APPENDIX BIO-2

BIOLOGICAL RESOURCES ASSESSMENT

Biological Resources Assessment

Upper Westside Specific Plan
Sacramento County, California

Prepared For: Upper Westside, LLC

Report Date: April 2022

Sacramento • Orange • Pasadena • San Bernardino • Temecula • San Diego
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1 Introduction

Bargas Environmental Consulting, LLC (Bargas) has prepared this Biological Resources Assessment (hereafter, **Assessment**) on behalf of Upper Westside, LLC (**Applicant**). The Upper Westside Specific Plan proposes developing 2,065 acres for mixed and residential use within the Natomas Basin. This Assessment analyzes the potential biological effects of that proposal consistent with the California Environmental Quality Act (CEQA).

1.1 Project Summary

The Upper Westside Specific Plan Project (hereafter **Project**) encompasses approximately 2,065 acres in the unincorporated Natomas community of Sacramento County, approximately 3.5 miles northwest of downtown Sacramento (**Exhibit 1. Project Site and Vicinity**). It is bounded by Interstate 80 to the south, the West Drainage Canal to the east, Fisherman's Lake Slough to the north, and Garden Highway to the west. Three sides are bordered by the City of Sacramento communities of North and South Natomas.

Lands within the Upper Westside Plan Area limits are mostly agricultural, with existing agricultural residential homes inside the northeastern and southwestern boundaries, and commercial uses located near the intersection of El Centro Road and West El Camino Avenue. Existing Sacramento County General Plan Land Use designations include Agricultural Cropland (1,858.3± acres); Agricultural Residential (97.0± acres); Commercial and Office (52.2± acres); and Recreation (58.8± acres). Multiple individuals own property within the limits of the Plan Area.

1.2 Habitat Conservation Plans

The Natomas Basin contains two habitat conservation plans, developed to satisfy the requirements of the Federal Endangered Species Act and California Endangered Species Act to allow for the incidental take of threatened and endangered species.

- The **Natomas Basin Habitat Conservation Plan (NBHCP)** is intended to minimize and mitigate the loss of habitat and the incidental take of 22 Covered Species that could result from urban development and management of reserves in the Natomas Basin. The NBHCP authorizes approximately 17,500 acres of development and preserves 8,750 acres in a reserve system surrounded by agricultural lands. At full build-out, the planned reserve system will consist of 4,375 acres of rice, 2,187 acres of created marsh, and 2,187 acres of upland habitat. In this reserve system, land will be managed to enhance its habitat values.
- The **Metro Air Park Habitat Conservation Plan (MAPHCP)** is intended to minimize and mitigate the loss of habitat and the incidental take of 14 Covered Species, many of which are shared with the NBHCP. The 2,011 acres of urban development associated with the MAPHCP are part of the total 17,500 acres of future Planned Development considered by the NBHCP in the Natomas Basin.

Both of these habitat conservation plans are discussed in greater detail in **Section 3.3** (Habitat Conservation Plans).

1.3 Definitions

This Assessment will use the following definitions for areas referred to herein:

- The **Upper Westside Specific Plan Area**, also referred to as **Plan Area**, is the 2,065 acres of the Upper Westside Specific Plan, exclusive of any off-site considerations related to the Project. At the time this Assessment was prepared, the extent and location of any off-site effects has not been determined.

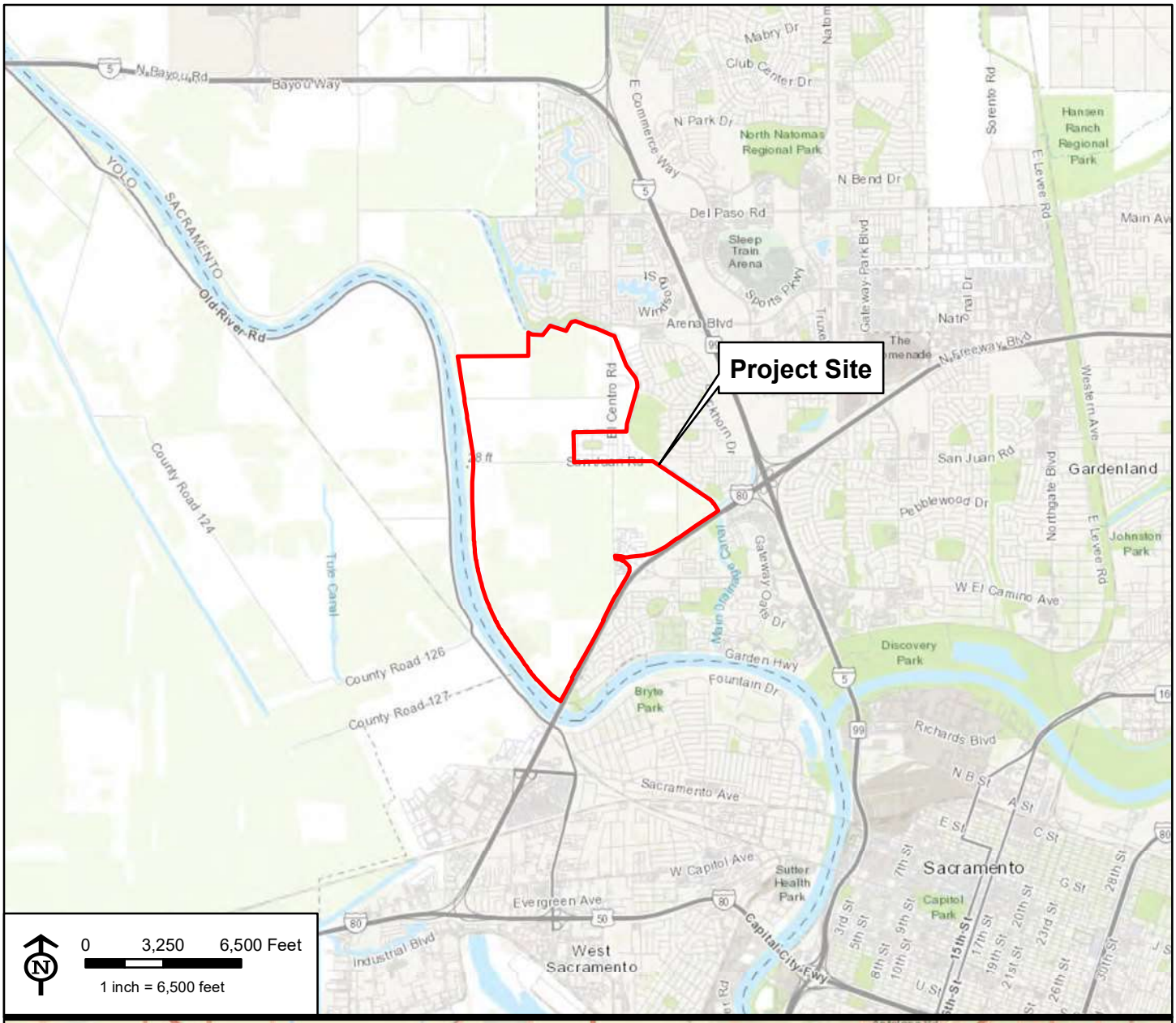
- The **Surveyed Area** includes all lands directly accessible by biologists and other surveyors during the surveys conducted for the Project. The Surveyed Area measures approximately 568.7 acres.
- The **Biological Study Area** (BSA) is defined as the Plan Area with a surrounding half mile buffer. This area was used as the survey limits for Swainson's Hawk and Giant Gartersnake, however, Giant Gartersnake surveys were restricted to publicly accessible areas of the BSA outside of the Surveyed Area defined above. Swainson's Hawk could be surveyed from a distance using optics.
- The **Off-Site Reserves** are those areas proposed for conservation of habitats for special status species to offset the effects of the Project. Their location and size will be further defined during consultation with local, state, and federal regulatory agencies.
- The **Regional Study Area** (RSA) is defined as the limits of the Natomas Basin plus a surrounding additional buffer of five miles, used to assess the status of species and habitats within the basin and additional areas of biological relevance.

A map depicting these areas is provided as **Exhibit 2. Area Reference.**

1.4 Summary of CEQA Findings

In **Section 6** (CEQA Analysis: Effects and Minimization Measures) of this Assessment, the following conclusions are drawn regarding the potential effects of the Project under CEQA when considering all impacts and on- and off-site preservation:

- The Project will not have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations by the California Department of Fish and Wildlife or US Fish and Wildlife Service.
- The Project will not have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or US Fish and Wildlife Service.
- The Project will not have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
- The Project will not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
- The Project will not conflict with any local policies or ordinances protecting biological resources, such as tree preservation policy or ordinance.
- The Project will not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.



Source: ESRI ArcGIS Online Basemap - World Topographic Map, World Street Map, Wood Rogers

Public Land Survey System (PLSS):
Mount Diablo Meridian,Township 9N, Range 4E,
Section 15,16,17,21,22,28

USGS Quad(s): Sacramento West (1980), Taylor Monument (1980)

Watershed: Upper Coon-Upper Auburn (18020161)

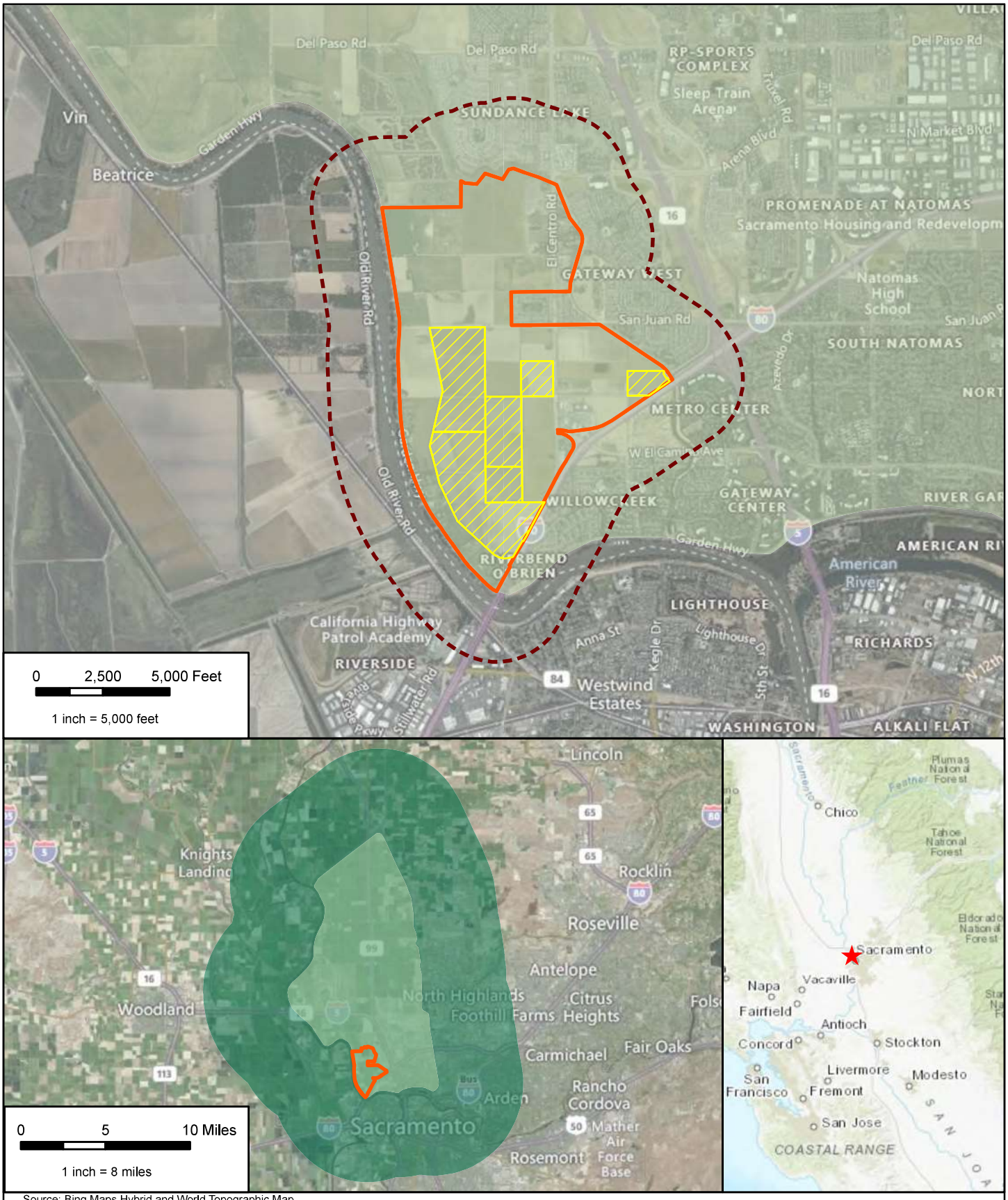
Project Site Coordinates: -121.544° W, 38.618° N

Exhibit 1
Project Site and Vicinity

Upper Westside

BARGAS Environmental Consulting

Map Created:7/11/2019, Map Revised: N/A, Bargas Project Number: 2018-1024



Source: Bing Maps Hybrid and World Topographic Map

Upper Westside Specific Plan Area
Surveyed Area
Biological Study Area
Natomas Basin
Regional Study Area

BARGAS Environmental Consulting

Exhibit 2
Area Reference

Upper Westside Effects Analysis

Map Created: 8/25/2021, Map Revised: 1/14/2022, Bargas Project Number: 1024-18

2 Project Description

2.1 Overview

2.1.1 Specific Plan

The Plan Area encompasses approximately 2,065 acres adjacent to and directly west of the communities of North and South Natomas in an area formerly referred to as "The Boot Precinct." The Plan Area is bounded by Interstate 80 to the south and east, Witter Canal and Fisherman's Lake/Slough to the northeast, and Garden Highway and the Sacramento River to the west. The center of the Plan Area is located approximately 3.5 miles northwest from downtown Sacramento. The Project is outside of the Urban Policy Area (UPA) and Urban Services Boundary (USB) in the Natomas New Growth Area. The conceptual Upper Westside development plan is shown in **Exhibit 3. Upper Westside Specific Plan**.

2.1.2 Off-Site Reserves

The Project envisions the creation of one or more Off-Site Reserves. The extent and location of these reserves has not yet been identified, but their inclusion in this Assessment is integral to the discussion of the Project's biological effects. The acreage, location and composition of the Off-Site Reserves will be determined during consultation with local, state, and federal regulatory agencies. The Off-Site Reserves will permanently preserve habitat for special status plant and wildlife species on lands of sufficient quality and quantity to offset proposed direct Project effects on biological resources in the Plan Area.

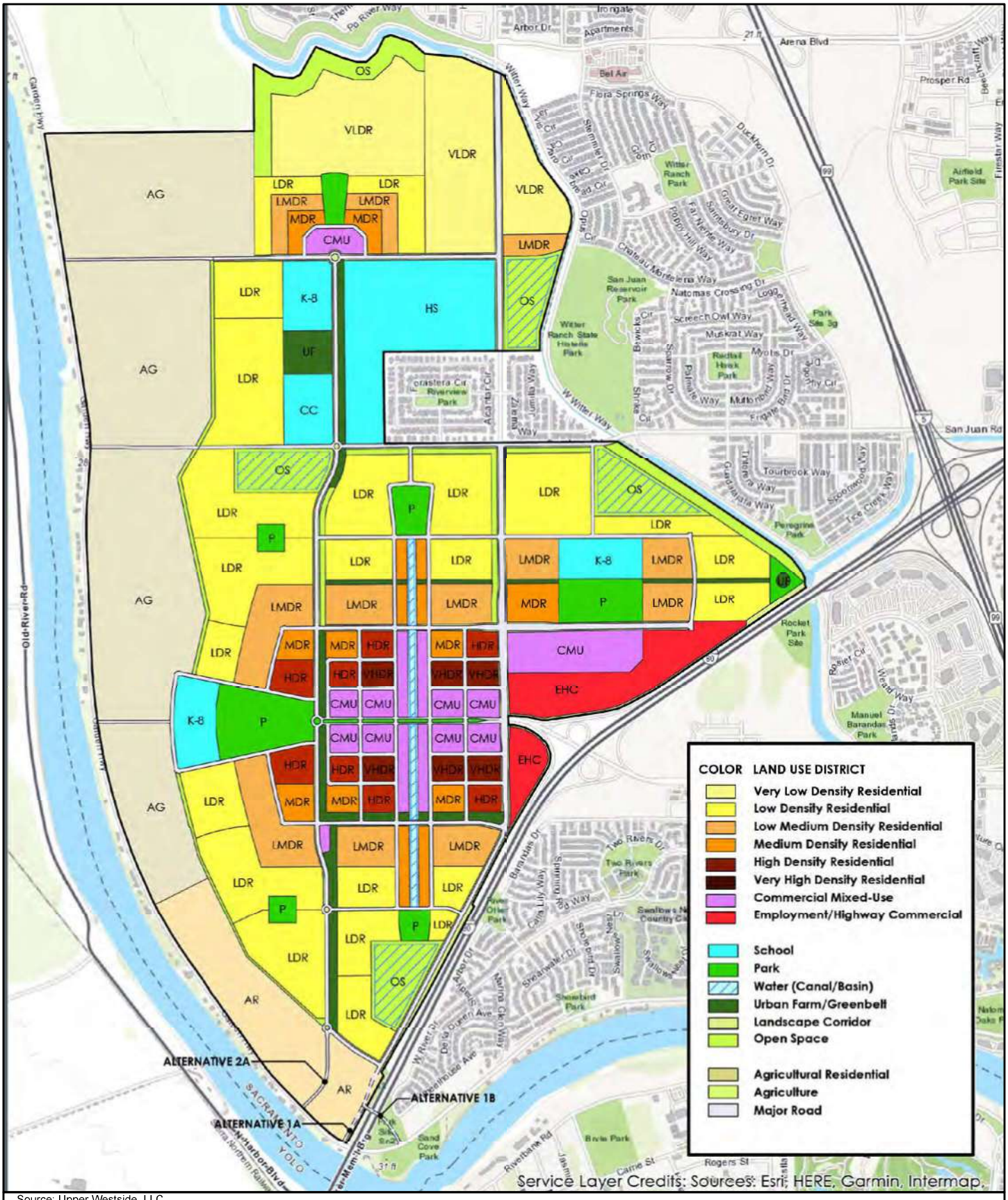
2.2 Objectives

The primary objectives for the Project as submitted by the applicant are as follows[1]:

- Formulate a specific plan and related land use planning documents and regulatory approvals for the Plan Area as a means of expanding the USB and UPA in an orderly manner and accommodating the County's share of future regional population growth.
- Create a land use plan that satisfies County policies, regulations, and expectations, as defined in the General Plan, including Policies LU-114, LU-119, and LU-120.
- Provide a comprehensively planned, high quality, large-scale, residential-based community in northwestern Sacramento County, directly northwest of the City of Sacramento, with a balanced mix of uses, employment opportunities, a wide variety of housing types, park and open space, and supporting public and quasi-public uses.
- Develop a master-planned community that can be efficiently served by existing infrastructure or proposed infrastructure that would encourage logical, orderly development and would discourage leapfrog or piecemeal development and sprawl.
- Provide residential housing within five miles of the existing job centers of downtown Sacramento and West Sacramento, as well as in close proximity to newly developing or proposed job centers.

[1] Notice of preparation of a Draft Environmental Impact Report for Upper Westside Specific Plan (PLNP2018-00284), October 2020.

- Create a development that has an overall positive economic impact on Sacramento County and achieves a neutral to positive fiscal impact on the County's finances and existing ratepayers.
- Create a community that can be logically and efficiently phased to allow the orderly build-out of the community.
- Provide a safe and efficient circulation system that interconnects land uses and promotes pedestrian and bicycle circulation and transit options that will encourage non-vehicular trips, thereby reducing vehicle miles traveled (VMT).
- Incorporate parks and open space, including an urban farm-greenbelt and canal, into the project design in a manner that provides community connectivity and encourages walking and bicycle use.
- Make efficient use of development opportunity as the project site is bordered on three sides by existing or planned urban development.
- Plan for enough units to provide housing choices in varying densities to respond to a range of market segments, including opportunities for rental units and affordable housing, and significant commercial uses, consistent with the General Plan and Housing Element.
- Design a land use plan where the development footprint avoids impacts to wetland resources to the extent feasible.
- Develop a specific plan that respects existing agricultural land uses and operations to the west of the proposed Development Area.
- Provide development that meets the seven identified Sacramento Area Council of Governments (SACOG) Blueprint principles, including provision of transportation choice, compact development, mixed use development, housing choice and diversity, use of existing assets, natural resource conservation, and quality design.
- Develop the Project and any associated on- and/or off-site mitigation to complement the NBHCP and the MAPHCP.
- Designate open space preserves along the south side of Fisherman's Lake Slough or along the West Drainage Canal that provide natural buffer to these features, and along the westerly edge of the proposed Development Area to provide a transition between residential and agricultural designations to the west, which will provide a regional benefit for habitat, resources, and open space amenities.
- Balance development with resource protection in an inter-connected, permanent open space.
- Create multi-functional habitat within open space corridors that provide on-site habitat and contribute to water quality.



Source: Upper Westside, LLC

Not to Scale

BARGAS Environmental Consulting

Exhibit 3
Upper Westside Specific Plan

Upper Westside Effects Analysis

Map Created: 8/25/2021, Map Revised: N/A, Bargas Project Number: 1024-18

3 Regulatory Setting

3.1 Federal

3.1.1 Federal Endangered Species Act

The Federal Endangered Species Act (FESA) is the federal government's regulations protecting rare and declining plant and wildlife species. FESA is jointly implemented by the United States Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS, marine resources only). FESA protects species using the following status designations:

- A federally **endangered** species is a species of invertebrate, plant, or wildlife formally listed by the USFWS under FESA as facing extinction throughout all or a significant portion of its geographic range.
- A federally **threatened** species is one formally listed by the USFWS as likely to become endangered within the foreseeable future throughout all or a significant portion of its range.
- A **proposed** threatened or endangered species is one officially proposed by the USFWS for addition to the federal threatened or endangered species lists.
- **Candidate** species are "plants and animals for which the USFWS has sufficient information on their biological status and threats to propose them as endangered or threatened under FESA, but for which development of a proposed listing regulation is precluded by other higher priority listing activities"(USFWS 2017).

"Take" of a federally endangered or threatened species or its habitat is prohibited by federal law without a special permit. The term "take," under FESA, means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in such conduct. "Harm" is defined by the USFWS to encompass "an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering" (50 CFR § 17.3).

Section 10(a)(1)(B) of the FESA allows for take of a threatened or endangered species incidental to development activities once a Habitat Conservation Plan (HCP) has been prepared to the satisfaction of the USFWS and a Section 10(a) incidental take permit has been issued to an applicant. For federal projects (including those involving federal funding), Section 7 of the FESA allows for consultation between the affected agency and the USFWS to determine what measures may be necessary to compensate for the incidental take of a listed species. A federal project is any project that is proposed by a federal agency or is at least partially funded or authorized by a federal agency. Additionally, if the listed species or its habitat occurs in a portion of the project subject to federal jurisdiction (such as Waters of the United States by the United States Army Corps of Engineers under Section 404 of the Clean Water Act), then consultation under Section 7 of the FESA is usually permissible and may be required.

