius montanus)* (wintering)	BCC/CSC	Winters in shortgrass plains, plowed fields, arid plains, alkali sink scrub, valley sink scrub, alkali playa, burned and annual grasslands, and open sagebrush areas that are barren or have sparse vegetation. Wintering plovers found in variable elevations but generally in valley bottoms below 300 meters.	Nor present. Although Mountain Plovers winter in Solano County (e.g. area around Flannery and Robinson Roads) this species has not been reported as wintering in Project Area. Habitat conditions at the site are not likely to support wintering populations of Mountain Plover.

Table 4. SPECIAL STATUS ANIMAL SPECIES KNOWN TO OCCUR WITHIN A 10-MILE RADIUS OF THE PROJECT SITE			
SCIENTIFIC NAME	**STATUS[2]**	**HABITAT/RANGE**	**OCCURRENCE**
Long-billed curlew *(Numenius americanus)* (nesting)	BCC/WL	An uncommon to fairly common breeder from April to September in wet meadow habitat in northeastern California. Uncommon to locally very common as a winter visitant along the California coast, and in the Central and Imperial Valleys. Preferred winter habitats include large coastal estuaries, upland herbaceous areas, and croplands. Large numbers remain in some localities in the Central Valley in winter.	Nesting unlikely. The Project Area is not within the nesting range of the species. Long-billed curlews observed in the proposed Managed Open Space area were likely non-breeders lingering through the summer months.
Black skimmer *(Rynchops niger)* (nesting colony)	BCC/CSC	Nests at Salton Sea and San Diego Bay and recently at San Francisco Bay. Nests primarily on gravel bars, low islets, and sandy beaches in unvegetated sites.	Not present. Suitable habitat is not found at the site.
California least tern *(Sterna antillarum browni)* (nesting colony)	FE/CE,FP	Nests on coastal, sandy, open areas usually around bays, estuaries, and creek and river mouths. Forages in shallow estuaries and lagoons, diving head first into the water after a wide variety of small fish.	Not present. Suitable habitat for a nesting colony is not present onsite.
Short-eared owl (nest site) *(Asio flammeus)*	--/CSC	Forages and nests in perennial marsh and grassland habitat; occurs in the Central Valley, coast, and east Sierra regions.	Nesting possible. CNDDB nest site records at Grizzly Island Wildlife Area. This species was not observed onsite, however, the perennial brackish marsh on the eastern portion of the study area provides potential foraging and nesting habitat for the species. Preconstruction nesting surveys are warranted.

Table 4. SPECIAL STATUS ANIMAL SPECIES KNOWN TO OCCUR WITHIN A 10-MILE RADIUS OF THE PROJECT SITE			
SCIENTIFIC NAME	**STATUS[2]**	**HABITAT/RANGE**	**OCCURRENCE**
Burrowing owl *(Athene cunicularia)* (burrow sites)	BCC/CSC	Nests in mammal burrows, rock cavities in grassland and scrub; occurs throughout much of mid and lower California.	Possible. Numerous CNDDB records in vicinity including one just southwest of the property next to the Cordelia Road. This species was not observed onsite, however, nesting burrows may occur on the property along levee banks and other raised areas that do not become saturated during the winter and spring. Preconstruction surveys are warranted.
Loggerhead shrike *(Lanius ludovicianus)* (nesting)	BCC/CSC	Habitat includes open areas such as desert, grasslands, and savannah. Nests in thickly foliaged trees or tall shrubs. Forages in open habitat which contains trees, fence posts, utility poles and other perches.	Possible. Observed onsite by HBG and Vollmar Consulting during the nesting season. Loggerhead shrikes use the site for foraging and perching. It is unlikely this species nests onsite due to a general lack of suitable habitat, but some nest sites are available in limited onsite riparian habitat. Preconstruction nesting surveys are warranted.
Bank swallow *(Riparia riparia)* (nesting)	--/CT	A migrant found primarily in riparian and other lowland habitats in California west of the deserts. In summer, restricted to riparian areas with vertical cliffs and banks with fine-textured or sandy soil, into which it digs its nesting holes.	Not present. Suitable habitat is not found at the site.
Saltmarsh common yellowthroat *(Geothylpis trichas sinuosa)*	BCC/CSC	Forages and nests in dense fresh and saltwater marsh habitat in the San Francisco Bay and lower Delta.	Not present. Common yellowthroats observed in the property are most likely not of the subspecies that is designated as a species of concern. Salt marsh common yellowthroat range does not extend east of Carquinez Strait.
Grasshopper sparrow (*Ammodramus savannarum*)	--/CSC	Found in dense grasslands, especially those with a variety of grasses and tall forbs and scattered shrubs for singing perches.	Possible. Non-native grasslands may provide suitable nesting habitat. Preconstruction nesting surveys are warranted.