FESA also requires the USFWS to consider whether there are areas of habitat essential to conservation for each listed species. **Critical habitat** designations protect these areas, including habitat that is currently unoccupied but may be essential to the recovery of a species. An area is designated as critical habitat after the USFWS publishes a proposed Federal regulation in the Federal Register and then receives and considers public comments on the proposal. The final boundaries of critical habitat are officially designated when published in the Federal Register.

3.1.2 Migratory Bird Treaty Act

The Migratory Bird Treaty Act of 1918 (MBTA) is a federal law governing the taking, killing, possession, transportation, and importation of various birds, their eggs, parts, and nests. The take of any number of a bird species

listed as protected on any one of four treaty lists is governed by the MBTA's regulation of taking migratory birds for educational, scientific, and recreational purposes and requiring harvest to be limited to levels that prevent over utilization. The MBTA also prohibits taking, possession, import, export, transport, selling, purchase, barter, or offering for sale, purchase or barter, certain bird species, their eggs, parts, and nests, except as authorized under a valid permit (50 CFR 21.11).

3.1.3 Clean Water Act and Waters of the United States

The U.S. Army Corps of Engineers (USACE) has primary federal responsibility for administering regulations that concern waters of the United States (U.S.) (including wetlands) under Section 404 of the Clean Water Act (CWA). Section 404 of the CWA regulates the discharge of dredged or fill material into waters of the U.S. The USACE requires that a permit be obtained if a project proposes the placement of structures within, over, or under navigable waters and/or discharging dredged or fill material into waters below the ordinary high-water mark (OHWM). The USACE has established a series of regulatory permitting processes that authorize certain activities in waters of the U.S.

In addition, a CWA Section 401 Water Quality Certification Permit is required to comply with CWA Sections 301, 302, 303, 306, and 307 which establishes discharge standards for effluents based upon technology-based guidelines and is regulated by the California State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCB). The CWA and state wetland regulations are discussed in greater detail in **Sections 3.27** and **3.28**. Furthermore, anyone that proposes to conduct a project that may result in a discharge to U.S. surface waters and/or "waters of the state," including wetlands (all types), year-round and seasonal streams, lakes, and all other surface waters, would require a permit. At a minimum, any beneficial uses that are lost must be replaced by mitigation of at least equal function, value, and area. Waste Discharge Requirements Permits are required pursuant to California Water Code Section 13260 for any persons discharging or proposing to discharge waste, including dredge/fill, that could affect the quality of the waters of the State.

Wetlands are defined under 33 C.F.R. 328.3(c)(16) as:

> *Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.*

The limits of USACE jurisdiction in non-tidal waters extends to the OHWM, which is defined under 33 CFR 328.3(c)(7) as:

> *…That line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impresses on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.*

Non-wetland features include:

> *…Upland and lowland areas that are neither deep water aquatic habitats, wetlands, nor other special aquatic sites. They are seldom or never inundated, or if frequently inundated, they have saturated soils for only a brief period of time during the growing season. If these features are vegetated, they normally support species that are predominantly adapted to aerobic soil conditions* (USACE - Environmental Laboratory 1987).

The Environmental Protection Agency (EPA) published a proposed revised definition of "waters of the United States" on December 7, 2021, in response to the U.S. District Court of the District of Arizona ruling resulting in "vacating and

remanding" the Navigable Waters Protection Rule (Federal Register 2021). This revised definition is consistent with the pre-2015 regulations based upon the Supreme Court cases of *Rapanos vs. United States* and *Carabell vs. United States* (EPA 2008), meaning the USACE will assert jurisdiction over traditional navigable waters (TNW) and the following types of features determined to have "significant nexus" to a TNW:

- wetlands adjacent to TNWs
- non-navigable tributaries of TNWs that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally
- wetlands that directly abut non-navigable tributaries of TNWs

The current interpretation of “waters of the United States” is consistent with the pre-2015 definition and practice, incorporating guidance from the *Rapanos v. United States*, *Carabell v. United States Supreme Court*, and the *SWANCC* Supreme Court decisions.

3.2 State of California

3.2.1 California Environmental Quality Act

CEQA is a public disclosure process codified by California Public Resources Code 21000, requiring decision-makers to analyze the environmental impacts of a project, disclose those impacts to the public, and mitigate environmental impacts to the extent feasible. The state or local lead agency provides an evaluation of project effects on biological resources; determining the significance of those effects is guided by Appendix G of the CEQA guidelines. These evaluations must consider direct effects on a biological resource within the project site itself, indirect effects on adjacent resources, and cumulative effects within a larger area or region. Effects can be locally important but not significant according to CEQA if they would not substantially affect the regional population of the biological resource. Significant adverse impacts on biological resources would include the following:

- Substantial adverse effects on any species identified as candidate, sensitive, or special status in local or regional plans, policies, or regulations or by the CDFW or the USFWS (these effects could be either direct or via habitat modification);
- Substantial adverse impacts to species designated by the CDFW as Species of Special Concern (SSC);
- Substantial adverse effects on riparian habitat or other sensitive habitat identified in local or regional plans, policies, or regulations or by CDFW and USFWS;
- Substantial adverse effects on federally protected wetlands defined under Section 404 of the CWA (these effects include direct removal, filling, or hydrologic interruption of marshes, vernal pools, coastal wetlands, or other wetland types);
- Substantial interference with movements of native resident or migratory fish or wildlife species population, or with use of native wildlife nursery sites;
- Conflicts with local policies or ordinances protecting biological resources (e.g., tree preservation policies); and;
- Conflict with provisions of an adopted HCP, NCCP, or another approved local, regional, or state habitat conservation plan.

3.2.2 California Endangered Species Act

The California Endangered Species Act (CESA) prohibits the take of state-listed threatened and endangered species. Under CESA, state agencies are required to consult with CDFW when preparing CEQA documents. Under CESA, CDFW is responsible for maintaining a list of rare, threatened, and endangered species designated under state law (California Fish and Game Code § 2070-2079). CDFW also maintains lists of candidate species, SSC, and fully-protected species. Candidate species are those taxa that have been formally recognized by the CDFW and are under review for addition to the state threatened and endangered list. Species of special concern are those taxa that are considered sensitive, and this list serves as a "watch list." The CDFW can authorize "take" if an incidental take permit is issued by the Secretary of the Interior or Commerce in compliance with FESA, or if the director of the CDFW issues a permit under Section 2080 in those cases where it is demonstrated that the impacts are minimized and mitigated.

3.2.3 California Fish and Game Code

Section 1600 et seq. – Lake and Streambed Alteration Agreement. Section 1600 provides provisions for protecting riparian systems, including the bed, banks, and riparian habitat of lakes, seasonal and perennial streams, and rivers. This section requires an applicant to notify CDFW and obtain a Lake and Streambed Alteration Agreement (LSAA) if their project would divert or obstruct the natural flow of any river, stream, or lake; change the bed, channel, or bank of any river, stream, or lake; use material from any river, stream, or lake; or deposit or dispose of material into any river, stream, or lake.

Section 2050 et seq. – California Endangered Species Act. CESA establishes the policy of the state to conserve, protect, restore, and enhance threatened or endangered species and their habitats. CESA is administered by CDFW and prohibits the take of any species that the California Fish and Game Commission (CFGC) determines to be a threatened or endangered species. CESA also mandates that "state agencies should not approve projects as proposed which would jeopardize the continued existence of any endangered species or threatened species" if reasonable and prudent alternatives are available that would avoid jeopardy. CDFW administers CESA and authorizes take through California Fish and Game Code Section 2081 Incidental Take Permits or through Section 2080.1 (for species also listed under FESA, consistency determination with a USFWS Biological Opinion).

Section 3511 – Fully Protected Species. The legislature of the State of California designated certain species as "fully protected" prior to the creation of CESA. Section 3511 states that "fully protected" birds or parts thereof may not be taken or possessed at any time. Lists of fully protected species were initially developed to provide protection to those animals that were rare or faced possible extinction and included fish, mammals, amphibians and reptiles, and birds. Most fully protected species have since been listed as threatened or endangered under CESA and/or FESA.

Sections 3503, 3503.5, 3505, 3513 — Birds. These California Fish and Game Code sections protect all birds, birds of prey, and all nongame birds, as well as their eggs and nests, for species that are not already listed as fully protected and that occur naturally within the state. Sections 3503 and 3503.5 of the CFGC stipulate the following regarding eggs and nests: Section 3503 states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by CFGC or any regulation made pursuant thereto; and Section 3503.5 states that is it unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by CFGC or any regulation adopted pursuant thereto. Section 3513 states that it is unlawful to take or possess any migratory nongame bird as designated in the MBTA or any part of such migratory nongame bird except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the MBTA.

3.2.4 California Native Plant Protection Act

The California Native Plant Protection Act of 1977 (California Fish and Game Code § 1900-1913) affords the CDFW Commission the authority to designate native plants as endangered or rare and protect them from "take." The California Native Plant Society (CNPS) maintains a list of sensitive plant species native to California and assigns each a rank in the California Rare Plant Rank (CRPR) system defined below:

- List 1A: Plants presumed extirpated in California and either rare or extinct elsewhere;
- List 1B: Plants are rare, threatened, or endangered in California and elsewhere;
- List 2A: Plants presumed extirpated in California, but more common elsewhere;
- List 2B: Plant are rare, threatened, or endangered in California, but more common elsewhere;
- List 3: Plants about which more information is needed (on a review list);
- List 4: Plants of limited distribution (on a watch list).

This list is further defined as described below:

- 0.1: Seriously threatened in California, meaning there is a high degree (over 80% of occurrences) and immediacy of threat;
- 0.2: Moderately threatened in California, meaning there is a moderate degree (20-80% of occurrences) and immediacy of threat;
- 0.3: Not very threatened in California, meaning there is a low degree (less than 20% of occurrences) and immediacy of threat.

All plants on Lists 1 and 2 meet the standards for state listing under the CEQA Guidelines (14 CCR § 15380). CNPS recommends that plants on Lists 3 and 4 be evaluated for consideration under CEQA.

3.2.5 CDFW Special Status Species

The CDFW maintains lists of special status species that are protected under CEQA. These lists include the Special Vascular Plants, Bryophytes, and Lichens List and the Special Animals List.

3.2.5.1 CDFW Special Vascular Plants, Bryophytes, and Lichens List

Special plants include:

- Taxa listed under FESA or CESA as Endangered, Threatened, or Rare;
- A candidate for state or federal listing as Endangered, Threatened, or Rare;
- Taxa listed in the CNPS's Inventory of Rare and Endangered Plants (IREP) of California;
- Taxa which meet the criteria for listing, even if not currently included on any list, as described in Section 15380 of the CEQA Guidelines; these taxa may indicate "None" under listing status, but note that all California Rare Plant Rank 1 and 2 and some Rank 3 and 4 plants may fall under Section 15380 of CEQA;
- Taxa that are biologically rare, very restricted in distribution, or declining throughout their range but not currently threatened with extirpation;
- Taxa listed as a Bureau of Land Management, USFWS, or U.S. Forest Service Sensitive Species;

- Population(s) in California that may be peripheral to the major portion of a taxon's range but are threatened with extirpation in California; and
- Taxa closely associated with a habitat that is declining in California at a significant rate (e.g., wetlands, riparian, vernal pools, old-growth forests, desert aquatic systems, native grasslands, valley shrubland habitats).

3.2.5.2 CDFW Special Animals List

"Special Animals" is a broad term used to refer to all the animal taxa tracked by CDFW's California Natural Diversity Database (CNDDB), regardless of their legal or protection status. This list is also referred to as the list of "species at risk" or "special status species." CDFW considers the taxa on this list to be those of greatest conservation need.

Special animals include:

- Taxa listed or proposed for listing under FESA and/or CESA;
- Taxa considered by CDFW to be a SSC;
- Taxa which meet the criteria for listing, even if not currently included on any list, as described in Section 15380 of the CEQA Guidelines;
- Taxa that are biologically rare, very restricted in distribution, or declining throughout their range but not currently threatened with extirpation;
- Population(s) in California that may be peripheral to the major portion of a taxon's range but are threatened with extirpation in California;
- Taxa closely associated with a habitat that is declining in California at a significant rate (e.g., wetlands, riparian, vernal pools, old-growth forests, desert aquatic systems, native grasslands, valley shrubland habitats, etc.);
- Taxa designated as a special status, sensitive, or declining species by other state or federal agencies or a non-governmental organization (NGO) and determined by the CNDDB to be rare, restricted, declining, or threatened across their range in California.

3.2.6 CEQA Sensitive Habitats

Several natural vegetation communities and habitats have been classified as sensitive under CEQA and other applicable laws and regulations. They are defined as meeting one or more of the following criteria:

- Areas of special aquatic biological significance as identified by the SWRCB;
- Areas that provide habitat for locally unique biotic species/communities;
- Areas which provide habitat for species of special concern as listed by CDFW in the Special Animals List and CNDDB;
- Areas which provide essential habitat, or are adjacent to essential habitat, for rare or endangered species which meet the definition of Section 15380 of the CEQA guidelines or designated by the CFGC, USFWS, or CNPS;

- Nearshore reefs, rocky intertidal areas, sea caves, islets, offshore rocks, kelp beds, marine mammal hauling grounds, sandy beaches, shorebird roosting, resting and nesting areas, cliff-nesting areas and marine, wildlife or educational/research reserves;
- Dune plant habitats;
- All lakes, wetlands, estuaries, lagoons, streams, and rivers; and
- Riparian corridors

Non-sensitive vegetation communities are those communities that are not afforded special protection under CEQA or other state, federal and local laws, regulations, and ordinances. However, they may still provide suitable habitats for special status animals and plant species.

3.2.7 Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act of 1969 established the SWRCB and the nine RWQCBs and authorized them to provide oversight for water rights and water quality. It uses the National Pollutant Discharge Elimination System (NPDES) to monitor point source discharges into the waters of the State to prevent water quality degradation. It also protects wetlands, surface waters, and groundwater from both point and nonpoint sources of pollution.

3.2.8 State Wetland Definition and Procedures

The SWRCB adopted the State Wetland Definition and Procedures for Discharges or Fill Material to Waters of the State in 2019 and completed revisions to this set of procedures in 2021 (SWRCB 2021). Four major elements are included in these procedures as described below, in addition to procedures for the submittal, review and approval of CWA Section 401 permits not described in this report.

1. Wetland definition:

   An area is wetland if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration such saturation is sufficient to cause anaerobic conditions in the upper substrate; and 3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation.

2. Framework for determining waters of the state:

   Waters of the state are broadly defined by the Porter-Cologne Water Quality Control Act as "any surface water or groundwater, including saline waters, within the boundaries of the state." The 2021 procedures expand upon this definition to clearly include natural wetlands, wetlands created by modification of a surface water of the state, and artificial wetlands meeting specific criteria.

   The criteria for an artificial wetland include wetlands created for agency-approved compensatory mitigation; those identified in a water quality control plan; and those greater than or equal to one acre in size unless they are constructed and maintained for wastewater treatment or disposal, sediment settling, stormwater permitting program pollutant or runoff management, surface water treatment, agricultural crop irrigation or stock watering, fire suppression, industrial processing and cooling, active surface mining, log storage, recycled water management, maximizing groundwater recharge, and rice paddies.

3. Wetland delineation procedures:

USACE-defined procedures for aquatic resources delineation (USACE 1987; USACE 2008, USACE 2010) used to assess the presence or absence of hydrophytic vegetation, hydric soils, and wetland hydrology are required by the SWRCB to delineate waters of the state, with one modification being that "the lack of vegetation does not preclude the determination of such an area that meets the definition of wetland."

3.3 Habitat Conservation Plans

An HCP is a planning document required as part of an application for an incidental take permit under Section 10(a)(1)(B) of FESA. Such permits are issued by the USFWS when take is not the intention of, and is incidental to, otherwise legal activities. An application for an incidental take permit under Section 10 of FESA must be accompanied by an HCP. HCPs describe the impacts of the proposed action that may result in take of federally listed species; how those impacts will be minimized or mitigated; and how the HCP is to be funded. HCPs can apply to both listed and non-listed species, including those that are candidates or have been proposed for listing. Conserving species before they are in danger of extinction or are likely to become so can also provide early benefits and prevent the need for listing.

Two HCPs have been approved for development within the vicinity of the Plan Area — the NBHCP and the MAPHCP. The Plan Area is within the Natomas Basin and the boundaries of the NBHCP but is not within the areas with take coverage. Further, the Plan Area is in Sacramento County, which is not a signatory to the NBHCP or the MAPHCP. As such, the Applicant is not eligible for the take coverage granted by USFWS and CDFW under the NBHCP or MAPHCP. The Plan Area is also outside of the Planned Development area of the NBHCP and potential impacts resulting from the development of the Project were not considered in the NBHCP.

3.3.1 Natomas Basin Habitat Conservation Plan

The NBHCP (City of Sacramento et al. 2003) provides for the conservation of 22 wildlife and plant species within the Natomas Basin. The NBHCP establishes a multispecies conservation program to minimize and mitigate the expected loss of habitat values and incidental take of Covered Species that could result from urban development, operation and maintenance of irrigation and drainage systems, and certain activities associated with The Natomas Basin Conservancy (TNBC) management of its system of reserves established under the NBHCP. The NBHCP applies to the 53,537-acre area interior to the toe of levees surrounding the Natomas Basin, located in the northern portion of Sacramento County and the southern portion of Sutter County. The Basin contains incorporated and unincorporated areas within Sacramento County and Sutter County.

Management of the NBHCP is heavily focused on the two most widely distributed covered species in the Natomas Basin: Swainson's Hawk (*Buteo swainsoni*) and Giant Gartersnake (*Thamnophis gigas*):

- Swainson's Hawk is an upland foraging species. It nests along the Sacramento River and in isolated trees and groves throughout the Natomas Basin. The NBHCP seeks to avoid development in the Swainson's Hawk Zone[2] and to acquire upland habitat as Mitigation Lands inside the Swainson's Hawk Zone.
- Giant Gartersnake is found primarily in agricultural wetlands (such as rice fields) and other waterways such as drainage canals as well as adjacent uplands in many portions of the Natomas Basin[3].

[2] The NBCHP Swainson's Hawk Zone is defined as the lands which are not currently developed [excluding the 250 acres of land designated "Urban" on the City of Sacramento General Plan and the North Natomas Community Plan located within the City of Sacramento] and which are located within the Natomas Basin and within one mile east of the toe of the inside levee of the Sacramento River and extending from the Natomas Cross Canal on the north and Interstate 80 on the south.
[3] https://www.fws.gov/sacramento/es_species/Accounts/Amphibians-Reptiles/giant_garter_snake/

It is anticipated that management of habitat for Swainson's Hawk and Giant Gartersnake will benefit the other covered species: Aleutian Cackling Goose (*Branta hutchinsii leucopareia*), Bank Swallow (*Riparia riparia*), Burrowing Owl (*Athene cunicularia*), Loggerhead Shrike (*Lanius ludovicianus*), Tricolored Blackbird (*Agelaius tricolor*), White-faced Ibis (*Plegadis chihi*), Northwestern Pond Turtle (*Actinemys marmorata*), California Tiger Salamander (*Ambystoma californiense*), Western Spadefoot Toad (*Spea hammondii*), Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*), Midvalley Fairy Shrimp (*Branchinecta mesovallensis*), Vernal Pool Fairy Shrimp (*Branchinecta lynchi*), Vernal Pool Tadpole Shrimp (*Lepidurus packardi*), Boggs Lake Hedge-Hyssop (*Gratiola heterosepala*), Colusa Grass (*Neostapfia colusana*), Delta Tule Pea (*Lathyrus jepsonii* var. *jepsonii*), Legenere (*Legenere limosa*), Sacramento Orcutt Grass (*Orcuttia viscida*), Slender Orcutt Grass (*Orcuttia tenuis*), and Sanford's Arrowhead (*Sagittaria sanfordii*).

Adaptive management is a key provision of the NBHCP, allowing examination of "alternative strategies for meeting measurable goals and objectives, and then, if necessary, adjusting future conservation and management actions according to what is learned" (NBCHP Page I-41).

3.3.2 Metro Air Park Habitat Conservation Plan

The Metro Air Park (MAP) Property Owners Association applied for, and received, a 50-year permit, pursuant to section 10(a)(1)(B) of the Endangered Species Act of 1973 from USFWS for the incidental take of Giant Gartersnake, Valley Elderberry Longhorn Beetle, and 12 additional species in July 2001. The resulting MAPHCP area is contained entirely within the boundaries of the NBHCP and covers many (but not all) of the same species: Aleutian Cackling Goose, Bank Swallow, Burrowing Owl, Greater Sandhill Crane (*Antigone canadensis tabida*), Loggerhead Shrike, American Peregrine Falcon (*Falco peregrinus anatum*), Swainson's Hawk, Tricolored Blackbird, White-faced Ibis, Giant Gartersnake, Northwestern Pond Turtle, Valley Elderberry Longhorn Beetle, Delta Tule Pea, and Sanford's Arrowhead.

The 2,011 acres of urban development associated with the MAPHCP are part of the total 17,500 acres of future Planned Development considered by the NBHCP in the Natomas Basin. However, a portion of the MAP project, approximately 28 acres, is located within the City of Sacramento's NBHCP Permit Area. These 28 acres are included in the 8,050 acres of disturbance attributed to the City of Sacramento. As a result, MAP will disturb 1,983 acres of the 17,500 acres of disturbance addressed by the NBHCP. The MAPHCP provides for automatic revision of the MAPHCP to incorporate applicable provisions of the revised NBHCP upon approval of the latter by regulatory agencies.

3.4 Local Policies and Ordinances

The Plan Area is located in unincorporated Sacramento County and is subject to the following local and regional regulations.

3.4.1 Sacramento County General Plan

The Sacramento County General Plan is a set of goals, objectives, policies, implementation measures, and maps that form a blueprint for physical development in the unincorporated County. The General Plan contains numerous goals, policies, and strategies to protect and/or preserve biological resources (Sacramento County 2021).

The Conservation Element of the General Plan includes as an overarching goal the management and protection of natural resources for the use and enjoyment of present and future generations while maintaining the long-term ecological health and balance of the environment.

The Open Space Element also incorporates habitat preservation principles to aid in the preservation/recovery of endangered and threatened species through protection of vernal pools, wetlands, creeks, oak woodlands, and other native plant communities throughout Sacramento County.

In addition to Open Space, the Agricultural Element of the General Plan places specific emphasis on agricultural lands and their importance not only in agricultural and economic productivity, but the natural resource and cultural benefits they provide.

3.4.2 Sacramento County Code Chapter 19.12 Tree Preservation and Protection

Sacramento County has adopted a tree preservation and protection ordinance to prevent the loss of native oak trees. For the purposes of this ordinance, tree is defined as:

> *Any living native oak tree having at least one trunk of six inches or more in diameter measured four and one-half feet above the ground, or a multi-trunked native oak tree having an aggregate diameter of ten inches or more, measured four and one-half feet above the ground.*

The majority of the oak woodland in Sacramento County has been cleared for agricultural and development uses and constitutes a fraction of what existed prior to the arrival of Europeans to the region. The County Tree Preservation and Protection Ordinance states that "it shall be the policy of the County to preserve all trees possible through its development review process" (SCC 480 § 1, 1981) (Sacramento County 1981). The intent of the policy is to enhance the natural beauty of the area, sustain potential property values associated with oak woodlands, and preserve the natural ecology of the region. Oak woodlands are important ecosystems in the Sacramento Valley which provide unique ecological services including topsoil retention and the mitigation of extreme temperatures and poor air quality.

3.4.3 Sacramento County Swainson's Hawk Ordinance

Sacramento County provides for a Swainson's Hawk Mitigation Program. As amended by the Board of Supervisors in 2009, the program provides for the following voluntary means for mitigating impacts to Swainson's Hawk foraging habitat:

- For impacts of less than 40 acres, project proponents have the option to pay an impact fee or provide title or easement to suitable Swainson's Hawk mitigation lands on a per-acre basis.
- For impacts of 40 acres or greater, project proponents must provide title or easement to approved Swainson's Hawk mitigation lands with one acre preserved for each one acre impacted.

The determination of impacts and mitigation land suitability is evaluated by the County's Office of Planning and Environmental Review.

4 Methods

This Biological Resources Assessment is informed by data from a desktop analysis of the literature and numerous resource databases, as well as more than three years of site-specific field surveys. The methods used to complete these surveys and desktop analyses are described below.

4.1 Desktop Review

Prior to conducting field surveys, Bargas biologists conducted an initial review of pertinent literature and data sources to characterize the biological conditions on and within the vicinity of the Plan Area and to compile records of sensitive biological resources, including occurrences of special status species. These data have been subsequently reviewed repeatedly throughout the implementation of field surveys and the creation of this Assessment. The methods used for this analysis are described below.

4.1.1 Biological Setting

The biological setting includes terrain, hydrology, soils, land uses, and other features that support or inhibit biological resources in an area. In order to better understand the biological setting of the project, the following resources were reviewed in detail:

- US Fish and Wildlife Service's National Wetlands Inventory (NWI) (USFWS 2021) to determine if surface waters and wetlands have been mapped on or adjacent to the Plan Area;
- US Geological Survey's National Hydrography Dataset (NHD) (USGS 2021) to determine if hydrological features have been mapped on or adjacent to the Plan Area;
- US Department of Agriculture National Resource Conservation Service (soil survey maps and unit descriptions (NRCS 2020) to map and describe soil(s) within the Plan Area;
- Google Earth Pro aerial map images of the Plan Area, including historical aerial images (Google 2021).

4.1.2 Special Status Species and Habitats

When analyzing potential Project effects on special status biological resources effectively, it is important to create a well-defined list of habitats and species that could reasonably be expected to occur in the area of interest.

4.1.2.1 Data Sources

Species and habitat occurrences were queried from the following resources, with search areas that varied depending on the capabilities of the database:

- US Fish and Wildlife Service's *Information for Planning and Consultation* portal (IPaC; USFWS 2021) for a list of federally listed species and designated critical habitat recommended for impact analysis consideration, based on an upload of the Plan Area limits;
- California Department of Fish and Wildlife's *California Natural Diversity Database* (e.g., CNDDB, CDFW 2021) for special status species and habitat records within the *Sacramento West, Clarksburg, Davis, Florin, Grays Bend, Rio Linda, Sacramento East, Saxon,* and *Taylor Monument* USGS 7.5-minute quadrangles;
- California Native Plant Society's Inventory of Rare and Endangered Plants (CNPS 2021) for a list of special status plant species occurrences within the *Sacramento West, Clarksburg, Davis, Florin, Grays Bend, Rio Linda, Sacramento East, Saxon,* and *Taylor Monument* USGS 7.5-minute quadrangles;

4.1.2.2 Special Status Designations Considered

A variety of agencies and respected non-profit organizations assess the conservation status of plant and wildlife species. A number of species are tracked by the CNDDB, but otherwise have no special status designation applicable to this Assessment. The following designations were considered when determining special status species to be discussed in this assessment:

- **Federal:** Species listed as **Endangered (FE)**, **Threatened (FT)**, or as a **Candidate (FC)** for listing as Endangered or Threatened under the FESA
- **California:** Species listed as **Endangered (SE)**, **Threatened (ST)**, or as a **Candidate (SC)** for listing as Endangered or Threatened under the CESA as well as species listed as **Fully Protected (FP)** or as a **California Species of Special Concern (SSC)**
- **Plants Only:** Species listed in the CNPS *Inventory of Rare and Endangered Plants* (CNPS 2021)
- Any vegetation community, plant, or wildlife taxon with records in the area analyzed for the CNDDB
- Any species covered by the NBHCP or MAPHCP not otherwise included in the designations above, whether present in the database or not.

Bargas also included in this Assessment any special status species observed during field surveys that was not listed in the database review.

4.2 Field Surveys

Bargas biologists conducted more than 40 survey visits for biological resources from March 2019 to July 2021. The majority of these surveys had an emphasis on a particular resource of concern to Project permitting, but most gathered general biological information of significance to the completion of this Assessment:

- **Giant Gartersnake surveys:** Eric Hansen, a recognized expert in Giant Gartersnake biology and survey methods, completed trapping and eDNA surveys for the species consistent with the guidelines set forth in the USFWS two-year protocol and consistent with Hansen's 10(a)(1)(A) permit from June-September 2019 and June-September 2020 (Hansen 2019, 2020).
- **Swainson's Hawk surveys:** Swainson's Hawk protocol surveys with final reports were completed during three years:
    - March-July 2019, led by Bargas Principal Biologist Marcus England (Bargas 2019).
    - March-July 2020, led by Bargas Biologist Allison Ferkovitch (Bargas 2020d).
    - March-July 2021, led by Bargas Biologist Bekah Christianson (Bargas 2021).

  Surveys during all three years followed *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (Swainson's Hawk Technical Advisory Committee 2000).
- **Botanical surveys:** Botanical surveys were conducted by Bargas Biologist Daniel Neal, Senior Biologists Bonnie Peterson and Krystal Pulsipher from March-July 2019, April 2020, and June 2020 (Bargas 2020c).
- **Arborist surveys:** Tree surveys were conducted in April and May 2021 by a team of biologists led by Krystal Pulsipher, a certified arborist (Bargas 2022).

- **Aquatic resources delineation:** Site surveys were conducted in June 2019, April 2020, June 2020 by a team of biologists led by Krystal Pulsipher (Bargas 2020a) and Bonnie Peterson in March 2021.

For detailed information on individual survey methods, please review the referenced reports.

Direct access during all field surveys in the Plan Area was restricted to the Surveyed Area defined previously in **Section 1.3-**Definitions. For some surveys, such as those for Swainson's Hawk, this was of minimal consequence because of the ability to survey the subject resource remotely using optics. For other resources, potential for occurrence had to be extrapolated based on remote observations in the field combined with detailed analysis of habitats as described below.

4.3 Habitat Analysis

Detailed GIS-based analyses were completed to create a vegetation layer, analyze habitat suitability, and assess the occurrence of wetlands and other potential jurisdictional features in the Plan Area where access could not be obtained by biologists. The methods used for these analyses are described below.

4.3.1 Vegetation

Vegetation in all portions of the RSA, including the Plan Area, have been mapped in significant detail. The underlying vegetation data used in this Assessment is derived from **Vegetation – Great Valley Ecoregion** (CDFW BIOS dataset ds2632). This dataset was produced to facilitate regional planning, conservation, and enhancement of biological resources by state agencies, project partners and regional stakeholders. Published in 2018, this geodatabase contains a map of vegetation within the Great Valley Ecoregion produced by the Geographical Information Center (GIC) at California State University – Chico. The minimum mapping unit for natural vegetation is 1.0 acre, with a minimum average width of 10 meters. The minimum mapping unit for agricultural and urban polygons is 10 acres. Vegetation is attributed to the Group and Alliance level of the state and national vegetation hierarchy.

This dataset was clipped to the limits of the RSA, and then further refined where needed, incorporating land use data from the California's Department of Water Resources (DWR) for Sacramento, Yolo, and Sutter Counties. Data were then manually assessed and reclassified where needed based on recent aerial photography.

4.3.2 Habitat Suitability

Various authors and agencies have developed frameworks for mapping habitats and using that data to assess habitat suitability for species. In California, the Department of Fish and Wildlife developed and maintains the *California Wildlife Habitat Relationships System* (CWHR). Among the tools provided by CWHR are the following:

- A habitat classification system, which can be cross-walked to other standard vegetation classifications (e.g., Holland 1986, Sawyer et al. 2009).
- A system for classifying size, cover, and habitat elements within a habitat classification.
- Habitat class and element preferences for all wildlife species in California.
- A software program for mapping habitat suitability for species based on a properly-structured input vegetation layer.

The system provides a structured and repeatable framework for analyzing habitat suitability for any wildlife species.

In order to analyze habitat suitability for key species, Bargas performed the following steps:

1. Prepared a table of structured vegetation attributes based upon the vegetation dataset described above in **Section 4.3.1**.
2. Ran the table prepared in Step 1 through the CWHR software for each species analyzed.
3. The output of Step 2 provides a habitat suitability matrix for each species and each provided vegetation type.
4. This table is then linked to the vegetation data for mapping of habitat quality and quantification of habitat availability and impacts.

4.3.3 Aquatic Resources

The USACE-verified (SPK-2020-00237) Aquatic Resources Delineation conducted in 2019 and 2020 covered the aquatic features mapped and overlapping the boundaries of the Surveyed Area. The USACE issued a Preliminary Jurisdictional Determination (PJD) for the project on 19 June 2020. The presence of potentially USACE jurisdictional aquatic features within the remaining portions of the Plan Area was assessed for this Assessment utilizing desktop methods. The following resources were reviewed to conduct this desktop analysis:

- USFWS NWI (USFWS 2021)
- USGS NHD (USGS 2021)
- NRCS Web Soil Survey (NRCS 2021)
- Aerial, including Bing "Bird's-Eye", imagery and street level imagery of the Plan Area (Google Earth Pro, 2021, Bing Maps 2021)

Current aerial and street level imagery were utilized to determine if aquatic features mapped within the databases listed above could still be extant. Current and available aerial and street level imagery were analyzed for possible aquatic features that were not mapped in the databases listed above. All potentially jurisdictional aquatic features identified using these methods were mapped in Google Earth Pro. Linear features were mapped by drawing the approximate centerline. Approximate OHWM was estimated using available imagery. Where visible in the imagery utilized, culverts were marked as point features. Non-linear or point features were drawn as polygons. A Google Earth KMZ file was then generated and converted into ESRI shapefile format. GIS was utilized to calculate the linear feet and surface area of each line and polygon feature, utilizing half of the OHWM widths to buffer the center-lines for linear features. The desktop-assessed aquatic features were then added to the exhibit from the USACE-verified aquatic resources delineation.

4.4 Occurrence Potential

Following the desktop review, field surveys, and habitat analyses, Bargas assessed the potential for the occurrence of special status species in the Plan Area. Biological conditions (vegetation communities, wildlife habitats, disturbances, etc.) and the habitat and life cycle requirements of special status species identified for analysis in the desktop review were considered. "Recent" occurrences are defined as observed within the past 30 years. Based on these considerations, species were assigned to the following categories:

- **Present:** Species is known to occur in Plan Area based on recent surveys, CNDDB (within 30 years), or other records.
- **High**: Species with known recent recorded occurrences/populations near the Plan Area and highly suitable habitat occurs within the Plan Area. Highly suitable habitat includes all necessary elements to support the species (e.g., elevation, hydrology, soils, cover, habitat type, food resources).

- **Moderate.** Species with known recent recorded occurrences/populations near the Plan Area; however, habitat within the Plan Area has been moderately disturbed, fragmented, or is small in extent. Moderately suitable habitat includes several elements to support the species (e.g., elevation, hydrology, soils, cover, habitat type, food resources). Furthermore, moderately suitable habitat may also be located at the edge of the species' range, or there are no reported occurrences nearby.
- **Low**. Species with few known recent recorded occurrences/populations near the Plan Area and habitat within the Plan Area is highly disturbed or extremely limited. A low potential is assigned to annual or perennial plant species that may have been detectable during a focused survey in the appropriate blooming period but was not found; however, small populations or scattered individuals are still considered to have a low potential to occur. Additionally, species for which poor-quality habitat may support the species within the Plan Area, but the reported extant range is far outside the Plan Area and/or any species observations would anticipate being migratory (i.e., not likely to reproduce within the Plan Area).
- **Presumed Absent/No Potential.** Focused surveys were conducted, and the species was not detected, or the species was found in the desktop review, but suitable habitat (soil, vegetation, elevational range) was not found in the Plan Area, or the Plan Area is not within the known geographic range of the species.

The potential for bird species were further distinguished into those that may: 1) nest within or near the Plan Area; 2) forage within or near the Plan Area; and/or 3) occur on or near the Plan Area only as transients during migratory flights or other dispersal events.

4.5 Taxonomy and Nomenclature

Every effort was made to use naming standards that are recognized by the scientific community, with the understanding that – for many wildlife groups – scientists may not always agree on a standard source. Because of this, some common names used in this report may not be the same as those used by the underlying data sources for species records. Bargas maintains a yearly-updated reference species list which uses the following taxonomic sources:

- **Birds** – American Ornithological Society Check-list and Supplements (AOS 2021)
- **Mammals** – The reference list in the CDFW's *California Wildlife Habitats Relationships Database* (CDFW 2014), with updates based on the American Society of Mammologists *Mammal Diversity Database* (2020)
- **Reptiles and Amphibians** – The technical website *californiaherps.com*, which is regularly updated based on the latest taxonomic literature.
- **Fish** – *Common and Scientific Names of Fishes from the United States, Canada, and Mexico*, 7th edition (AFS 2013)
- **Invertebrates** – no naming standard was identified that was current and applicable to freshwater and terrestrial invertebrates. Names used by the underlying data sources when a species was first identified were retained.
- **Plants** – the Jepson eFlora (Jepson eFlora 2021)

Birds have the most well-established naming standards of all taxonomic groups. These standards include instructions for the proper use of capitalization for common names to make clear that, for example, someone mentioning a Blue-winged Teal refers to the species "Blue-winged Teal" and not any species of teal with blue wings. The capitalization standards used for birds have been used with other taxa as well throughout this report.

5 Results

5.1 Biological Setting

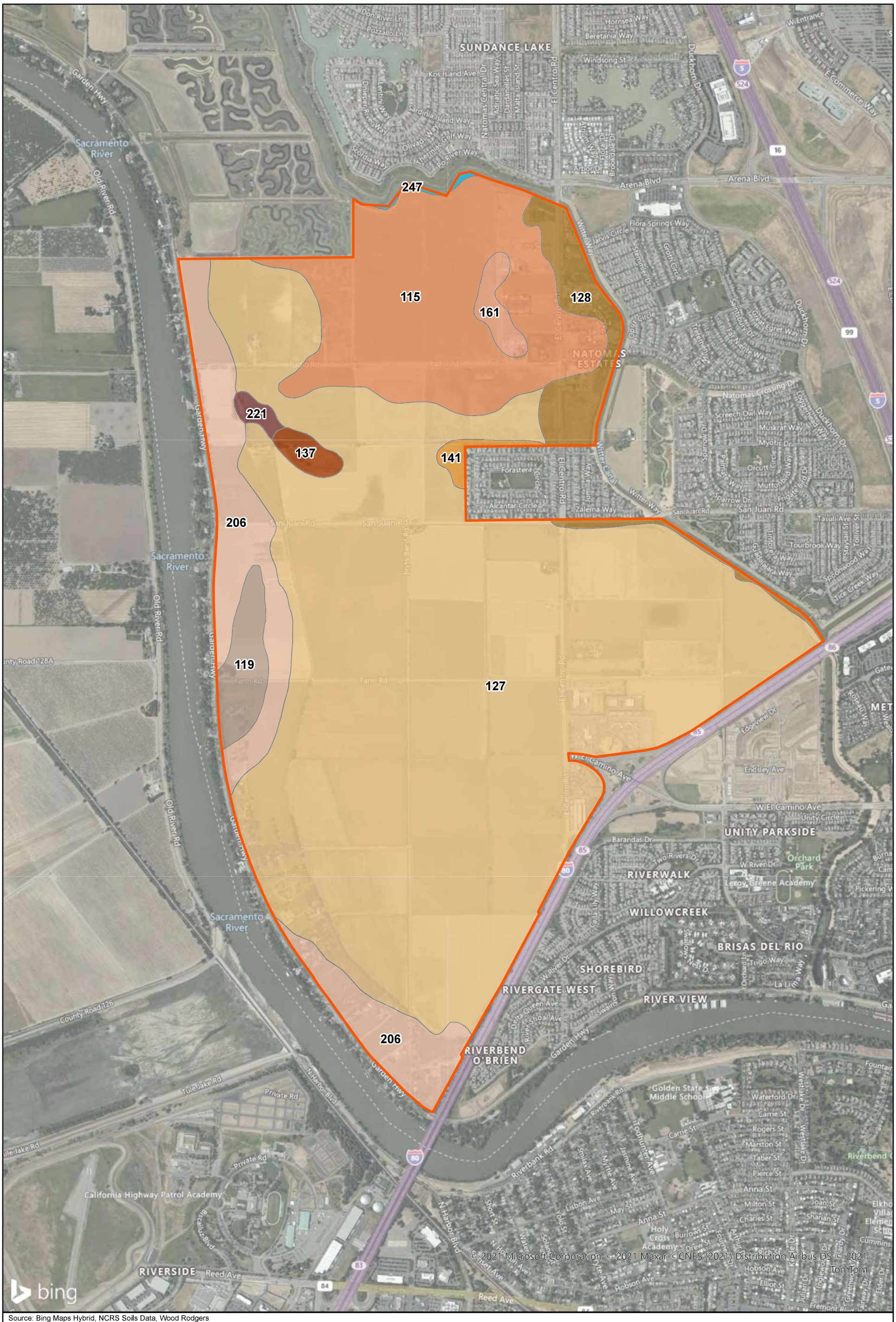
When viewing the RSA limits in its entirety on aerial photography, the defining land use of the region is agriculture. Urban land uses are also significant and comprise the majority land use of the southeastern third of the RSA. Natural habitats are present, however, including interspersed and sometimes substantial annual grasslands, shrublands, and riparian woodlands along the margins of the Sacramento River in the west and American River in the southeast. Special status habitats such as vernal pools are also present in the region, particularly on sites with lesser disturbance. There are no significant terrain features in the RSA: elevations range from approximately 15 to 100 feet above mean sea level. The RSA is within the Lower Sacramento watershed, Hydrologic Unit Code (HUC)-8-18020109.

5.2 Soils

Nine soil types exist within the Plan Area, as summarized in **Table 1** below with the types, acreages, percentages, and hydric rating of each soil type. A map showing soils is provided as **Exhibit 4. Soils**. The NRCS soil report for the Plan Area is included in **Appendix D.**

Table 1. Soil Types within the Plan Area

Soil Series	Map Unit Number	Map Symbol	Acreage within the Plan Area	Percent of the Plan Area	Hydric Rating
Clear Lake clay, hardpan substratum, drained, 0 to 1 percent slopes	115	hhlp	310.3	15.0%	Hydric
Columbia sandy loam, clayey substratum, partially drained, 0 to 2 percent slopes	119	hhlt	38.9	1.9%	Hydric
Cosumnes silt loam, partially drained, 0 to 2 percent slopes	127	2x415	1,401.2	67.8%	Hydric
Cosumnes silt loam, drained, 0 to 2 percent slopes	128	hhm3	75.4	3.7%	Hydric
Durixeralfs, 0 to 1 percent slopes	137	hhmd	13.3	0.6%	Not Hydric
Egbert clay, partially drained, 0 to 2 percent slopes	141	hhmj	9.4	0.5%	Hydric
Jacktone clay, drained, 0 to 2 percent slopes	161	Hhn5	17.2	0.8%	Hydric
Sailboat silt loam, partially drained, 0 to 2 percent slopes, MLRA 16	206	2xlch	189.6	9.2%	Hydric
San Joaquin-Xerarents complex, leveled, 0 to 1 percent slopes	221	Hhq3	7.3	0.4%	Hydric
Water	247	N/A	2.4	0.1%	N/A



Source: Bing Maps Hybrid, NCRS Soils Data, Wood Rodgers

0 750 1,500 Feet

1 inch = 1,500 feet

BARGAS Environmental Consulting

Upper Westside Specific Plan Area

SSURGO Soils

- 115 - Clear Lake clay, hardpan substratum, drained, 0 to 1 percent slopes
- 119 - Columbia sandy loam, clayey substratum, partially drained, 0 to 2 percent slopes
- 127 - Cosumnes silt loam, partially drained, 0 to 2 percent slopes
- 128 - Cosumnes silt loam, drained, 0 to 2 percent slopes
- 137 - Durixeralfs, 0 to 1 percent slopes
- 141 - Egbert clay, partially drained, 0 to 2 percent slopes
- 161 - Jacktone clay, drained, 0 to 2 percent slopes
- 206 - Sailboat silt loam, partially drained, 0 to 2 percent slopes, MLRA 16
- 221 - San Joaquin-Xerarents complex, leveled, 0 to 1 percent slopes
- 247 - Water

Exhibit 4
Soils

Upper Westside

Map Created: 1/13/2022, Map Revised: N/A, Bargas Project Number: 1024-18

5.3 Aquatic Resources

The aquatic resource site analysis was a combination of site surveys consistent with USACE wetland survey protocols, and desktop analysis for properties that were not currently accessible. A total of 20.03 acres and 103,879 linear feet of potential jurisdictional other waters of the U.S. have been identified within the Plan Area. The USACE issued a Preliminary Jurisdictional Determination (PJD) on 19 June 2020 for a 568.7-acre subset of the larger 2,065 Plan Area. **Table 2** below provides a summary of these features, including their classification, acreage, and length. **Exhibit 5. Aquatic Resources** displays each feature identified within the Plan Area in addition to an approximately 82-acre polygon in the northwest corner of the Plan Area within which construction of habitat mitigation wetlands and associated water conveyance features appears to be ongoing. The aquatic resource restoration construction is not linked to the anticipated unavoidable resource impacts associated with the Upper Westside Plan. The proposed Specific Plan designates the aquatic resource restoration area as AG – Agriculture Residential. A total of 11.22 acres and 41,881 linear feet, including all or portions of features R5UBFx-1 through -18, within the Surveyed Area have been verified by the USACE via the preliminary jurisdictional delineation (PJD) process (USACE 2020). Feature R5UBFx-19 was removed from the aquatic resources delineation for verification as the feature was confirmed to no longer exist through normal farming practices during the June 2020 supplemental site visit.