Table 4. SPECIAL STATUS ANIMAL SPECIES KNOWN TO OCCUR WITHIN A 10-MILE RADIUS OF THE PROJECT SITE			
SCIENTIFIC NAME	**STATUS[2]**	**HABITAT/RANGE**	**OCCURRENCE**
Suisun song sparrow *(Melospiza melodia maxillaris)*	BCC/CSC	Forages and nests in dense marsh and scrub habitat along the margins of Suisun Bay.	Present. Observed on site by HBG and Vollmar Consulting foraging in the dense perennial marsh habitat on the eastern portions of the site (not the Development Site) during the nesting season. CNDDB records south of the property along edge of Suisun Bay. May also use the site for nesting. Preconstruction nesting surveys are warranted.
San Pablo song sparrow *(Melospiza melodia samuelis)*	BCC/CSC	Tidal, brackish or salt marshes, San Pablo Bay.	Not present. Site is outside the limited range of this species.
Tri-colored blackbird (*Agelaius tricolor*) [Nesting colony]	BCC/CT,CSC	Breeds near freshwater, usually in tall emergent vegetation. Requires open water with protected nesting substrate. Colonies prefer heavy growth of cattails and tules. Uses grasslands and agricultural lands for foraging.	Possible. Historic CNDDB records several miles east of the study site. This species was not observed onsite, however, perennial marsh on the property could provide suitable habitat for a nesting colony. Preconstruction nesting surveys are warranted.
Mammals			
Suisun shrew *(Sorex ornatus sinuosus)*	--/CSC	Inhabits tidal marshes along the northern shores of San Pablo and Suisun Bays.	Likely. CNDDB record immediately east of the southern portion of the property south of Cordelia Road. Likely to occur onsite within perennial marsh in the southern and eastern portions of the property proposed to be included in a Managed Open Space. Mitigation is recommended during construction of mitigation wetlands.
Townsend's big-eared bat *(Corynorhinus townsendii)*	--/CSC	Found in desert scrub and coniferous forests. Roost in caves or abandoned mines and occasionally are found to roost in buildings.	Not present. Suitable habitat is not found at the project site.
Hoary bat (*Lasuirus cinereus*)	-/-	Prefers open habitats with access to trees for cover and open areas or	Not present. Suitable habitat is not found at the site.

Table 4. SPECIAL STATUS ANIMAL SPECIES KNOWN TO OCCUR WITHIN A 10-MILE RADIUS OF THE PROJECT SITE			
SCIENTIFIC NAME	**STATUS[2]**	**HABITAT/RANGE**	**OCCURRENCE**
		habitat edges for feeding. Roosts in dense foliage of medium to large trees.	
Western red bat *(Lasiurus blossevillii)*	--/CSC	Roosting habitat includes forests and woodlands from sea level up through mixed conifer forests. Feeds over a wide variety of habitats including grasslands, shrublands, open woodlands and forests, and croplands.	Not present. Suitable habitat is not found at the site.
San Joaquin pocket mouse *(Perognathus inornatus)*	--/--	Occurs in dry, open grasslands or scrub areas on fine-textured soils between 350 and 600 meters in the Central and Salinas Valleys. Occurs in shrubby ridge tops and hillsides, characterized as being open, sandy areas with grasses and forbs. Digs burrows for cover.	Not present. Suitable habitat is not found at the project site.
Salt Marsh harvest mouse *(Reithrodontomys raviventris)*	FE/CE,FP	Inhabits pickleweed salt marsh flats in the San Francisco Bay and lower Delta.	Likely. CNDDB records an occurrence of the species in the perennial marsh habitat on eastern edge of the proposed annexation area (not the Development Site). Species may occur in the southern portion of the property nearest to Suisun Bay. Mitigation is recommended during construction of mitigation wetlands.

1. Source: California Natural Diversity Data Base, Natural Heritage Division, California Department of Fish and Wildlife for the Fairfield North and Fairfield South 7.5 Minute Quadrangle Maps and surrounding areas, information dated February 2022.

2. Status Codes:
   FE Federally listed Endangered
   CE California State-listed Endangered

FT Federally listed Threatened
FPE Federally Proposed Endangered
FPT Federally Proposed Threatened
BCC USFWS Bird Species of Conservation Concern

CT California State-listed Threatened
CR California Rare
FP California Fully Protected
CSC CDFW Species of Special Concern
WL CDFW Watch List Species

Appendix E

Grading Plan for Wetland Creation

(To be provided during agency permitting process)

Appendix F

USFWS Biological Opinion and CDFW ITP or CD

(To be provided during agency permitting process)

Appendix G

Maintenance Monitoring Field Form

FORM 1. MAINTENANCE MONITORING FIELD DATA COLLECTION FORM

Project Name: _____

Monitoring Year_____Date:_____; Time:_____(AM / PM);

Inspected By:_____; Technical Reviewer:_____; Map Reference:

_____

INSPECTION ITEM	Maintenance Necessary[1]	LOCATION[2]	DESCRIBE ACTION TO BE TAKEN OR TAKEN
1. Vegetation Management			
2. Site Access Security			
3. Fences, Gates, Locks, Signs, and Boundary Markers			
4. Fuel Management			
5. Mosquito Abatement			
6. Other			

[1] Status: No= no maintenance action required; A = Immediate maintenance action required, high priority; B = Maintenance action required, low priority, but need before year end.[2] Attach location map and photo.

Appendix H

Draft Deed Restriction or Conservation Easement

(To be provided during agency permitting process)

Appendix I

Endowment Costs for Long-Term Management Plan Implementation

(To be provided during agency permitting process)