For the residual acreage that could not be accessed a desktop assessment of aquatic features was completed in 2022 and identified 8.81 acres, and 61,998 linear feet of potential jurisdictional other waters of the U.S. within the portions of the Plan Area beyond the boundaries of the Surveyed Area. Two of the features (R5UBFx-11, R5UBFx-15) identified during desktop analysis were contiguous with features mapped during the field ARD, therefore, the same feature name was assigned. Nine additional features (R5UBFx-20 through -29) were identified during a reconnaissance-level site visit completed to gather supplemental data requested by USACE during the PJD verification process. The desktop assessment identified nine more features (R5UBFx-30 through -38) within the Plan Area. A total of 38 other waters of the U.S. features have been identified within the Plan Area.

Table 2. Potential Jurisdictional Features Mapped within the Plan Area

Feature Name	Classification	Area (acres)*	Length (linear feet)
R5UBFx-1	Riverine, Unknown Perennial, Unconsolidated Bottom, Semipermanently Flooded, Excavated	0.20	1,106
R5UBFx-2	Riverine, Unknown Perennial, Unconsolidated Bottom, Semipermanently Flooded, Excavated	0.43	2,337
R5UBFx-3	Riverine, Unknown Perennial, Unconsolidated Bottom, Semipermanently Flooded, Excavated	0.54	2,985
R5UBFx-4	Riverine, Unknown Perennial, Unconsolidated Bottom, Semipermanently Flooded, Excavated	0.88	2,724
R5UBFx-5	Riverine, Unknown Perennial, Unconsolidated Bottom, Semipermanently Flooded, Excavated	0.27	1,184
R5UBFx-6	Riverine, Unknown Perennial, Unconsolidated Bottom, Semipermanently Flooded, Excavated	0.32	1,773
R5UBFx-7	Riverine, Unknown Perennial, Unconsolidated Bottom, Semipermanently Flooded, Excavated	0.53	1,786
R5UBFx-8	Riverine, Unknown Perennial, Unconsolidated Bottom, Semipermanently Flooded, Excavated	0.68	1,475
R5UBFx-9	Riverine, Unknown Perennial, Unconsolidated Bottom, Semipermanently Flooded, Excavated	0.42	1,392

Feature Name	Classification	Area (acres)*	Length (linear feet)
R5UBFx-10	Riverine, Unknown Perennial, Unconsolidated Bottom, Semipermanently Flooded, Excavated	0.22	1,894
R5UBFx-11	Riverine, Unknown Perennial, Unconsolidated Bottom, Semipermanently Flooded, Excavated	2.77	7,563
R5UBFx-12	Riverine, Unknown Perennial, Unconsolidated Bottom, Semipermanently Flooded, Excavated	0.36	1,323
R5UBFx-13	Riverine, Unknown Perennial, Unconsolidated Bottom, Semipermanently Flooded, Excavated	2.05	6,857
R5UBFx-14	Riverine, Unknown Perennial, Unconsolidated Bottom, Semipermanently Flooded, Excavated	0.72	2,626
R5UBFx-15	Riverine, Unknown Perennial, Unconsolidated Bottom, Semipermanently Flooded, Excavated	1.69	7,399
R5UBFx-16	Riverine, Unknown Perennial, Unconsolidated Bottom, Semipermanently Flooded, Excavated	0.72	2,414
R5UBFx-17	Riverine, Unknown Perennial, Unconsolidated Bottom, Semipermanently Flooded, Excavated	0.15	1,328
R5UBFx-18	Riverine, Unknown Perennial, Unconsolidated Bottom, Semipermanently Flooded, Excavated	0.02	100
R5UBFx-20	Riverine, Unknown Perennial, Unconsolidated Bottom, Semipermanently Flooded, Excavated	0.41	1,483
R5UBFx-21	Riverine, Unknown Perennial, Unconsolidated Bottom, Semipermanently Flooded, Excavated	0.30	1,882
R5UBFx-22	Riverine, Unknown Perennial, Unconsolidated Bottom, Semipermanently Flooded, Excavated	0.77	2,559
R5UBFx-23	Riverine, Unknown Perennial, Unconsolidated Bottom, Semipermanently Flooded, Excavated	0.56	2,428
R5UBFx-24	Riverine, Unknown Perennial, Unconsolidated Bottom, Semipermanently Flooded, Excavated	0.55	2,370
R5UBFx-25	Riverine, Unknown Perennial, Unconsolidated Bottom, Semipermanently Flooded, Excavated	0.93	2,880
R5UBFx-26	Riverine, Unknown Perennial, Unconsolidated Bottom, Semipermanently Flooded, Excavated	0.70	8,141
R5UBFx-27	Riverine, Unknown Perennial, Unconsolidated Bottom, Semipermanently Flooded, Excavated	0.31	1,374
R5UBFx-28	Riverine, Unknown Perennial, Unconsolidated Bottom, Semipermanently Flooded, Excavated	0.12	889
R5UBFx-29	Riverine, Unknown Perennial, Unconsolidated Bottom, Semipermanently Flooded, Excavated	0.11	941
R5UBFx-30	Riverine, Unknown Perennial, Unconsolidated Bottom, Semipermanently Flooded, Excavated	0.08	910
R5UBFx-31	Riverine, Unknown Perennial, Unconsolidated Bottom, Semipermanently Flooded, Excavated	0.18	1,297
R5UBFx-32	Riverine, Unknown Perennial, Unconsolidated Bottom, Semipermanently Flooded, Excavated	0.03	1,255
R5UBFx-33	Riverine, Unknown Perennial, Unconsolidated Bottom, Semipermanently Flooded, Excavated	0.51	6,427
R5UBFx-34	Riverine, Unknown Perennial, Unconsolidated Bottom, Semipermanently Flooded, Excavated	0.15	2,227

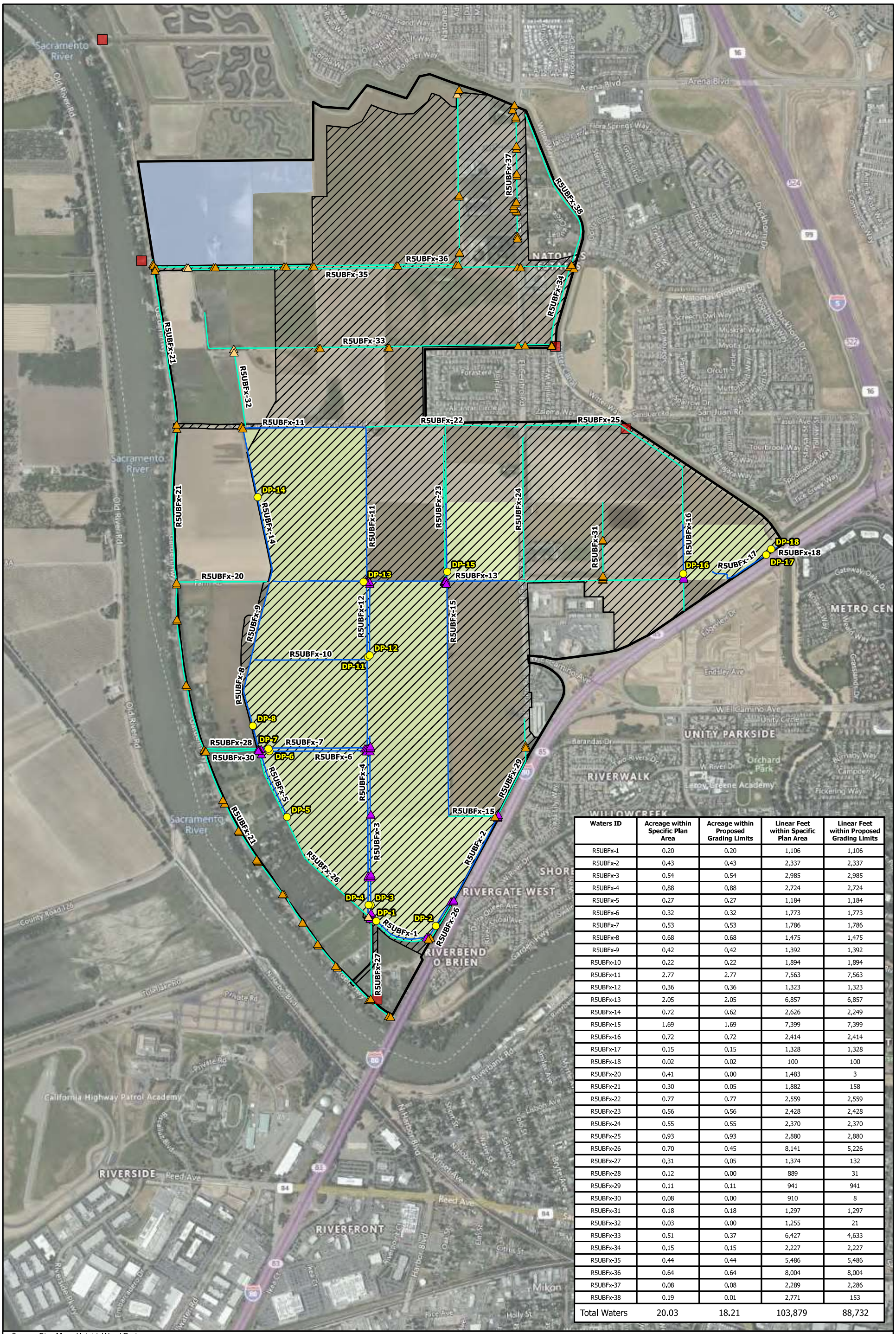
Feature Name	Classification	Area (acres)*	Length (linear feet)
R5UBFx-35	Riverine, Unknown Perennial, Unconsolidated Bottom, Semipermanently Flooded, Excavated	0.44	5,486
R5UBFx-36	Riverine, Unknown Perennial, Unconsolidated Bottom, Semipermanently Flooded, Excavated	0.64	8,004
R5UBFx-37	Riverine, Unknown Perennial, Unconsolidated Bottom, Semipermanently Flooded, Excavated	0.08	2,286
R5UBFx-38	Riverine, Unknown Perennial, Unconsolidated Bottom, Semipermanently Flooded, Excavated	0.19	2,771
	Total Other Waters of the U.S.:	**20.03**	**103,879**

Source: Bargas, 2020 and 2022. *Acreages for features R5UBFx-1 through -18 overlapping the Surveyed Area have been verified by the USACE as potential jurisdictional aquatic resources through PJD, SPK-2020-00237. The remaining acreage of features R5UBFx-1 through -18 are subject to modification pending formal verification by USACE. Features R5UBFx-20 through -38 are anticipated to require a formal aquatic resources delineation survey to obtain a PJD from USACE.

These features are best described as agricultural canals and ditches with very similar characteristics as some of the canals and ditches previously mapped during the field aquatic resources delineation. The features are classified as "R5UBFx," indicating that they are "Riverine, Unknown Perennial, Unconsolidated Bottom, Semi-permanently Flooded, [and] Excavated." The OHWM of the features vary in size from approximately one foot wide to 12 feet wide. The features which were field-mapped and verified exhibited evident beds and banks, as well as OHWM indicators. The desktop assessed waters were apparent in aerial imagery and, where street level imagery was available, appeared to have defined bed and bank.

Features R5UBFx-1 through -31 are located south of San Juan Road and appear to have substantial interconnectivity through culverts or other infrastructure utilized for agricultural irrigation / drainage. Features R5UBFx-32 through -38 are located north of San Juan Road and also appear to have substantial interconnectivity through various structures. The apparent hydrologic connection between these two regions (either side of San Juan Road) appears to be via culvert along RU5BFx-21 at the intersection of San Juan Road and Garden Highway. The following features have evident or likely hydrologic connection to either the Sacramento River or the West Drainage Canal through either pumping stations (Denham 2020), culverts, or other agricultural infrastructure:

- R5UBFx-21: Appears to receive water from the Sacramento River via the Riverside Pumping Plant
- R5UBFx-25: Appears to receive water from the West Drainage Canal via the San Juan Pump Station
- R5UBFx-33: Appears to receive water from the West Drainage Canal via the Riverside Pumping Station
- R5UBFx-34: Appears to have connectivity to West Drainage Canal via culvert or other structure
- R5UBFx-36: Appears to have connectivity to West Drainage Canal via culvert or other structure
- R5UBFx-37: Appears to have connectivity to West Drainage Canal via culvert or other structure



Waters ID	Acreage within Specific Plan Area	Acreage within Proposed Grading Limits	Linear Feet within Specific Plan Area	Linear Feet within Proposed Grading Limits
R5UBFx-1	0.20	0.20	1,106	1,106
R5UBFx-2	0.43	0.43	2,337	2,337
R5UBFx-3	0.54	0.54	2,985	2,985
R5UBFx-4	0.88	0.88	2,724	2,724
R5UBFx-5	0.27	0.27	1,184	1,184
R5UBFx-6	0.32	0.32	1,773	1,773
R5UBFx-7	0.53	0.53	1,786	1,786
R5UBFx-8	0.68	0.68	1,475	1,475
R5UBFx-9	0.42	0.42	1,392	1,392
R5UBFx-10	0.22	0.22	1,894	1,894
R5UBFx-11	2.77	2.77	7,563	7,563
R5UBFx-12	0.36	0.36	1,323	1,323
R5UBFx-13	2.05	2.05	6,857	6,857
R5UBFx-14	0.72	0.62	2,626	2,249
R5UBFx-15	1.69	1.69	7,399	7,399
R5UBFx-16	0.72	0.72	2,414	2,414
R5UBFx-17	0.15	0.15	1,328	1,328
R5UBFx-18	0.02	0.02	100	100
R5UBFx-20	0.41	0.00	1,483	3
R5UBFx-21	0.30	0.05	1,882	158
R5UBFx-22	0.77	0.77	2,559	2,559
R5UBFx-23	0.56	0.56	2,428	2,428
R5UBFx-24	0.55	0.55	2,370	2,370
R5UBFx-25	0.93	0.93	2,880	2,880
R5UBFx-26	0.70	0.45	8,141	5,226
R5UBFx-27	0.31	0.05	1,374	132
R5UBFx-28	0.12	0.00	889	31
R5UBFx-29	0.11	0.11	941	941
R5UBFx-30	0.08	0.00	910	8
R5UBFx-31	0.18	0.18	1,297	1,297
R5UBFx-32	0.03	0.00	1,255	21
R5UBFx-33	0.51	0.37	6,427	4,633
R5UBFx-34	0.15	0.15	2,227	2,227
R5UBFx-35	0.44	0.44	5,486	5,486
R5UBFx-36	0.64	0.64	8,004	8,004
R5UBFx-37	0.08	0.08	2,289	2,286
R5UBFx-38	0.19	0.01	2,771	153
Total Waters	20.03	18.21	103,879	88,732

Source: Bing Maps Hybrid, Wood Rodgers

0 750 1,500 Feet

1 inch = 1,500 feet

BARGAS Environmental Consulting

- Upper Westside Specific Plan Area
- Proposed Grading Limits
- Ongoing GGS Aquatic Habitat Construction
- Approved Access Parcels
- Pump Station Locations
- Sample Points
- Desktop Assessed Culvert
- Desktop Assessed Suspected Culvert
- Previously Mapped Culvert

Other Waters*
- USACE Verified Waters (SPK-2020-00237)
- Desktop Assessed Waters

*R5UBFx-19 was confirmed to no longer exist in the June 2020 supplemental ARD field visit

Exhibit 5
Aquatic Resources

Upper Westside

Map Created: 1/10/2022, Map Revised: 1/14/2022, Bargas Project Number: 1024-18

5.4 Habitats and Vegetation Communities

5.4.1 Vegetation Communities in the Plan Area

The following sections describe the vegetation communities and other landcover types found within the Plan Area. Vegetation community descriptions, which largely match those of the *California Wildlife Habitat Relationships* system, are derived from the descriptions contained therein with revisions to make them consistent with conditions observed by Bargas biologists in the Plan Area. This information is shown on the map provided as **Exhibit 6. Vegetation Communities –Plan Area** and summarized in **Table 2**.

5.4.1.1 Irrigated Row and Field Crops

Irrigated Row and Field Crops are found on 892.1 acres, or 43.2% of the Plan Area at the time of this Assessment. Like most agricultural habitat types, cover type, canopy, plant composition and other metrics are variable and may change year to year or even season to season. This is mapped as Field Crops and Orchard – Vineyard, which are non-CWHR types, on **Exhibit 6**. Depending on the growing season and crop planted, some areas may have 100 percent canopy while others may have significant bare areas between rows. Row and field crops are established on fertile soils, which historically supported an abundance of wildlife. Many species of rodents and birds have adapted to croplands. Availability of irrigation water during dryer months benefits many wildlife species as a source of water. This land use would be mapped as the Non-Rice Crops land classification of the NBHCP.

5.4.1.2 Irrigated Hayfield

Irrigated Hayfields are found on 511.1 acres, or 24.8% of the Plan Area at the time of this Assessment. Like most agricultural habitat types, cover type, canopy, plant composition and other metrics are variable and may change year to year or even season to season. This is mapped as Cropland, which is a non-CWHR type, on **Exhibit 6.** Except for 2 to 6 months initial growing period, depending on climate, and soil, this habitat is dense, with nearly 100 percent cover. Planted fields generally are monocultures. Structure changes to a lower stature following each harvest, grows up again and reverts to bare ground following plowing or discing. Plowing may occur annually but is usually less often. Layering generally does not occur in this habitat. This habitat can provide a high-quality seasonal resource for a variety of wildlife, however, where harvesting is constant, reproduction values for ground-nesting species are reduced to zero. This land use would be mapped as the Non-Rice Crops land classification of the NBHCP.

5.4.1.3 Annual Grassland

Annual Grasslands are found on 232.8 acres, or 11.3% of the Plan Area within the agricultural matrix and occur while fields have remained fallow for an extended period. Annual Grassland habitats are open grasslands composed primarily of annual plant species. Dramatic differences in physiognomy, both between seasons and between years, are characteristic of this habitat. Fall rains cause germination of annual plant seeds. Plants grow slowly during the cool winter months, remaining low in stature until spring, when temperatures increase and stimulate more rapid growth. Large amounts of standing dead plant material can be found during summer in years of abundant rainfall. Many wildlife species use Annual Grasslands for foraging, but some require special habitat features such as cliffs, caves, ponds, or habitats with woody plants for breeding, resting, and escape cover. This vegetation community would be mapped as the Grassland land classification of the NBHCP.

5.4.1.4 Pasture

Pasture is found on 193.3 acres, or 9.4% of the Plan Area at the time of this Assessment. Like most agricultural habitat types, cover type, canopy, plant composition and other metrics are variable and may change year to year or even

season to season. Pasture vegetation is commonly a mix of perennial grasses and legumes that normally provide 100 percent canopy closure. Height of vegetation varies, according to season and livestock stocking levels, from a few inches to two or more feet on fertile soils before grazing. Pastures are used by a variety of wildlife depending upon geographic area and types of adjacent habitats. Ground-nesting birds nest in pastures if adequate residual vegetation is present at the onset of the nesting season. Flood irrigation of pastures provides feeding and roosting sites for many wetland-associated birds. This land use would be mapped as the Pasture land classification of the NBHCP.

5.4.1.5 Urban

Urban habitats are found on 143.5 acres, or 6.9% of the Plan Area. The structure of urban vegetation varies with the land use. Within the Plan Area, areas mapped as Urban include residential lots as well as commercial development. Impervious surfaces – such as pavement – are common in the latter, while former often includes mowed lawns, gardens, and ornamental trees. The abundance of wooded cover in the Urban portions of the Plan Area provides shelter and foraging habitat for a wide variety of native and non-native wildlife, especially birds. This land use would be mapped as the Urban land classification of the NBHCP.

5.4.1.6 Valley Foothill Riparian

Valley Foothill Riparian is found on 50.0 acres, or 2.4% of the Plan Area. In the Plan Area, this habitat type is dominated by Valley Oak, with a handful of other canopy tree species such as California Sycamore. In the Plan Area, this habitat type often is part of a rural residential property. Undisturbed areas contain a subcanopy tree layer and an understory shrub layer. Valley-Foothill Riparian habitats provide food, water, migration and dispersal corridors, and escape, nesting, and thermal cover for an abundance of wildlife. This vegetation community would be mapped as the Riparian land classification of the NBHCP.

5.4.1.7 Riverine

Riverine is present on 20.1 acres, or 1.0% of the Plan Area. Within the Plan Area, this habitat type is represented by over 41,719 linear feet of irrigation canals and ditches. Within the Plan Area, the Riverine habitats contained Duckweed (*Lemna minor*), green algae, and a variety of emergent vegetation. The banks of the irrigation canals and ditches were dominated by ruderal vegetation. This land use would be mapped as the Canals land classification of the NBHCP.

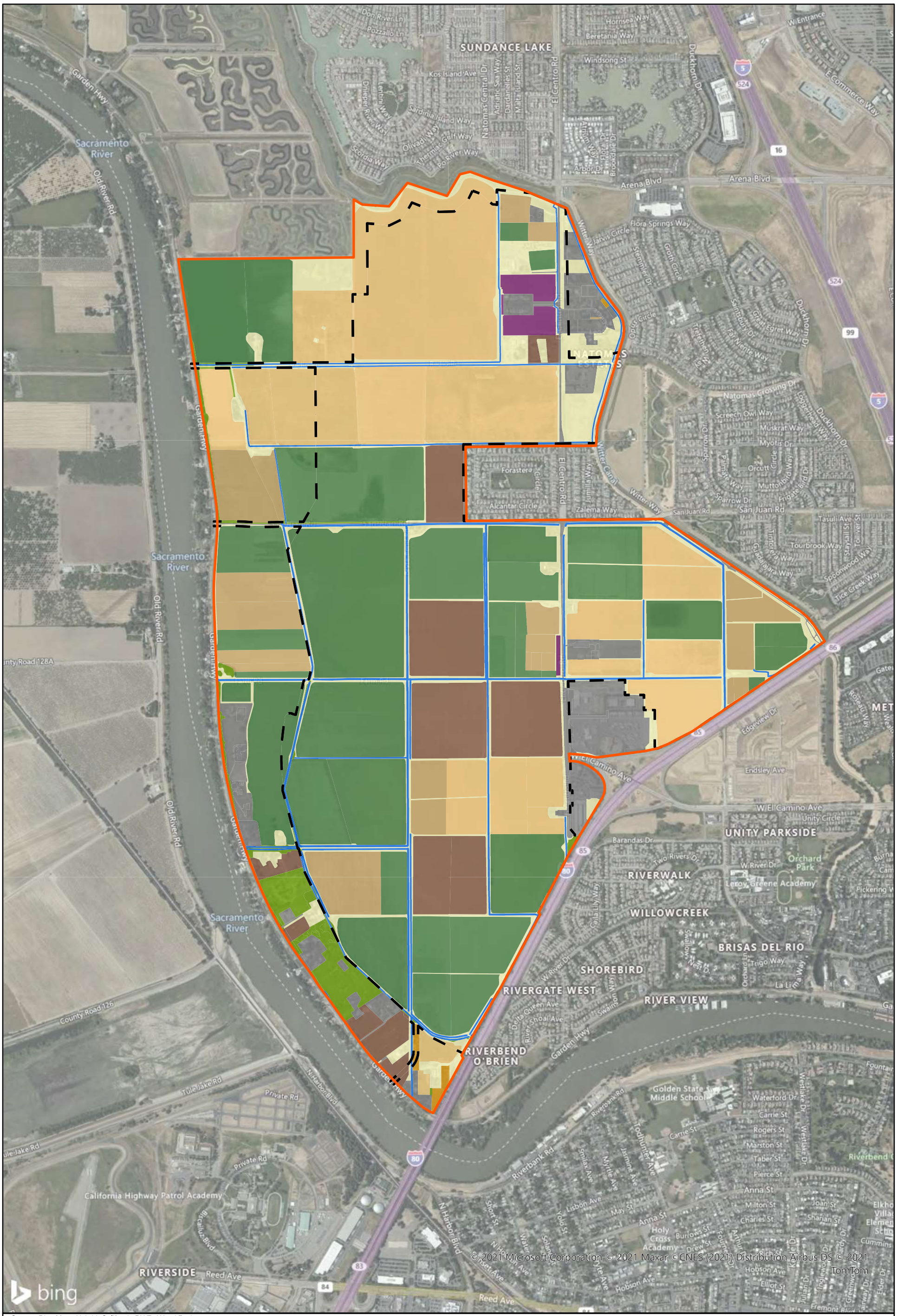
5.4.1.8 Vineyard

Vineyards are found on 17.6 acres, or 0.9% of the Plan Area. Vineyards are composed of single species planted in rows, usually supported on wood and wire trellises. Vines are normally intertwined in the rows but open between rows. Rows under the vines are usually sprayed with herbicides to prevent growth of herbaceous plants. Between rows of vines, grasses and other herbaceous plants may be planted or allowed to grow as a cover crop to control erosion. Vineyards are typically planted on deep fertile soils which once supported productive and diverse natural habitats. Some species of birds and mammals have adapted to Vineyard habitats, including raptors, which often perch on supporting structures. This land use would be mapped as the Non-Rice Crops land classification of the NBHCP.

5.4.1.9 Deciduous Orchard

Deciduous Orchards are found on 4.7 acres or 0.2% of the Plan Area. Deciduous orchards are open single species tree dominated habitats. Spacing between trees is uniform depending on desired spread of mature trees. The understory may be composed of low-growing grasses, legumes, and other herbaceous plants, or may be managed to prevent understory growth totally or partially, such as along tree rows. Orchards are planted on deep fertile soils

which once supported productive and diverse natural habitats. Some species of birds and mammals have adapted to the orchard habitats. This land use would be mapped as the Orchard land classification of the NBHCP.



Source: Bing Maps Hybrid, California DWR, Wood Rodgers

0 750 1,500 Feet

1 inch = 1,500 feet

BARGAS Environmental Consulting

- Upper Westside Specific Plan Area
- Proposed Grading Limits

Vegetation Communities

- Annual Grassland (232.8acres)
- Cropland (511.1-acres)
- Deciduous Orchard (4.7-acres)
- Irrigated Row and Field Crops (729.8-acres)
- Orchard - Vineyard (162.3-acres)
- Pasture (193.3-acres)
- Riverine (20.1-acres)
- Urban (143.5-acres)
- Valley Foothill Riparian (50-acres)
- Vineyard (17.6-acres)

Exhibit 6
Vegetation Communities – Plan Area

Upper Westside

Map Created: 1/13/2022, Map Revised: N/A, Bargas Project Number: 1024-18

Table 3. Vegetation Community Summary – Plan Area

Community	Acres	Percent
Irrigated Row and Field Crops	892.1	43.2%
Irrigated Hayfield	511.1	24.8%
Annual Grassland	232.8	11.3%
Pasture	193.3	9.4%
Urban	143.5	6.9%
Valley Foothill Riparian	50.0	2.4%
Riverine	20.1	1.0%
Vineyard	17.6	0.9%
Deciduous Orchard	4.7	0.2%
TOTAL	**2064.9**	**100.0%**

5.4.2 Vegetation Communities in the Regional Study Area and Natomas Basin

In assessing a project's effects on biological resources, it is important to understand the regional context of the biological resources that are found on a project site. The following, shown on **Exhibit 7. Vegetation Communities – Regional Study Area** and summarized in **Table 4** below, summarizes the vegetation communities found in the Plan Area relative to the Natomas Basin and the RSA:

- **Annual Grassland**, described above in **Section 5.4.2.3**, is located in 18,601.7 acres of the RSA, 3,895.8 acres of Natomas Basin, and 232.8 acres of the Plan Area. As such, the Plan Area harbors 1.3% of Annual Grasslands found in the RSA and 6.0% of the Annual Grasslands found in the Natomas Basin.
- **Deciduous Orchard**, described above in **Section 5.4.2.9**, is located in 18,349.6 acres of the RSA, 339.2 acres of the Natomas Basin, and 4.7 acres of the Plan Area. As such, the Plan Area harbors less than 0.1% of Deciduous Orchards found in the RSA and the Natomas Basin.
- **Irrigated Hayfield**, described above in **Section 5.4.2.2**, is located in 2,1321.6 acres of the RSA, 7,435.7 acres of the Natomas Basin, and 511.1 acres of the Plan Area. As such, the Plan Area harbors 2.4% of the Irrigated Hayfields in the RSA and 6.9% of the Irrigated Hayfields in the Natomas Basin.
- **Irrigated Row and Field Crops**, described above in **Section 5.4.2.1**, is located in 19,678.8 acres of the RSA, 1,927.0 acres of the Natomas Basin, and 892.1 acres of the Plan Area. As such, the Plan Area harbors 4.5% of Irrigated Row and Field Crops in the RSA and 46.3% of Irrigated Row and Field Crops in the Natomas Basin.
- **Pasture**, described above in **Section 5.4.2.4**, is located in 9,791.6 acres of the RSA, 1173.9 acres of the Natomas Basin, and 193.3 acres of the Plan Area. As such, the Plan Area harbors 2.0% of Pasture in the RSA and 16.5% in the Natomas Basin.
- **Riverine**, described above in **Section 5.4.2.7**, is located in 5,775.8 acres of the RSA, 625.1 acres of the Natomas Basin, and 20.1 acres of the Plan Area. As such, the Plan Area harbors 0.3% of Riverine in the RSA and 3.2% of Riverine in the Natomas Basin.

- **Urban**, described above in **Section 5.4.2.5**, is located in 64,794.1 acres of the RSA, 13,676.4 acres of the Natomas Basin, and 143.5 acres of the Plan Area. As such, the Plan Area harbors 0.2% of Urban habitats in the RSA and 1.0% of Urban habitats in the Natomas Basin.
- **Valley Foothill Riparian**, described above in **Section 5.4.2.6**, is located in 13,390.7 acres of the RSA, 2,313.3 acres of the Natomas Basin, and 50 acres of the Plan Area. As such, the Plan Area harbors 0.4% of Valley Foothill Riparian in the RSA and 2.2% of Valley Foothill Riparian in the Natomas Basin.
- **Vineyard**, described above in **Section 5.4.2.8**, is located in 26.3 acres of the RSA, 18.0 acres of the Natomas Basin, and 17.6 acres of the Plan Area. As such, the Plan Area harbors 66.9% of Vineyard habitat in the RSA and 97.6% of Vineyard habitat in the Natomas Basin.

The vegetation communities below are additional communities found in the RSA that are not present in the Plan Area:

- **Barren** is a series of habitat types – both natural and man-made – that are devoid of vegetation. Barren habitats are located in 35.2 acres of the RSA and 5.5 acres of the Natomas Basin.
- **Blue Oak Woodland** is a forested habitat located in 49.5 acres of the RSA, and not present in the Natomas Basin.
- **Coastal Scrub** is a shrub habitat located in 4.8 acres of the RSA, and not present in the Natomas Basin.
- **Eucalyptus** is a non-native woodland habitat located in 9.1 acres of the RSA, and not present in the Natomas Basin.
- **Fresh Emergent Wetland** is an aquatic habitat located in 3,616.8 acres of the RSA and 148.1 acres of the Natomas Basin.
- **Lacustrine** is an aquatic habitat located in 4,189.5 acres of the RSA and 492.4 acres of the Natomas Basin.
- **Montane Chaparral** is a tall shrub habitat located in 1.3 acres of the RSA, and not present in the Natomas Basin.
- **Montane Hardwood** is a forested habitat located in 7.8 acres of the RSA, and not present in the Natomas Basin.
- **Rice** is an agricultural habitat important to many wildlife species located in 52,374.9 acres of the RSA, and 21,333.3 acres of the Natomas Basin.
- **Wet Meadow** is an aquatic habitat located in 3.7 acres of the RSA, and not present in the Natomas Basin.

Table 4. Regional Study Area Vegetation Summary

Community	RSA Acres	Natomas Acres	Plan Area	Plan Area/RSA	Plan Area/Natomas
Annual Grassland	18601.7	3895.8	232.8	1.3%	6.0%
Barren	35.2	5.5	-	-	-
Blue Oak Woodland	49.5	-	-	-	-
Coastal Scrub	4.8	-	-	-	-
Deciduous Orchard	18349.6	339.2	4.7	<0.1%	<0.1%
Eucalyptus	9.1	-	-	-	-

Community	RSA Acres	Natomas Acres	Plan Area	Plan Area/RSA	Plan Area/Natomas
Fresh Emergent Wetland	3616.8	148.1	-	-	-
Irrigated Hayfield	21321.6	7435.7	511.1	2.4%	6.9%
Irrigated Row and Field Crops	19678.8	1927.0	892.1	4.5%	46.3%
Lacustrine	4189.5	492.4	-	-	-
Montane Chaparral	1.3	-	-	-	-
Montane Hardwood	7.8	-	-	-	-
Pasture	9791.6	1173.9	193.3	2.0%	16.5%
Rice	52374.9	21333.3	-	-	-
Riverine	5775.8	625.1	20.1	0.3%	3.2%
Urban	64794.1	13676.4	143.5	0.2%	1.0%
Valley Foothill Riparian	13390.7	2313.3	50	0.4%	2.2%
Vineyard	26.3	18.0	17.6	66.9%	97.6%
Wet Meadow	3.7	-	-	-	-
TOTAL	**232023.0**	**53383.7**	**2064.9**		

5.4.3 Sensitive Vegetation Communities

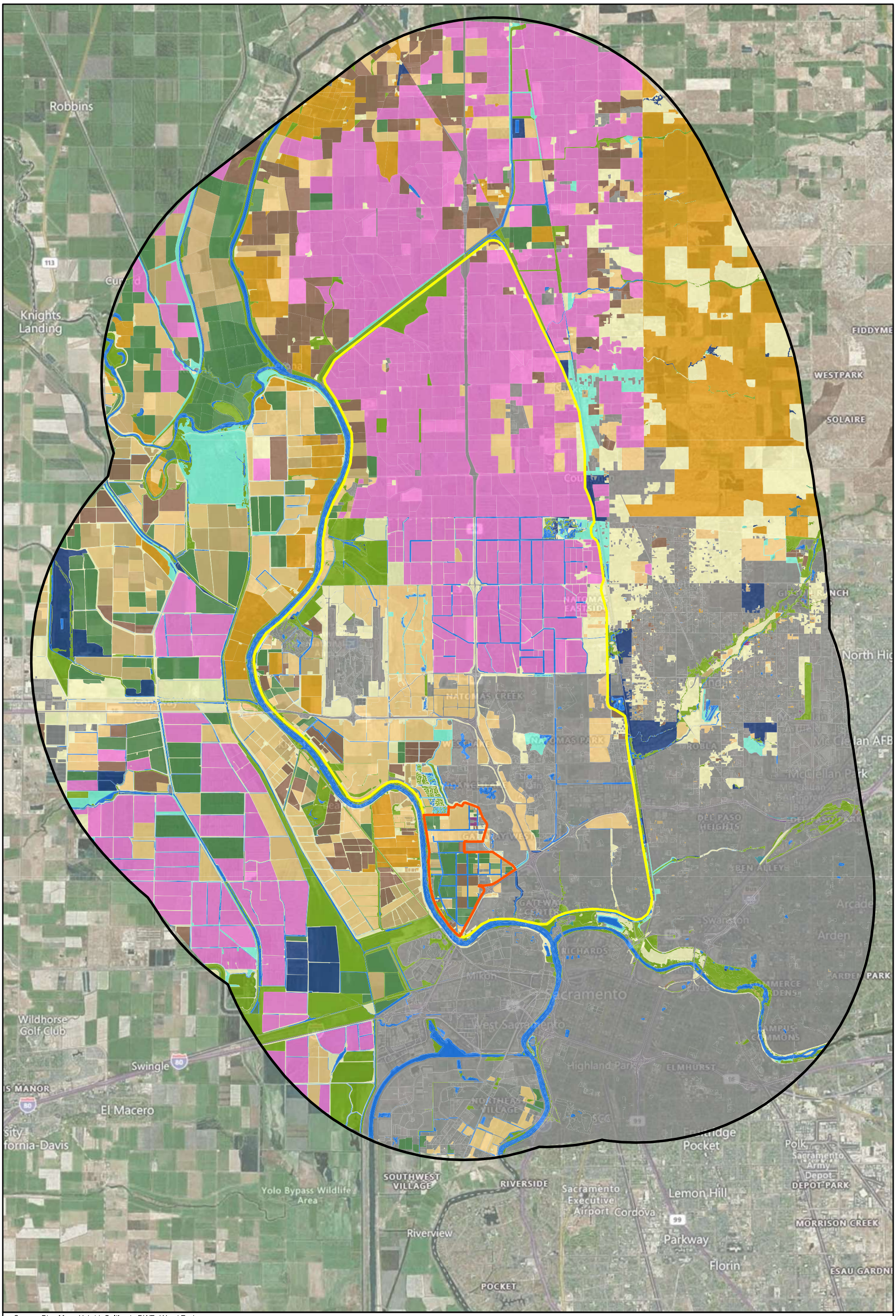
Three sensitive vegetation communities were mapped in the CNDDB for the area covered by the desktop review. None of these communities are present in the Plan Area. These are discussed below and summarized in **Appendix C.**

5.4.3.1 Northern Hardpan Vernal Pool

Holland (1986) describes Northern Hardpan Vernal Pool communities as *a low, amphibious, herbaceous community dominated by annual herbs and grasses. Germination and growth begin with winter rains, often continuing even when inundated. Rising spring temperatures evaporate the pools, leaving concentric bands of vegetation that colorfully encircle the drying pool.* There are eight location records for this community in the CNDDB desktop review, with the nearest being six miles northeast of Plan Area. Based on three years of surveys in the Surveyed Area, remote observations of the remainder of the Plan Area, a review of aerial photography at different seasons, and the absence of a restrictive clay layer across approximately 81% of the site, vernal pools communities were determined to be absent from the Plan Area.

5.4.3.2 Northern Claypan Vernal Pool

Holland (1986) describes Northern Claypan Vernal Pool communities as *similar to Northern Hardpan Vernal Pools, but with lower microrelief, and usually lower overall cover. Pools may be small (a few square meters) or quite large (covering several hectares).* There is a single location record for this community in the CNDDB desktop review four miles east of Plan Area. Based on three years of surveys in the Surveyed Area, remote observations of the remainder of the Plan Area, a review of aerial photography at different seasons, and the absence of a restrictive clay layer across approximately 81% of the site, vernal pools communities were determined to be absent from the Plan Area.



Source: Bing Maps Hybrid, California DWR, Wood Rodgers

0 1 2 Miles

1 inch = 2 miles

BARGAS Environmental Consulting

Vegetation Communities

- Annual Grassland (18,602acres)
- Barren (35-acres)
- Blue Oak Woodland (50-acres)
- Coastal Scrub (5-acres)
- Cropland (21,322-acres)
- Deciduous Orchard (18,350-acres)
- Eucalyptus (9-acres)
- Fresh Emergent Wetland (3617-acres)
- Irrigated Row and Field Crops (12,208-acres)
- Lacustrine (4189-acres)
- Montane Chaparral (1-acre)
- Montane Hardwood (8-acres)
- Orchard - Vineyard (7471-acres)
- Pasture (9792-acres)
- Rice (52,375-acres)
- Riverine (5776-acres)
- Urban (64,794-acres)
- Valley Foothill Riparian (13,391-acres)
- Vineyard (26-acres)
- Wet Meadow (4-acres)

Exhibit 7
Vegetation Communities – Regional Study Area

Upper Westside

Map Created: 1/13/2022, Map Revised: N/A, Bargas Project Number: 1024-18

5.4.3.3 Great Valley Cottonwood Riparian Forest

Holland (1986) describes Great Valley Cottonwood Riparian Forest communities as *a dense, broadleafed, winter deciduous riparian forest dominated by* Populus fremontii *and* Salix gooddingii variabilis*. Understories are dense, with abundant vegetative reproduction of canopy dominants.* There is a single location record in the CNDDB desktop review for this community, mapped along the far shore of the Sacramento River bend immediately southeast of the Plan Area. This location was field-verified as accurate during Swainson's Hawk surveys conducted in 2019. Otherwise, Great Valley Cottonwood Riparian Forest – which would have been visible in the Plan Area during surveys and on aerial photography – is absent from the Plan Area.

5.5 Plants

5.5.1 Floral Diversity

A list of plant species observed by Bargas biologists within the Surveyed Area is provided in **Appendix B**. A total of 58 plant species, none of which are special status species, have been observed between the botanical and arborist surveys. Approximately 55% of the observed species are non-native, 38% being recognized as invasive. Approximately 68% of the observed species occur in disturbed areas such as the ruderal roadside and agricultural land present within the Plan Area. Areas heavily disturbed by anthropogenic activities such as rural and urban development and agricultural activities can be expected to have lower floral diversity than areas containing intact natural plant communities and habitats.

5.5.2 Special Status Plants

The desktop review determined that a total of 26 special status plant species are known to occur in the nine-quadrangle search area surrounding the Plan Area. Legal status, natural history, and occurrence potential are described for each of these species below and summarized in **Appendix C.** Natural history information is taken directly from the CNPS *Inventory of Rare and Endangered Plants of California* (CNPS 2021). The botanical surveys were conducted during the blooming period for each of these 26 special status species, none were observed during the surveys conducted in the Survey Area, and none have greater than a low potential for occurrence in the Plan Area (including the portions that were not directly surveyed) given the extensive and long-term anthropogenic disturbance that characterizes the majority of the Plan Area.

5.5.2.1 Taxa with Low Potential for Occurrence

Of the 26 plant species analyzed for occurrence potential, 17 were determined to have a low potential for occurrence in the Plan Area. These species are described in detail below.

Woolly Rose-Mallow (*Hibiscus lasiocarpos* var. *occidentalis*)

Special Status:	California Rare Plant Rank 1B.2
NBHCP Covered:	No
Lifeform:	Perennial rhizomatous herb (emergent)
Blooming Period:	June to September
Elevation:	0 to 395 feet
Habitat:	Freshwater marshes and swamps, wet banks, often in riprap on sides of levees
Determination Reason:	Surveyed Area: Not detected during botanical surveys and almost certainly not present given extensive agricultural and other site disturbance. Remainder of Plan Area: There are four previously recorded occurrences of this species within the database search area, the nearest recorded in 1988 within a mile of the Plan Area near the West El Camino Avenue exit for I-80. The Plan Area

occurs within the elevational and distribution range of the species, however, primary threats to the species are agriculture and drainage channelization, which are predominant land uses in the Plan Area. Further, some of the irrigation canals and ditches within the Plan Area are periodically maintained (i.e. accumulated sediment removed, vegetation along banks mowed/trimmed), with some not always inundated with water (dependent upon the agricultural irrigation needs), reducing their suitability as potential habitat. As such, potential for the occurrence of this species is low in remainder of the Plan Area.

Mason's Lilaeopsis (*Lilaeopsis masonii*)

Special Status:	California Rare Plant Rank 1B.1
NBHCP Covered:	No
Lifeform:	Perennial rhizomatous herb
Blooming Period:	April to November
Elevation:	0 to 35 feet
Habitat:	Brackish and freshwater marshes and swamps, intertidal marshes, riparian scrub
Determination Reason:	Surveyed Area: Not detected during botanical surveys and almost certainly not present given extensive agricultural and other site disturbance. Remainder of Plan Area: There are two previously recorded occurrences of this species within the database search area, the nearest recorded in 2009 along the banks of the Sacramento River Deep Water Ship Channel approximately 8.5 miles southwest of the Plan Area. The Plan Area occurs within the elevational and distribution range of the species, however, primary threats to the species are agriculture and drainage channelization, which are predominant land uses in the Plan Area. Further, some of the irrigation canals and ditches within the Plan Area are periodically maintained (i.e. accumulated sediment removed, vegetation along banks mowed/trimmed), with some not always inundated with water (dependent upon the agricultural irrigation needs), reducing their suitability as potential habitat. As such, potential for the occurrence of this species is low in remainder of the Plan Area.

Sanford's Arrowhead (*Sagittaria sanfordii*)

Special Status:	California Rare Plant Rank 1B.2
NBHCP Covered:	Yes
Lifeform:	Perennial rhizomatous herb (emergent)
Blooming Period:	May to October
Elevation:	0 to 2,135 feet
Habitat:	Shallow freshwater wetlands, ponds, ditches
Determination Reason:	Surveyed Area: Not detected during botanical surveys and almost certainly not present given extensive agricultural and other site disturbance. Remainder of Plan Area: There are four previously recorded occurrence of this species within the database search area, the nearest recorded in 1993 along an unnamed drainage within the American River Parkway approximately 5 miles southeast of the Plan Area. The Plan Area occurs within the elevational and distribution range of the species, however, primary threats to the species are agriculture and drainage channelization, which are predominant land uses in the Plan Area. Further, some of the irrigation canals and ditches within the Plan Area are periodically maintained (i.e. accumulated sediment removed, vegetation

along banks mowed/trimmed), with some not always inundated with water (dependent upon the agricultural irrigation needs), reducing their suitability as potential habitat. As such, potential for the occurrence of this species is low in remainder of the Plan Area.

Heartscale (*Atriplex cordulata* var. *cordulata*)

Special Status:	California Rare Plant Rank 1B.2
NBHCP Covered:	No
Lifeform:	Annual herb
Blooming Period:	April to October
Elevation:	0 to 1,835 feet
Habitat:	Saline or alkaline soils in chenopod scrub, meadows and seeps, valley and foothill grasslands (sandy soils)
Determination Reason:	Surveyed Area: Not detected during botanical surveys and almost certainly not present given extensive agricultural and other site disturbance. Remainder of Plan Area: There is one previously recorded occurrence of this species within the database search area. While grassland habitat was mapped in the Plan Area (Section 5.4), this habitat represents a temporary state of fallow agricultural fields and does not occur on the correct soils (Section 5.2) for this species. Other habitats preferred by this species are not present in the Plan Area. As such, this species is unlikely to occur and has been determined to have low potential for occurrence within the Plan Area.

Brittlescale (*Atriplex depressa*)

Special Status:	California Rare Plant Rank 1B.2
NBHCP Covered:	No
Lifeform:	Annual herb
Blooming Period:	April to October
Elevation:	5 to 1,050 feet
Habitat:	Playas, vernal pools, meadows and seeps with alkaline or clay soils in chenopod scrub and valley and foothill grassland communities
Determination Reason:	Surveyed Area: Not detected during botanical surveys and almost certainly not present given extensive agricultural and other site disturbance. Remainder of Plan Area: There is one previously recorded occurrence of this species within the database search area. While grassland habitat was mapped in the Plan Area (Section 5.4), this habitat represents a temporary state of fallow agricultural fields and does not occur on the correct soils (Section 5.2) for this species. Other habitats preferred by this species are not present in the Plan Area. As such, this species is unlikely to occur and has been determined to have low potential for occurrence within the Plan Area.

Bristly Sedge (*Carex comosa*)

Special Status:	California Rare Plant Rank 2B.1
NBHCP Covered:	No
Lifeform:	Perennial rhizomatous herb
Blooming Period:	May to September
Elevation:	0 to 2,050 feet
Habitat:	Lake margins, wetland edges, and mesic places in coastal prairie, marshes and swamps, and valley and foothill grassland communities

Determination Reason:	Surveyed Area: Not detected during botanical surveys and almost certainly not present given extensive agricultural and other site disturbance. Remainder of Plan Area: There is one previously recorded occurrence of this species within the database search area but is of low accuracy. While grassland habitat was mapped in the Plan Area (Section 5.4), this habitat represents a temporary state of fallow agricultural fields and does not occur on the correct soils (Section 5.2) for this species. Other habitats preferred by this species are not present in the Plan Area. As such, this species is unlikely to occur and has been determined to have low potential for occurrence within the Plan Area.

Pappose Tarplant (*Centromadia parryi* ssp. *parryi*)

Special Status:	California Rare Plant Rank 1B.2
NBHCP Covered:	No
Lifeform:	Annual herb
Blooming Period:	May to November
Elevation:	0 to 1,380 feet
Habitat:	Vernally mesic wetlands, marshes, or seeps often with alkaline soils in chaparral, coastal prairie, and valley and foothill grassland communities
Determination Reason:	Surveyed Area: Not detected during botanical surveys and almost certainly not present given extensive agricultural and other site disturbance. Remainder of Plan Area: There are previously documented occurrences of this species within the database search area. While grassland habitat was mapped in the Plan Area (Section 5.4), this habitat represents a temporary state of fallow agricultural fields and does not occur on the correct soils (Section 5.2) for this species. Other habitats preferred by this species are not present in the Plan Area. As such, this species is unlikely to occur and has been determined to have low potential for occurrence within the Plan Area.

Palmate-bracted Bird's-Beak (*Chloropyron palmatum*)

Special Status:	Federal Endangered, State Endangered, California Rare Plant Rank 1B.1
NBHCP Covered:	No
Lifeform:	Annual herb (hemiparasitic)
Blooming Period:	May to October
Elevation:	15 to 510 feet
Habitat:	Alkaline flats in chenopod scrub and valley and foothill grassland communities
Determination Reason:	Surveyed Area: Not detected during botanical surveys and almost certainly not present given extensive agricultural and other site disturbance. Remainder of Plan Area: There are previously documented occurrences of this species within the database search area. While grassland habitat was mapped in the Plan Area (Section 5.4), this habitat represents a temporary state of fallow agricultural fields and does not occur on the correct soils (Section 5.2) for this species. Other habitats preferred by this species are not present in the Plan Area. As such, this species is unlikely to occur and has been determined to have low potential for occurrence within the Plan Area.

Dwarf Downingia (*Downingia pusilla*)

Special Status:	California Rare Plant Rank 2B.2
NBHCP Covered:	No
Lifeform:	Annual herb
Blooming Period:	March to May

Elevation:	5 to 1,460 feet
Habitat:	Vernal pool wetlands in valley and foothill grassland communities
Determination Reason:	Surveyed Area: Not detected during botanical surveys and almost certainly not present given extensive agricultural and other site disturbance. Remainder of Plan Area: There are previously recorded occurrences of this species within the database search area. While grassland habitat was mapped in the Plan Area (Section 5.4), this habitat represents a temporary state of fallow agricultural fields and does not occur on the correct soils (Section 5.2) for this species. Other habitats preferred by this species are not present in the Plan Area. As such, this species is unlikely to occur and has been determined to have low potential for occurrence within the Plan Area.

Jepson's Coyote Thistle (*Eryngium jepsonii*)

Special Status:	California Rare Plant Rank 1B.2
NBHCP Covered:	No
Lifeform:	Perennial herb
Blooming Period:	April to August
Elevation:	10 to 985 feet
Habitat:	Vernal pools with clay soils and valley and foothill grassland communities
Determination Reason:	Surveyed Area: Not detected during botanical surveys and almost certainly not present given extensive agricultural and other site disturbance. Remainder of Plan Area: There are previously recorded occurrences of this species within the database search area. While grassland habitat was mapped in the Plan Area (Section 5.4), this habitat represents a temporary state of fallow agricultural fields and does not occur on the correct soils (Section 5.2) for this species. Other habitats preferred by this species are not present in the Plan Area. As such, this species is unlikely to occur and has been determined to have low potential for occurrence within the Plan Area.

San Joaquin Spearscale (*Extriplex joaquinana*)

Special Status:	California Rare Plant Rank 1B.2
NBHCP Covered:	No
Lifeform:	Annual herb
Blooming Period:	April to October
Elevation:	5 to 2,740 feet
Habitat:	Meadows and seeps, playas, chenopod scrub, and valley and foothill grassland on alkaline soils.
Determination Reason:	Surveyed Area: Not detected during botanical surveys and almost certainly not present given extensive agricultural and other site disturbance. Remainder of Plan Area: There are previously recorded occurrences of this species within the database search area. While grassland habitat was mapped in the Plan Area (Section 5.4), this habitat represents a temporary state of fallow agricultural fields and does not occur on the correct soils (Section 5.2) for this species. Other habitats preferred by this species are not present in the Plan Area. As such, this species is unlikely to occur and has been determined to have low potential for occurrence within the Plan Area.

Heckard's Pepper Grass (*Lepidium latipes* var. *heckardii*)

Special Status:	California Rare Plant Rank 1B.2
NBHCP Covered:	No

Lifeform:	Annual herb
Blooming Period:	March to May
Elevation:	5 to 655 feet
Habitat:	Valley and foothill grassland communities with alkaline soils.
Determination Reason:	Surveyed Area: Not detected during botanical surveys and almost certainly not present given extensive agricultural and other site disturbance. Remainder of Plan Area: There are previously recorded occurrences of this species within the database search area. While grassland habitat was mapped in the Plan Area (Section 5.4), this habitat represents a temporary state of fallow agricultural fields and does not occur on the correct soils (Section 5.2) for this species. Other habitats preferred by this species are not present in the Plan Area. As such, this species is unlikely to occur and has been determined to have low potential for occurrence within the Plan Area.

Baker's Navarretia (*Navarretia leucocephala* ssp. *bakeri*)

Special Status:	California Rare Plant Rank 1B.1
NBHCP Covered:	No
Lifeform:	Annual herb
Blooming Period:	April to July
Elevation:	15 to 5,710 feet
Habitat:	Vernal pools and seeps in cismontane woodland, lower montane coniferous forest, and valley and foothill grassland communities
Determination Reason:	Surveyed Area: Not detected during botanical surveys and almost certainly not present given extensive agricultural and other site disturbance. Remainder of Plan Area: There are previously recorded occurrences of this species within the database search area. While grassland habitat was mapped in the Plan Area (Section 5.4), this habitat represents a temporary state of fallow agricultural fields and does not occur on the correct soils (Section 5.2) for this species. Other habitats preferred by this species are not present in the Plan Area. As such, this species is unlikely to occur and has been determined to have low potential for occurrence within the Plan Area.

Bearded Popcorn Flower (*Plagiobothrys hystriculus*)

Special Status:	California Rare Plant Rank 1B.1
NBHCP Covered:	No
Lifeform:	Annual herb
Blooming Period:	April to May
Elevation:	0 to 900 feet
Habitat:	Vernal pool margins and mesic grasslands in valley and foothill grassland communities
Determination Reason:	Surveyed Area: Not detected during botanical surveys and almost certainly not present given extensive agricultural and other site disturbance. Remainder of Plan Area: There is one previously recorded occurrence of this species within the database search area. While grassland habitat was mapped in the Plan Area (Section 5.4), this habitat represents a temporary state of fallow agricultural fields and does not occur on the correct soils (Section 5.2) for this species. Other habitats preferred by this species are not present in the Plan Area. As such, this species is unlikely to occur and has been determined to have low potential for occurrence within the Plan Area.

California Alkaligrass (*Puccinellia simplex*)

Special Status:	California Rare Plant Rank 1B.2
NBHCP Covered:	No
Lifeform:	Annual herb
Blooming Period:	March to May
Elevation:	5 to 3,050 feet
Habitat:	Alkaline flats and sinks, mineral springs, and vernally mesic lake margins in chenopod scrub and valley and foothill grassland communities
Determination Reason:	Surveyed Area: Not detected during botanical surveys and almost certainly not present given extensive agricultural and other site disturbance. Remainder of Plan Area: There are previously recorded occurrences of this species within the database search area. While grassland habitat was mapped in the Plan Area (Section 5.4), this habitat represents a temporary state of fallow agricultural fields and does not occur on the correct soils (Section 5.2) for this species. Other habitats preferred by this species are not present in the Plan Area. As such, this species is unlikely to occur and has been determined to have low potential for occurrence within the Plan Area.

Saline Clover (*Trifolium hydrophilum*)

Special Status:	California Rare Plant Rank 1B.2
NBHCP Covered:	No
Lifeform:	Annual herb
Blooming Period:	April to June
Elevation:	0 to 985 feet
Habitat:	Salt marshes, vernal pools, and open mesic areas with alkaline soils in valley and foothill grassland communities
Determination Reason:	Surveyed Area: Not detected during botanical surveys and almost certainly not present given extensive agricultural and other site disturbance. Remainder of Plan Area: There are previously recorded occurrences of this species within the database search area. While grassland habitat was mapped in the Plan Area (Section 5.4), this habitat represents a temporary state of fallow agricultural fields and does not occur on the correct soils (Section 5.2) for this species. Other habitats preferred by this species are not present in the Plan Area. As such, this species is unlikely to occur and has been determined to have low potential for occurrence within the Plan Area.

Crampton's Tuctoria (*Tuctoria mucronata*)

Special Status:	Federal Endangered, State Endangered, California Rare Plant Rank 1B.1
NBHCP Covered:	No
Lifeform:	Annual herb
Blooming Period:	April to August
Elevation:	15 to 35 feet
Habitat:	Vernal pools and valley and foothill grassland.
Determination Reason:	Surveyed Area: Not detected during botanical surveys and almost certainly not present given extensive agricultural and other site disturbance. Remainder of Plan Area: There is one previously recorded occurrence of this species within the database search area. While grassland habitat was mapped in the Plan Area (Section 5.4), this habitat represents a temporary state of fallow agricultural fields and does not occur on the correct soils (Section 5.2) for this species. Other habitats preferred by this species are not present in the Plan Area.

As such, this species is unlikely to occur and has been determined to have low potential for occurrence within the Plan Area.

5.5.2.2 Taxa Presumed Absent/No Potential for Occurrence

Of the 26 plant species analyzed for occurrence potential, nine were determined to be absent and have no potential for occurrence in the Plan Area. These species are described in detail below.

Ferris' Milkvetch (*Astragalus tener* var. *ferrisiae*)

Special Status:	California Rare Plant Rank 1B.1
NBHCP Covered:	No
Lifeform:	Annual herb
Blooming Period:	April to May
Elevation:	5 to 245 feet
Habitat:	Vernally mesic meadows and seeps, subalkaline flats
Determination Reason:	Surveyed Area: Not detected during botanical surveys and almost certainly not present given extensive agricultural and other site disturbance. Remainder of Plan Area: There are previously recorded occurrences of this species within the database search area. This species was previously thought extinct until rediscovered in 1989 and is known from only six occurrences. The primary threat to this species is agriculture, which is the dominant land use in the Plan Area. As such, this species has been determined to have no potential for occurrence within the Plan Area.

Peruvian Dodder (*Cuscuta obtusiflora* var. *glandulosa*)

Special Status:	California Rare Plant Rank 2B.2
NBHCP Covered:	No
Lifeform:	Annual vine (parasitic)
Blooming Period:	July to October
Elevation:	50 to 920 feet
Habitat:	Host plants include species in the *Alternanthera*, *Dalea*, *Lyrthrum*, *Polygonum*, and *Xanthium* genera in freshwater marshes and swamps
Determination Reason:	Surveyed Area: Not detected during botanical surveys and almost certainly not present given extensive agricultural and other site disturbance. Remainder of Plan Area: There is one previously recorded occurrence of this species within the database search area but is of low accuracy. This species was last definitely documented in Merced County in 1948. Further, marsh and swamp habitat preferred by this species is not present in the Plan Area. As such, this species has been determined to have no potential for occurrence within the Plan Area.

Boggs Lake Hedge Hyssop (*Gratiola heterosepala*)

Special Status:	State Endangered, California Rare Plant Rank 1B.2
NBHCP Covered:	Yes
Lifeform:	Annual herb
Blooming Period:	April to August
Elevation:	0 to 7,790 feet
Habitat:	Vernal pools and lake margins with clay soils
Determination Reason:	Surveyed Area: Not detected during botanical surveys and almost certainly not present given extensive agricultural and other site disturbance.

Remainder of Plan Area: There are previously recorded occurrences of this species within the database search area, however, the Plan Area lacks vernal pool or lake margins with clay soils and as such this species has been determined to have no potential for occurrence within the Plan Area.

Delta Tule Pea (*Lathyrus jepsonii* var. *jepsonii*)

Special Status:	California Rare Plant Rank 1B.2
NBHCP Covered:	Yes
Lifeform:	Perennial herb
Blooming Period:	May to July
Elevation:	0 to 15 feet
Habitat:	Brackish and freshwater marshes and swamps
Determination Reason:	Surveyed Area: Not detected during botanical surveys and almost certainly not present given extensive agricultural and other site disturbance. Remainder of Plan Area: There are not any previously recorded occurrences of this species within the database search area. This species was included as an NBHCP Covered Species. The Plan Area lacks marsh and swamp habitat and as such this species has been determined to have no potential for occurrence within the Plan Area.

Legenere (*Legenere limosa*)

Special Status:	California Rare Plant Rank 1B.1
NBHCP Covered:	Yes
Lifeform:	Annual herb
Blooming Period:	April to June
Elevation:	5 to 2,885 feet
Habitat:	Vernal pools.
Determination Reason:	Surveyed Area: Not detected during botanical surveys and almost certainly not present given extensive agricultural and other site disturbance. Remainder of Plan Area: There are previously recorded occurrences of this species within the database search area, however, the Plan Area lacks vernal pools and as such this species has been determined to have no potential for occurrence within the Plan Area.

Colusa Grass (*Neostapfia colusana*)

Special Status:	Federal Threatened, State Endangered, California Rare Plant Rank 1B.1
NBHCP Covered:	Yes
Lifeform:	Annual herb
Blooming Period:	May to August
Elevation:	15 to 655 feet
Habitat:	Vernal pools with adobe clay soils.
Determination Reason:	Surveyed Area: Not detected during botanical surveys and almost certainly not present given extensive agricultural and other site disturbance. Remainder of Plan Area: There is one previously recorded occurrence of this species within the database search area, however, the Plan Area lacks vernal pools and as such this species has been determined to have no potential for occurrence within the Plan Area.

Slender Orcutt Grass (*Orcuttia tenuis*)

Special Status:	Federal Threatened, State Endangered, California Rare Plant Rank 1B.1

NBHCP Covered:	Yes
Lifeform:	Annual herb
Blooming Period:	May to September
Elevation:	115 to 5,775 feet
Habitat:	Vernal pools often with gravelly soils.
Determination Reason:	Surveyed Area: Not detected during botanical surveys and almost certainly not present given extensive agricultural and other site disturbance. Remainder of Plan Area: There is one previously recorded occurrence of this species within the database search area, however, the Plan Area lacks vernal pools and as such this species has been determined to have no potential for occurrence within the Plan Area.

Sacramento Orcutt Grass (*Orcuttia viscida*)

Special Status:	Federal Endangered, State Endangered, California Rare Plant Rank 1B.1
NBHCP Covered:	Yes
Lifeform:	Annual herb
Blooming Period:	April to July
Elevation:	100 to 330 feet
Habitat:	Vernal pools.
Determination Reason:	Surveyed Area: Not detected during botanical surveys and almost certainly not present given extensive agricultural and other site disturbance. Remainder of Plan Area: There are not any previously recorded occurrences of this species within the database search area. This species was included as an NBHCP Covered Species. The Plan Area does not occur within the elevational and distributional range of the species, and lacks the specific habitat types (vernal pools) required to support this species. This species has been determined to have no potential for occurrence within the Plan Area.

Suisun Marsh Aster (*Symphyotrichum lentum*)

Special Status:	California Rare Plant Rank 1B.2
NBHCP Covered:	No
Lifeform:	Perennial rhizomatous herb
Blooming Period:	May to November
Elevation:	0 to 10 feet
Habitat:	Brackish and freshwater marshes and swamps
Determination Reason:	Surveyed Area: Not detected during botanical surveys and almost certainly not present given extensive agricultural and other site disturbance. Remainder of Plan Area: There are previously recorded occurrences of this species within the database search area. The Plan Area lacks marsh and swamp habitat and as such this species has been determined to have no potential for occurrence within the Plan Area.

5.6 Wildlife

5.6.1 Wildlife Diversity

A list of wildlife species observed by Bargas biologists during surveys conducted for the Project is included **Appendix A**. While the majority of these observations were within the Plan Area, some were incidental to survey activities in surrounding survey buffers. A total of 100 wildlife species were observed across three years of surveys, including

two reptile species, six mammal species, and 92 bird species. Eight of the species observed are non-native. Three of the observed species are California Species of Special Concern: American White Pelican (*Pelacanus erythrorhynchos*), Yellow Warbler (*Setophaga petechia*), and Yellow-headed Blackbird (*Xanthocephalus xanthocephalus*).

5.6.2 Special Status Wildlife

The desktop review determined that five (5) invertebrate, three (3) fish, two (2) amphibian, two (2) reptile, and 13 bird species with special status had been documented as occurring in the nine-quadrangle search area surrounding the Plan Area. An additional three California Species of Special Concern were not in that data but were observed during surveys. Legal status, natural history, and occurrence potential are described for each of these species below and summarized in **Appendix C.** Natural history information for terrestrial vertebrate species is taken directly from the species accounts provided in the *California Wildlife Habitats Relationships System* with internal citations removed for brevity. Natural history sources for invertebrates and fish are cited where used.

5.6.2.1 Taxa Confirmed Present

Four (4) special status wildlife species were confirmed **Present** within the Plan Area.

American White Pelican (*Pelacanus erythrorhynchos*)

Special Status:	California Species of Special Concern
NBHCP Covered:	No
Natural History:	In California, now nests only at large lakes in Klamath Basin, especially Clear Lake National Wildlife Refuge. It is common to abundant on nesting grounds April to August (sometimes March to September). Bred at Honey Lake in 1976, and formerly bred in large numbers in Central Valley and Salton Sea. From August to December common on salt ponds of San Francisco Bay and on the coastal slope from Sonoma County south. Locally uncommon to common on large lakes and estuaries in Central Valley. Fairly common at Lake Tahoe and Salton Sea in late spring and summer. Common spring and fall migrant at Salton Sea and Colorado River. In fall and winter, rare at Salton Sea, Morro Bay, and San Diego Bay; sporadic elsewhere. Migrant flocks pass overhead almost any month, but mainly in spring and fall throughout the state, especially in southern California.
Determination Reason:	Species was observed flying over as well as loafing/foraging on canals in the Plan Area. This species is fairly widespread and seasonally mobile, particularly in the non-breeding season. There is no breeding habitat for this species in the Plan Area.

Swainson's Hawk (*Buteo swainsonii*)

Special Status:	California Threatened
NBHCP Covered:	Yes
Natural History:	Uncommon breeding resident and migrant in the Central Valley, Klamath Basin, Northeastern Plateau, Lassen County, and Mojave Desert. Very limited breeding reported from Lanfair Valley, Owens Valley, Fish Lake Valley, and Antelope Valley. Breeds in stands with few trees in juniper-sage flats, riparian areas, and in oak savannah in the Central Valley. Forages in adjacent grasslands or suitable grain or alfalfa fields, or livestock pastures. In southern California, now mostly limited to spring and fall transient. Formerly abundant in California with wider breeding range. Decline resulted in part from loss of nesting habitat.

Determination Reason: Species observed actively utilizing habitat within the Plan Area, with observations indicating the Plan Area is an important stopover site for migrants of the species. Four pairs were observed within the protocol survey study area (Plan Area plus a half-mile buffer) in 2021, with one pair confirmed nesting that year. Multiple year observations suggest two of these pairs have utilized habitat within this study area multiple years. Nesting was observed in this study area in 2019, 2020, and 2021.

White-tailed Kite (*Elanus leucurus*)

Special Status: California Fully Protected
NBHCP Covered: No
Natural History: Common to uncommon, yearlong resident in coastal and valley lowlands; rarely found away from agricultural areas. Inhabits herbaceous and open stages of most habitats mostly in cismontane California. Nests in isolated trees or in large stands, with nest trees varying in size from less than 3 m (10 ft) to greater than 50 m (164 ft) in height (Dunk 1995). Has extended range and increased numbers in recent decades.
Determination Reason: Species observed actively utilizing habitat within the Plan Area, primarily for foraging. One potential nest site was observed within the Swainson's Hawk protocol survey study area during the 2019 surveys. White-tailed Kite was observed multiple times near the 2019 potential nest site. This species was observed to the east of the Plan Area during the 2021 surveys with no nesting activity observed.

Northern Harrier (*Circus hudsonius*)

Special Status: California Species of Special Concern
NBHCP Covered: No
Natural History: Occurs from annual grassland up to lodgepole pine and alpine meadow habitats, as high as 3,000 m (10,000 ft). Breeds from sea level to 1,700 m (0-5,700 ft) in the Central Valley and Sierra Nevada, and up to 800 m (3,600 ft) in northeastern California. Frequents meadows, grasslands, open rangelands, desert sinks, fresh and saltwater emergent wetlands; seldom found in wooded areas. Permanent resident of the northeastern plateau and coastal areas; less common resident of the Central Valley. Widespread winter resident and migrant in suitable habitat. California population has decreased in recent decades, but can be locally abundant where suitable habitat remains free of disturbance, especially from intensive agriculture. Breeding population much reduced, especially in southern coastal district. Nests on the ground, usually in tall vegetation, making their nest locations often difficult to detect (Smith et a. 2011). Destruction of wetland habitat, native grassland, and moist meadows, and burning and plowing of nesting areas during early stages of breeding cycle, are major reasons for the decline.
Determination Reason: Species observed actively utilizing habitat within the Plan Area in 2019 and 2021, particularly in the eastern and northern portions of the Swainson's Hawk protocol survey study area.

5.6.2.2 Taxa with High Potential for Occurrence

Four (4) special status wildlife species were determined to have a **High** potential to occur within the Plan Area

Northwestern Pond Turtle (*Actinemys marmorata*)

Special Status: California Threatened

NBHCP Covered: Yes

Natural History: *Actinemys* species are uncommon to common in suitable aquatic habitat throughout California, west of the Sierra-Cascade crest and absent from desert regions, except in the Mojave Desert along the Mojave River and its tributaries. Elevation range extends from near sea level to 1,430 meters (4,690 feet). Associated with permanent or nearly permanent water in a wide variety of habitat types. Western Pond Turtle was split into two species in 2014, with *A. marmorata* ranging from the Central Valley north. Northwestern Pond Turtles occur in a variety of fresh and brackish water habitats, including marshes, lakes, ponds, and slow-moving streams. This species is primarily aquatic; however, they typically leave aquatic habitats in the fall to reproduce and to overwinter. Deep, still water with abundant emergent woody debris, overhanging vegetation, and rock outcrops are optimal for basking and thermoregulation. Although adults are habitat generalists, hatchlings and juveniles require shallow edgewater with relatively dense submergent or short emergent vegetation in which to forage. Northwestern Pond Turtles are typically active between March and November, with mating occurring during late April and early May, and egg deposition between late April and early August. Eggs are deposited within excavated nests in upland areas, with substrates that typically have high clay or silt fractions. The majority of nesting sites are located within 650 feet of the aquatic sites; however, nests have been documented as far as 1,310 feet from the aquatic habitat.

Determination Reason: There are previously recorded occurrences of this species within the database search area. This species was frequently observed along the Natomas Main Drainage Canal, which is adjacent to the northeastern Plan Area border, during NBHCP habitat mapping surveys (City of Sacramento et al. 2003). The agricultural canals present within the Plan Area are significantly smaller than the Natomas Main Drainage Canal; however, the larger, deeper canals provide suitable aquatic habitat for this species. The Plan Area is heavily developed and disturbed by agricultural activities and commercial/residential development, therefore, breeding habitat for this species is severely limited within the Plan Area and restricted to relatively undisturbed areas immediately adjacent to the aquatic habitat. This species has been determined to have a high potential for occurrence.

Loggerhead Shrike (*Lanius ludovicianus*)

Special Status: California Species of Special Concern

NBHCP Covered: Yes

Natural History: A common resident and winter visitor in lowlands and foothills throughout California. Highest density occurs in open-canopied valley foothill hardwood, valley foothill hardwood-conifer, valley foothill riparian, pinyon-juniper, juniper, desert riparian, and Joshua Tree habitats. In the Great Basin, from Inyo County north, population declines markedly from November through March. Rare on

coastal slope north of Mendocino County, occurring only in winter. Occurs only rarely in heavily urbanized areas, but often found in open cropland. Sometimes uses edges of denser habitats. Often found in pastures and agricultural fields, this species is uncommon but widespread throughout the Sacramento Valley and Natomas Basin. This predatory songbird is often found along fence lines, utility poles, and other perches suitable for territorial defense, foraging, and courtship displays. These perches are especially valuable due to the species' unique foraging method. Loggerhead Shrikes lack the strong talons of larger birds of prey such as the American Kestrel or Cooper's Hawk. To compensate, Loggerhead Shrike use barbed wire fences, twigs, thorns, and other sharp protrusions to impale their prey after they have been captured. These impaling sites are used not only to kill prey items but also serve as a substrate for prey manipulation and storage (Morrison 1980). Common prey items include large arthropods, small reptiles and amphibians, and occasionally small mammals and birds. Loggerhead Shrike nest in shrubs, trees, and vines in open country and riparian habitats typically 1-2 m (3-6.5 ft) from the ground but nests may be found up to 15 m (49 ft; Bent 1950, Yosef 1996). Breeding season is typically from early March to late August with egg laying March to May. Incubation is 14 to 15 days and young leave the nest before 20 days (Yosef 1996).

Determination Reason: There are no previously recorded occurrences of this species in the database search area. Loggerhead Shrikes are a year-round resident of the Natomas Basin and found throughout the NBHCP area (City of Sacramento et al. 2003). Monitoring conducted by the Natomas Basin Conservancy has documented a decline in detections since 2012 with a record low number of observations recorded in 2019 (ICF 2020). Limited nesting habitat is present within the Plan Area in the form of shrubs and trees along some of the agricultural canals and on some of the commercial and residential parcels. The majority of the Plan Area provides suitable foraging habitat for this species. This species has been determined to have a high potential for occurrence.

Yellow Warbler (*Setophaga petechia*)

Special Status: California Species of Special Concern

NBHCP Covered: No

Natural History: Breeding distribution includes from the coast range in Del Norte County, east to Modoc plateau, south along coast range to Santa Barbara and Ventura counties and along western slope of Sierra Nevada south to Kern county. Also breeds along eastern side of California from the Lake Tahoe area south through Inyo co. Also breeds in several southern California mountain ranges and throughout most of San Diego County. Winters in Imperial and Colorado river valleys. Breeds in riparian woodlands from coastal and desert lowlands up to 2500 m (8000 ft) in Sierra Nevada. Also breeds in montane chaparral, and in open ponderosa pine and mixed conifer habitats with substantial amounts of brush. Numbers of breeding pairs have declined dramatically in recent decades in many lowland areas (southern coast, Colorado River, San Joaquin and Sacramento valleys). Now rare to uncommon in many lowland areas where formerly common. A common migrant on Channel and Farallon Islands in spring and fall.

Determination Reason: Common during breeding season in the riparian woodlands along the Sacramento River. Has potential to occur in landscaped urban areas within the

Plan Area, but unlikely to breed due to a lack of preferred riparian woodland elements.

Yellow-headed Blackbird (*Xanthocephalus xanthocephalus*)

Special Status: California Species of Special Concern
NBHCP Covered: No
Natural History: Breeds commonly, but locally, east of Cascade Range and Sierra Nevada, in Imperial and Colorado River valleys, in the Central Valley, and at selected locations in the coast ranges west of the Central Valley. Nests in fresh emergent wetland with dense vegetation and deep water, often along borders of lakes or ponds. Forages in emergent wetland and moist, open areas, especially cropland and muddy shores of lacustrine habitat. Restricted distribution in Central Valley in winter, occurring mainly in the western portion. Fairly common in winter in Imperial Valley. Occurs as a migrant and local breeder in deserts and along Orange County coast. Has bred, at least irregularly, as high as 2000 m (6600 ft) in San Bernardino Mountains.
Determination Reason: Recorded in a wetland east of the Plan Area during Swainson's Hawk surveys. While there is no appropriate breeding habitat in the Plan Area, this species is widespread during migration and winter and often forages on the ground in agricultural areas, such as those found in the Plan Area.

5.6.2.3 Taxa with Moderate Potential for Occurrence

Five (5) special status wildlife species were determined to have a **Moderate** potential to occur in the Plan Area.

Aleutian Cackling Goose (*Branta hutchinsii leucopareia*)

Special Status: Federal Delisted
NBHCP Covered: Yes
Natural History: The only subspecies of *B. hudsonii* in California (*B.h. leucoparia*) was once considered a subspecies of *B. canadensis*, the Canada Goose (*B.c. leucoparia*). Preferred habitats include lacustrine, fresh emergent wetlands, and moist grasslands, croplands, pastures, and meadows. This species occurs mainly in these habitats during winter in Del Norte County, the San Francisco bay-delta, and southern Central Valley. Resident year-round in northeastern California, except most of the population departs in mid-winter if water freezes. Wintering populations elsewhere in California migrate north and east to breeding grounds in northeastern California, several western states, Canada, and Alaska, and are absent May to September. Nests mainly March to June in northeastern California, and February to June on the coastal slope.
Determination Reason: There are no previously recorded occurrences of this species in the database search area. Although there are no known occurrences within the Natomas Basin, the species may stop over in the Natomas Basin's marshes and agricultural fields on its way to nearby wintering areas in the southern San Joaquin Valley. A small population does winter to the north of the Natomas Basin along the border of Colusa and Sutter Counties (City of Sacramento et al. 2003). This species has not been detected within the NBHCP area since 2004 (ICF 2020). The Plan Area contains agricultural fields provide suitable foraging habitat during migration. This species has been determined to have a moderate potential for occurrence.

White-faced Ibis (*Plegadis chihi*)

Special Status: None

NBHCP Covered: Yes

Natural History: The White-faced Ibis is an uncommon summer resident in sections of southern California, a rare visitor in the Central Valley, and is more widespread in migration. It prefers to feed in fresh emergent wetland, shallow lacustrine waters, muddy ground of wet meadows, and irrigated or flooded pastures and croplands. Nests in dense, fresh emergent wetland. Formerly more common, especially in the San Joaquin Valley, this species no longer breeds regularly anywhere in California. A few pairs bred in 1977 and 1978 at the Salton Sea, and in 1979 at Buena Vista Lagoon, San Diego County. Has nested at Honey Lake, in the Klamath Basin, and at a few isolated areas in Central Valley. At Salton Sea area, fairly common April to September, and uncommon through winter; uncommon transient elsewhere in southern California, and very local winter visitant along coast. Rare in San Joaquin Valley, occurring mainly near Los Banos, August to April; and rare on northeastern plateau April to September.

Determination Reason: There are no previously recorded occurrences of this species in the database search area. This species is observed as a rare visitor to the Natomas Basin during migration (City of Sacramento et al. 2003). White-faced Ibis nesting colonies have been periodically observed on several NBHCP protected lands north of the Plan Area including the Central Basin Reserve in 2010 and Willey Wetlands Preserve in 2012 and 2013, but nesting has not been observed within the Natomas Basin since 2013 (ICF 2020). The Plan Area does not provide suitable nesting habitat for this species, but the agricultural fields may provide suitable foraging habitat depending upon the crop type being cultivated. This species has been determined to have a moderate potential for occurrence.

Burrowing Owl (*Athene cunicularia*)

Special Status: California Species of Special Concern

NBHCP Covered: Yes

Natural History: A yearlong resident of open, dry grassland and desert habitats, and in grass, forb and open shrub stages of Pinyon-Juniper and Ponderosa Pine habitats. Formerly common in appropriate habitats throughout the state, excluding the humid northwest coastal forests and high mountains. Numbers markedly reduced in recent decades. Present on the larger offshore islands. Found as high as 1600 meters (5300 feet) in Lassen County.

Determination Reason: This species is found in several locations in the Natomas Basin, including the higher terrace along the basin's eastern border, in tree planter boxes in the Power Balance Pavilion (formerly known as Arco Arena) parking lot, and along the higher berms of the larger irrigation and drainage canals in the central basin. Burrowing Owl has not been documented to occur in the Plan Area, however, it is most likely to occur during migration or winter. Within the Plan Area, Burrowing Owl would potentially be found in Annual Grassland and Urban habitats.

Bank Swallow (*Riparia riparia*)

Special Status: California Threatened

NBHCP Covered: Yes

Natural History: A neotropical migrant found primarily in riparian and other lowland habitats in California west of the deserts during the spring-fall period. A spring and fall migrant in the interior, less common on coast; an uncommon and very local summer resident. Casual in southern California in winter; a few winter records along central coast to San Mateo County. In summer, restricted to riparian, lacustrine, and coastal areas with vertical banks, bluffs, and cliffs with fine-textured or sandy soils, into which it digs nesting holes. In migration, flocks with other swallows over many open habitats. Range in California estimated to be reduced 50% since 1900. Formerly more common as breeder in California. Now, only approximately 110-120 colonies remain within the state. Perhaps 75% of the current breeding population in California occurs along banks of the Sacramento and Feather rivers in the northern Central Valley. About 50-60 colonies remain along the middle Sacramento River and 15-25 colonies occur along lower Feather River where the rivers meanders still in a mostly natural state. Other colonies persist along the central coast from Monterey to San Mateo counties, and northeastern California in Shasta, Siskiyou, Lassen, Plumas, and Modoc counties. Arrives in California from South America in early March and numbers peak by early May. Numbers fall off in July and August as colonies are abandoned and migration begins. Colonies are vacant by late July or early August, and migrants are observed usually through early or mid-September. There are few winter records for California.

Determination Reason: There are previously recorded occurrences of this species within the database search area. While breeding habitat is not present in the Plan Area, it is present locally along the adjacent Sacramento River, and the species may forage into the Plan Area. The species has also been reported in eBird by multiple observers at the nearby Sacramento Bypass Wildlife Area (eBird 2021). This species has been determined to have a moderate potential for occurrence.

Tricolored Blackbird (*Agelaius tricolor*)

Special Status: California Threatened, California Species of Special Concern

NBHCP Covered: Yes

Natural History: Mostly a resident in California. Common locally throughout Central Valley and in coastal districts from Sonoma County south. Breeds near fresh water, preferably in emergent wetland with tall, dense cattails or tules, but also in thickets of willow, blackberry, wild rose, tall herbs. Feeds in grassland and cropland habitats. Breeds locally in northeastern California. In winter, becomes more widespread along central coast and San Francisco Bay area and is found in portions of the Colorado Desert. Numbers appear to be declining in California. Usual breeding season mid-April into late July.

Determination Reason: There are previously recorded occurrences of this species within the database search area. The species is regularly reported in eBird at the nearby Sacramento Bypass Wildlife Area. Tricolored Blackbirds have been observed nesting north of the Plan Area including the BKS tract in 2005 through 2010, private lands north of the Natomas Basin in 2007, Frazer tract in 2008, and Willey Wetlands Preserve in 2011 and 2013 (ICF 2020). Suitable nesting habitat was determined to be absent from the Plan Area during numerous SWHA and other focused species surveys covering the entire Plan Area, however, the agricultural fields present in

the Plan Area provide suitable foraging habitat for this species. This species has been determined to have a moderate potential for occurrence.

5.6.2.4 Taxa with Low Potential for Occurrence

Three (3) special status wildlife species were determined to have a **Low** potential to occur in the Plan Area.

Vernal Pool Fairy Shrimp (*Branchinecta lynchi*)

Special Status: Federal Threatened

NBHCP Covered: Yes

Natural History[4]: The Vernal Pool Fairy Shrimp is currently found in 28 counties across the Central Valley and coast ranges of California, and in Jackson County of southern Oregon. Although the vernal pool fairy shrimp is distributed more widely than most other listed fairy shrimp species, it is generally uncommon throughout its range, and rarely abundant where it does occur. This species is adapted to the environmental conditions of their ephemeral habitats. One adaptation is the ability of the vernal pool fairy shrimp eggs, or cysts, to remain dormant in the soil when their vernal pool habitats are dry. Another important adaptation is that the vernal pool fairy shrimp has a relatively short life span, allowing it to hatch, mature to adulthood, and reproduce during the short time period when vernal pools contain water. This species occupies a variety of different vernal pool habitats, from small, clear, sandstone rock pools to large, turbid, alkaline, grassland valley floor pools.

Determination Reason: There are previously recorded occurrences of this species within the database search area. The Plan Area lacks vernal pool habitats required for this species to complete its life cycle, however, this species is known to be found in water accumulations with very short persistence, such as tire ruts and roadside ditches. As such, this species has been determined to have low potential for occurrence within the Plan Area.

Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*)

Special Status: Federal Threatened

NBHCP Covered: Yes

Natural History[5]: When listed, the Valley Elderberry Longhorn Beetle was known from only 10 records in 3 locations (Merced County, Yolo County, and Sacramento County). Subsequent surveys throughout the Central Valley discovered more locations and the current presumed historical range is now believed to extend from Shasta County to Madera County below 500 feet in elevation (152.4 meters). Elderberry (*Sambucus* sp.) is the obligate larval host plant for the Valley elderberry longhorn beetle. After hatching, the larva creates a feeding gallery (set of tunnels) in the pith at the stem center. While only one larva is found in each feeding gallery, multiple larvae can occur in one stem if the stem is long enough to accommodate multiple galleries. Though rarely observed, adults have been described as feeding on the nectar, flowers, and leaves of the elderberry plant, or flying between trees. Previous studies of the beetle (both subspecies) estimated that the larval development period inside 2 the plant is 2 years, but laboratory

[4] https://www.fws.gov/sacramento/es/Recovery-Planning/Vernal-Pool/Documents/vp_fairy_shrimp.pdf
[5] https://ecos.fws.gov/docs/recovery_plan/Revised%20recovery%20plan%20for%20VELB.pdf

observations have indicated that the beetle may develop into an adult in a 1-year cycle. Because elderberry is the host plant for the beetle, environmental and habitat conditions that favor a robust elderberry community also benefit the beetle. Elderberry is an important component of riparian ecosystems in California. It can be found as an overstory plant or understory plant within these communities. Elderberry also occurs in upland communities such as oak woodland. Occupancy of elderberry by the Valley elderberry longhorn beetle is generally low but tends to be highest in riparian communities.

Determination Reason: There are previously recorded occurrences of this species within the database search area, primarily along the Sacramento and American Rivers. There are no known occurrences of this species within the Natomas Basin (City of Sacramento et al. 2003). Elderberry plants have not been observed within the Plan Area, though direct on the ground surveys have only been performed in the smaller Surveyed Area. There is no indication the Plan Area has specific habitat components required to support this species. This species has been determined to have low potential for occurrence within the Plan Area.

Giant Gartersnake (*Thamnophis gigas*)

Special Status: Federal Threatened

NBHCP Covered: Yes

Natural History: Historically ranged in the Sacramento and San Joaquin valleys. Its current range is much reduced, and it is apparently extirpated south of Fresno County except for western Kern County. Primarily associated with marshes and sloughs, less with slow-moving creeks, and absent from larger rivers. Active from May until October.

Determination Reason: While there are recent CNDDB records along the canal at the northern edge of the Plan Area, and DNA for the species was detected over two years in three locations outside of the Plan Area, and one location in the central portion of the Plan Area, habitat in the Plan Area has a low suitability for Giant Gartersnake. Further, intensive sampling efforts (40,703 total trap days), accompanied by a high catch of Valley Gartersnake (*Thamnophis sirtalis fitchi*), but zero captures of Giant Gartersnake, indicate there is low potential for occurrence of Giant Gartersnake population within the Plan Area, though the species may infrequently use interior canals for dispersal.

5.6.2.5 Taxa Presumed Absent/No Potential for Occurrence

Twelve (12) special status wildlife species were assessed as **Presumed Absent/No Potential** within the Plan Area.

Conservancy Fairy Shrimp (*Branchinecta conservatio*)

Special Status: Federal Endangered

NBHCP Covered: No

Natural History[6]: The Conservancy Fairy Shrimp is known from a few isolated populations distributed over a large portion of California's Central Valley and in southern California. In the Northeastern Sacramento Valley Vernal Pool Region, four populations are clustered around the Vina Plains area in Tehama and Butte Counties. Populations are also found in the Solano-Colusa Vernal Pool Region on

[6] https://www.fws.gov/sacramento/es/Recovery-Planning/Vernal-Pool/Documents/conserv_fairy_shrimp.pdf

the Greater Jepson Prairie area in Solano County, at the Sacramento National Wildlife Refuge in Glenn County, and in the Tule Ranch unit of the CDFW Yolo Basin Wildlife Area, in Yolo County. The life history of this species is uniquely adapted to the ephemeral conditions of its vernal pool habitat. This species has been found to reach maturity in an average of 46 days, and live for as long as 154 days. However, aquatic invertebrate growth rates are largely controlled by water temperature and can vary greatly. This species produces one large cohort of offspring each wet season. Occurs in vernal pools found on several different landforms, geologic formations and soil types. At the Vina Plains in Tehama County, the species occurs in pools formed on Peters Clay soil on the volcanic Tuscan Formation. At Jepson Prairie, the species is found in large playa-like depressions on deep alluvial soils of Pescadero Clay Loam on Basin Rim landforms.

Determination Reason: There is one previously recorded occurrence of this species within the database search area. Based on extensive surveys of the Surveyed Area, remote observations of the remainder of the Plan Area, and aerial-based analysis of the remainder of the Plan Area, the vernal pool habitat required to support this species is not present. This species has been determined to have no potential for occurrence within the Plan Area.

Vernal Pool Tadpole Shrimp (*Lepidurus packardi*)

Special Status: Federal Endangered

NBHCP Covered: Yes

Natural History[7]: The Vernal Pool Tadpole Shrimp is currently distributed across the Central Valley of California and in the San Francisco Bay area. The species' distribution has been greatly reduced from historical times as a result of widespread destruction and degradation of its vernal pool habitat. Vernal pool tadpole shrimp are uncommon even where vernal pool habitats occur. The largest concentration of Vernal Pool Tadpole Shrimp occurrences are found in the Southeastern Sacramento Vernal Pool Region, where the species occurs on a number of public and private lands in Sacramento County. Vernal pool tadpole shrimp are also known from a few locations in Yuba and Placer Counties, including Beale Air Force Base. In the Solano-Colusa Vernal Pool Region the vernal pool tadpole shrimp occurs in the vicinity of Jepson Prairie, Travis Air Force Base, and near Montezuma in Solano County and on the Sacramento National Wildlife Refuge in Glenn County. Although the Vernal Pool Tadpole Shrimp is adapted to survive in seasonally available habitat, the species has a relatively long life span compared to other vernal pool crustaceans. This species has been found to generally take between 3 and 4 weeks to mature.

Determination Reason: There are previously recorded occurrences of this species within the database search area. Based on extensive surveys of the Surveyed Area, remote observations of the remainder of the Plan Area, and aerial-based analysis of the remainder of the Plan Area, the vernal pool habitat required to support this species is not present. This species has been determined to have no potential for occurrence within the Plan Area.

[7] https://www.fws.gov/sacramento/es/Recovery-Planning/Vernal-Pool/Documents/vp_tadpole_shrimp.pdf

Midvalley Fairy Shrimp (*Branchinecta mesovallensis*)

Special Status: N/A

NBHCP Covered: Yes

Natural History[8]: The Midvalley Fairy Shrimp is endemic to a small portion of California's Central Valley Based on the few known occurrences, the species' distribution is apparently limited to the Southeastern Sacramento, Southern Sierra Foothill, San Joaquin, and Solano-Colusa Vernal Pool Regions. In the Southeastern Sacramento region, most occurrences are clustered around the City of Sacramento and Mather Air Force Base in Sacramento County. In the Southern Sierra Foothills and San Joaquin Vernal Pool Regions, the Midvalley Fairy Shrimp has been documented in the vicinity of the Virginia Smith Trust property in Merced County and from isolated occurrences in San Joaquin, Madera, and Fresno Counties. However, because this species was described only recently, it is likely additional occurrences will be found in the future.

Determination Reason: There are no previously recorded occurrences of this species within the database search area, however, an analysis of this species was included because of NBHCP coverage. Based on extensive surveys of the Surveyed Area, remote observations of the remainder of the Plan Area, and aerial-based analysis of the remainder of the Plan Area, the vernal pool habitat required to support this species is not present. This species has been determined to have no potential for occurrence within the Plan Area.

Chinook Salmon (*Oncorhynchus tshawytscha*)

Special Status: Central Valley spring-run evolutionarily significant unit (ESU) - Federal Threated, California Threatened
Sacramento River winter-run ESU - Federal Endangered, California Endangered

NBHCP Covered: No

Natural History[9]: Chinook salmon have evolved a broad array of life history patterns that allow them to take advantage of diverse riverine conditions throughout the year. Four principal life history variants are recognized and are named for the timing of their upstream migration: fall-run, late fall-run, winter-run, and spring-run. The Sacramento River supports all four runs of Chinook salmon. The larger tributaries to the Sacramento River (American, Yuba, and Feather rivers) and rivers in the San Joaquin Basin also provide habitat for one or more of these runs. Winter-run Chinook salmon are unique because they spawn during summer months when air temperatures usually approach their yearly maximum. As a result, winter-run Chinook salmon require stream reaches with cold water sources that will protect embryos and juveniles from the warm ambient conditions in summer. Adult winter-run Chinook salmon immigration and holding (upstream spawning migration) through the Delta and into the lower Sacramento River occurs from December through July, with a peak during the period extending from January through April. Spawning occurs between late-April and mid-August, with a peak in June and July. Adult Central Valley spring-run Chinook salmon leave the ocean to begin their upstream migration in late January and early February, and enter the Sacramento River between March and September, primarily in May and

[8] https://www.fws.gov/sacramento/es/Recovery-Planning/Vernal-Pool/Documents/midvalley_fairy_shrimp.pdf
[9] https://media.fisheries.noaa.gov/dam-migration/central_valley_salmonids_recovery_plan-accessible.pdf

June. Spawning normally occurs between mid-August and early October, peaking in September.

Determination Reason: There are previously recorded occurrences of this species within the database search area, primarily along the Sacramento River. Critical habitat is also designated along the Sacramento River. The Plan Area, however, lacks the specific habitat components required to support this species. This species has been determined to have no potential for occurrence within the Plan Area.

Steelhead (*Oncorhynchus mykiss irideus*)

Special Status: Central Valley distinct population segment (DPS) - Federal Threatened

NBHCP Covered: No

Natural History[10]: Steelhead may exhibit anadromy or freshwater residency. Resident forms are usually referred to as Rainbow Trout, while anadromous life forms are termed ‘‘Steelhead.’’ Resident Rainbow Trout can produce anadromous smolts and anadromous steelhead can produce resident Rainbow Trout in the Central Valley. Steelhead typically migrate to marine waters after spending two years in fresh water. They reside in marine waters for typically two or three years prior to returning to their natal stream to spawn as four- or five-year-olds. Unlike Pacific salmon, steelhead are capable of spawning more than once before they die. However, it is rare for steelhead to spawn more than twice before dying, and most that do so are females. Central Valley Steelhead enter fresh water from August through April. They hold until flows are high enough in tributaries to enter for spawning. Steelhead adults typically spawn from December through April, with peaks from January through March in small streams and tributaries where cool, well oxygenated water is available year-round.

Determination Reason: There are previously recorded occurrences of this species within the database search area, primarily along the Sacramento River, American River, and Dry Creek. Critical habitat is also designated along the Sacramento River. The Plan Area, however, lacks the specific habitat components required to support this species. This species has been determined to have no potential for occurrence within the Plan Area.

Longfin Smelt (*Spirinchus thaleichthys*)

Special Status: California Threatened, Federal Candidate

NBHCP Covered: No

Natural History[11]: Historically, populations of Longfin Smelt in California have been present in: (1) Sacramento-San Joaquin estuary, (2) Humboldt Bay, (3) Eel River estuary, and, (4) Klamath River estuary. In the Sacramento-San Joaquin estuary, Longfin Smelt are rarely found upstream of Rio Vista or Medford Island in the Delta. Adults occur seasonally as far downstream as South Bay but they are concentrated in Suisun, San Pablo, and North San Francisco Bays. They are rarely collected outside the estuary. Adult and juvenile Longfin Smelt occupy mostly the middle or bottom of the water column in the salt or brackish water portions of the estuary, although larval Longfin Smelt are concentrated in near-surface, brackish

[10] https://media.fisheries.noaa.gov/dam-migration/central_valley_salmonids_recovery_plan-accessible.pdf
[11] https://ecos.fws.gov/docs/recovery_plan/961126.pdf

waters. Spawning takes place in freshwater, over sandy-gravel substrates, rocks, and aquatic plants.

Determination Reason: There are previously recorded occurrences of this species within the database search area, primarily along the Sacramento River. The Plan Area, however, lacks the specific habitat components required to support this species. This species has been determined to have no potential for occurrence within the Plan Area.

Western Spadefoot (*Spea hammondii*)

Special Status: California Species of Special Concern

NBHCP Covered: Yes

Natural History: The Western Spadefoot ranges throughout the Central Valley and adjacent foothills, and is usually quite common where it occurs. In the Coast Ranges it is found from Point Conception, Santa Barbara County, south to the Mexican border. Elevations of occurrence extend from near sea level to 1363 m (4460 ft) in the southern Sierra foothills. This species occurs primarily in grasslands, but occasional populations also occur in valley-foothill hardwood woodlands. Some populations persist for a few years in orchard or vineyard habitats.

Determination Reason: Western Spadefoot is not known to inhabit the Natomas Basin but has been found in Placer County and central Sacramento County. There are no CNDDB records for Western Spadefoot within the RSA.

California Tiger Salamander (*Ambystoma californiense*)

Special Status: Federal Threatened, California Threatened

NBHCP Covered: Yes

Natural History: Most commonly found in Annual Grassland habitat, but also occurs in the grassy understory of Valley-Foothill Hardwood habitats, and uncommonly along stream courses in Valley-Foothill Riparian habitats. The species occurs from near Petaluma, Sonoma County, east through the Central Valley to Yolo and Sacramento counties and south to Tulare County; and from the vicinity of San Francisco Bay south to Santa Barbara County. They occur at elevations from 3 meters up to 1,054 meters (3,200 feet).

Determination Reason: California Tiger Salamander has been not documented in the Natomas Basin, despite the presence of a narrow band of vernal pool habitats along the eastern edge of the basin. There are no CNDDB records for California Tiger Salamander within the RSA.

Western Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*)

Special Status: Federal Threatened, California Endangered

NBHCP Covered: No

Natural History: An uncommon to rare summer resident of valley foothill and desert riparian habitats in scattered locations in California. Along the Colorado River, breeding population on California side was estimated at 180 pairs in 1977. Additional pairs reside in the Sacramento and Owens valleys; along the South Fork of the Kern River, Kern County; along the Santa Ana River, Riverside County; and along the Amargosa River, Inyo and San Bernardino counties. Also may nest along San Luis Rey River, San Diego County. Formerly much more common and widespread throughout lowland California, but numbers drastically reduced by habitat loss. Current population estimations show about 50 pairs existing in California.

Inhabits extensive deciduous riparian thickets or forests with dense, low-level or understory foliage, and which abut on slow-moving watercourses, backwaters, or seeps. Willow almost always a dominant component of the vegetation. In Sacramento Valley, also utilizes adjacent orchards, especially of walnut. Along Colorado River, may inhabit mesquite thickets where willow is absent. Nests typically in sites with at least some willow, dense low-level or understory foliage, high humidity, and wooded foraging spaces in excess of 93 m (300 ft) in width and 10 hectares (25 acres) in area.

Determination Reason: There are previously recorded occurrences of this species within the database search area, primarily along the Sacramento River to the north of the Natomas Basin. The Plan Area lacks the habitat components required by this species for nesting or foraging. This species has been determined to have no potential for occurrence within the Plan Area.

California Black Rail (*Laterallus jamaicensis coturniculus*)

Special Status: California Threatened

NBHCP Covered: No

Natural History: Rarely seen, scarce, yearlong resident of saline, brackish, and fresh emergent wetlands in the San Francisco Bay area, Sacramento-San Joaquin Delta, coastal southern California at Morro Bay and a few other locations, the Salton Sea, and lower Colorado River area. Formerly a local resident in coastal wetlands from Santa Barbara County to San Diego County; still winters there rarely. Significant loss of saltwater and freshwater wetland habitat in recent decades probably has reduced population. The majority of breeders in the San Francisco Bay area located in San Pablo Bay. Loss of higher wetland around San Francisco Bay apparently has eliminated breeding in the south bay area.

Determination Reason: The Plan Area is outside of the range of species and lacks the habitat components required by this species for nesting or foraging. This species has been determined to have no potential for occurrence within the Plan Area.

Western Snowy Plover (*Charadrius nivosus nivosus*)

Special Status: Federal Threatened

NBHCP Covered: No

Natural History: In fall and winter, common on sandy marine and estuarine shores. Nests locally in these same habitats from April through August, but the major nesting habitat now appears to be on salt pond levees. Inland nesting areas occur at the Salton Sea, Mono Lake, and at isolated sites on the shores of alkali lakes in northeastern California, in the Central Valley, and southeastern deserts.

Determination Reason: The Plan Area is outside of the range of species and lacks the habitat components required by this species for nesting or foraging. This species has been determined to have no potential for occurrence within the Plan Area.

Least Bell's Vireo (*Vireo bellii pusillus*)

Special Status: Federal Endangered

NBHCP Covered: No

Natural History: Formerly a common and widespread summer resident below about 600 m (2,000 ft) in western Sierra Nevada, throughout Sacramento and San Joaquin valleys, and in the coastal valleys and foothills from Santa Clara County south. Also was

common in coastal southern California from Santa Barbara County south, below about 1,200 m (4,000 ft) east of the Sierra Nevada, in Owens and Benton valleys, along Mojave River and other streams at western edge of southeastern deserts. Has declined drastically or vanished entirely throughout California range in recent decades, apparently from cowbird parasitism and habitat destruction and degradation. Now a rare, local, summer resident below about 600 m (2,000 ft) in willows and other low, dense valley foothill riparian habitat and lower portions of canyons mostly in San Benito and Monterey counties; in coastal southern California from Santa Barbara County south; and along the western edge of the deserts in desert riparian habitat.

Determination Reason: The Plan Area is outside of the range of species and lacks the habitat components required by this species for nesting or foraging. This species has been determined to have no potential for occurrence within the Plan Area.

5.6.3 NBHCP Key Species

This section of the Assessment discusses two key umbrella species of the NBHCP in depth: Swainson's Hawk and Giant Gartersnake.

5.6.3.1 Swainson's Hawk

Natural History

In California, Swainson's Hawk is an uncommon breeding resident and migrant in the Central Valley, Klamath Basin, Northeastern Plateau, Lassen County, and Mojave Desert, with limited breeding reported from Lanfair Valley, Owens Valley, Fish Lake Valley, and Antelope Valley (Bloom 1980, Garrett and Dunn 1981). The species breeds in generally open habitats with isolated stands or narrow corridors of trees, or with widely scattered trees, such as in juniper-sage flats. Swainson's Hawks also breed in riparian areas and in the Central Valley in oak savannah, foraging in adjacent grasslands, suitable grain or alfalfa fields, or livestock pastures. Bloom (1980) estimated 110 nesting pairs, and a total population of 375 pairs, in California. In 2005, a state-wide breeding survey was conducted in the species' known range and estimated 1,893 breeding pairs. In 2006, the Central Valley breeding population was estimated to be 2,251 (CDFW 2016). In southern California, Swainson's Hawks are now mostly limited to spring and fall transients. This species was formerly abundant in California with a wider breeding range (Grinnell and Miller 1944, Bloom 1980, Garrett and Dunn 1981), but declines were noted as early as 1933 (Willett 1933). It is believed that the decline resulted in part from loss of nesting habitat.

Figure 1. Swainson's Hawk Range in California.

Location of the Plan Area is represented by the red dot. Source: CWHR.

Migrants move south through the southern and central interior of California from mid-August through late October and move north from late February through mid-May (eBird online database). The majority of birds migrate to the Argentine pampas in south-central South America, passing in large flocks over Central America (Ferguson-Lees and

Christie 2001). Although formerly migrating in large numbers through much of California, they are now seen regularly in migration only in the extreme northeastern corner of the state and in a few places along the western edge of the deserts. They also congregate in spring migration at staging areas in Anza Borrego State Park and Morongo Valley, from which they move north along the eastern and northern flanks of the coast ranges, across the Tehachapi Mountains and Kern Valley, and into the Central Valley where the largest numbers of Swainson's Hawks still breed in California. In fall migration, Swainson's Hawks are more widely dispersed, with occasional small concentrations observed in the eastern Colorado Desert and Colorado River (Bloom 1980, Bechard et al. 2010, Small 1994). Other than small, isolated wintering populations in California's Sacramento-San Joaquin River Delta and in southern Florida, the majority of birds winter in South America (Bechard et al. 2010). Breeding occurs from late March to late August, with peak activity in late May through July.

Swainson's Hawk is listed as threatened under the California Endangered Species Act. It is also listed as "Sensitive" by the U.S. Forest Service and U.S. Bureau of Land Management, and as a "Bird of Conservation Concern" by the U.S. Fish and Wildlife Service (USFS 2005, BLM 2014, USFWS 2008).

Status in the Plan Area

Swainson's Hawk is present in the Plan Area during the breeding season. Bargas qualified avian biologists conducted site surveys guided *by Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (Swainson's Hawk Technical Advisory Committee 2000). The breeding territories of three Swainson's Hawk pairs were documented within the Plan Area in 2019 (Bargas 2019). One of the three breeding pairs was observed nesting in 2020. Nesting by one pair of Swainson's Hawks was confirmed inside the study area during the 2021 surveys, and there was activity indicative of nesting pairs observed in the previously identified territories for Pair B and Pair C (Bargas 2021). The Sacramento River corridor is also an important flyway for migrating Swainson's Hawks in the spring, with many streaming over the Project Area and some stopping to forage.

Status in the Natomas Basin and Regional Study Area

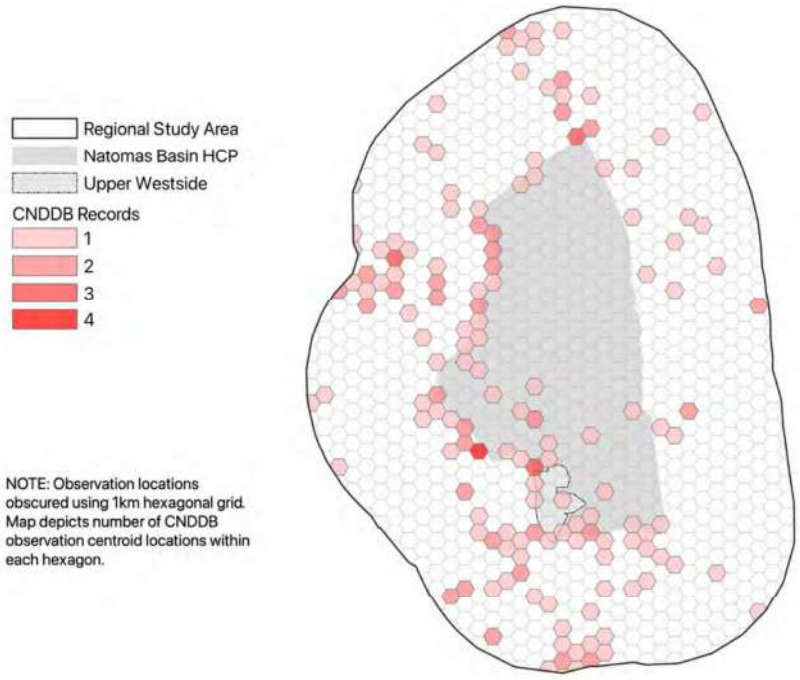
While Swainson's Hawks can be found throughout the RSA, they are most frequently recorded on the western end, especially along the Sacramento River (which forms the western border of the NBHCP), which is also where most nesting records are located (see **Figure 2**). It is important to note, however, that the absence of CNDDB records does not equate to absence of occurrence, as occurrence records require a documenting surveyor to cover an area and later to submit the observation.

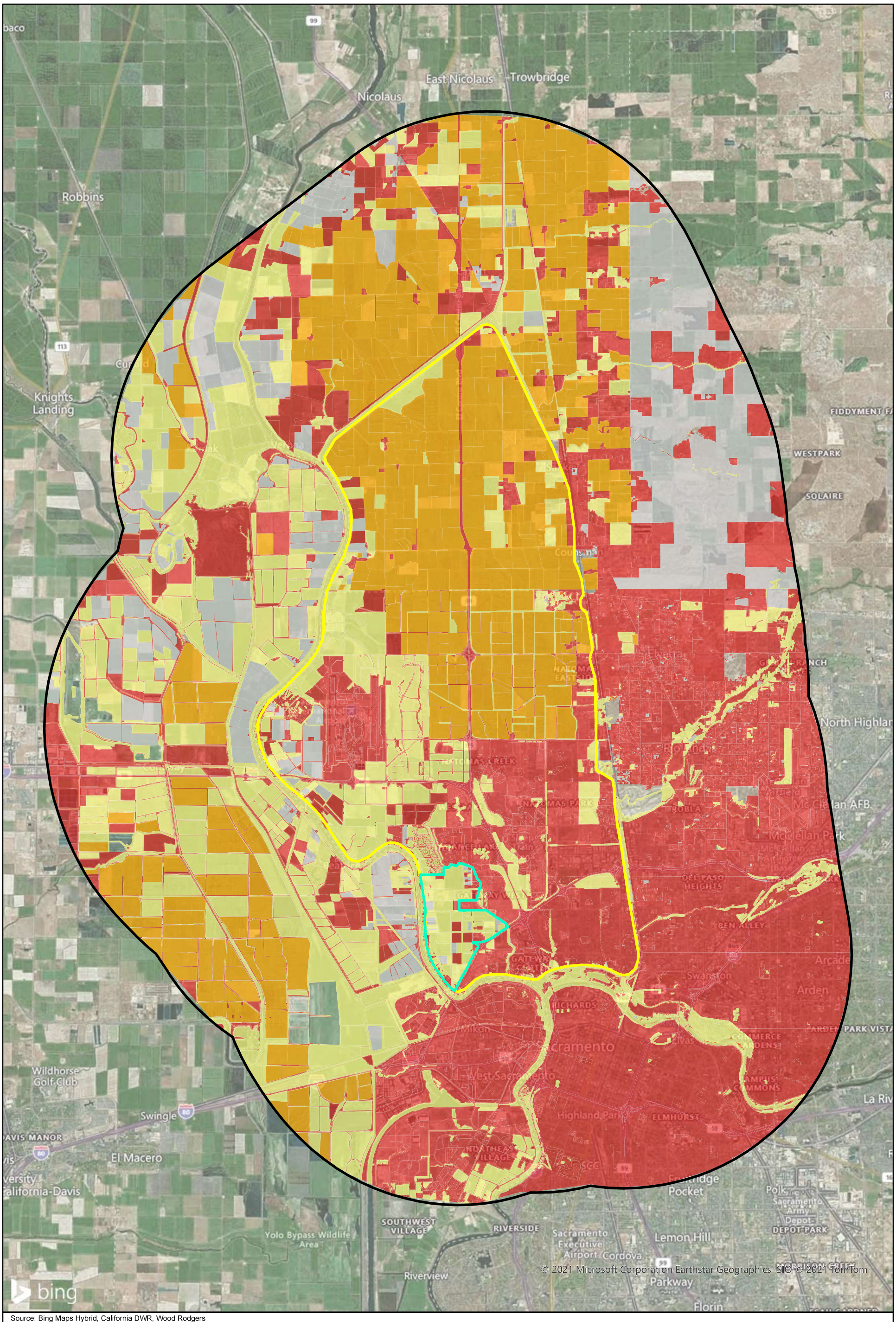
Habitats used by Swainson's Hawk in the RSA (**Table 5**) include Annual Grassland, Barren, Eucalyptus, Urban, Valley Foothill Riparian, and Wet Meadow. Habitat suitability in the RSA for Swainson's Hawk based on CWHR modeling is depicted in **Exhibit 8. Habitat Suitability – Swainson's Hawk.** As Swainson's Hawks use the Urban CWHR habitat type which can include a lot of different cover types including impervious surfaces, the regional-scale mapping of suitability within larger urban areas (such as the limits of the City of Sacramento) presented in Exhibit 8 should be viewed with caution. Swainson's Hawk, however, is present in naturally vegetated areas within the urban zone of the City of Sacramento.

Table 5. Habitat Suitability Matrix for Swainson's Hawk in the RSA

Habitat	CWHR Habitat Metrics		Suitability (0-1)			
	Size	Canopy	Reproduction	Cover	Feeding	Mean
Annual Grassland	1	M	0.66	0.66	1	0.77
Barren	1	-	0	0.66	1	0.55
Eucalyptus	4	M	0.33	0.33	0.33	0.33
Eucalyptus	5	M	0.33	0.33	0.33	0.33
Urban	1	-	0.66	0.66	1	0.77
Valley Foothill Riparian	2	M	0	0	0.33	0.11
Valley Foothill Riparian	5	M	1	1	0.33	0.78
Valley Foothill Riparian	3	M	0.33	0.33	0.33	0.33
Valley Foothill Riparian	4	M	0.66	0.33	0.33	0.44
Wet Meadow	1	M	0	0.33	0.66	0.33

Figure 2. CNDDB Occurrences for Swainson's Hawk





0 1 2 Miles

1 inch = 1500 feet

BARGAS Environmental Consulting

Regional Study Area

Upper Westside Specific Plan Area

Natomas Basin

Habitat Suitability

No Suitability

Low

Medium

High

Exhibit 8
Habitat Suitability – Swainson's Hawk

Upper Westside

Map Created: 1/14/2022, Map Revised: N/A, Bargas Project Number: 1024-18

5.6.3.2 Giant Gartersnake

Natural History[12]

- The Giant Gartersnake historically ranged in the Sacramento and San Joaquin valleys. Its current range is much reduced, and it is apparently extirpated south of Fresno County except for western Kern County. In this region, Giant Gartersnake typically occurs in agricultural rice fields and wetlands as well as other waterways such as drainage canals and adjacent uplands in many portions of the Natomas Basin[13].

This species is active from May until October.

- **Feeding:** Giant Gartersnakes forage primarily in and along waterways taking fish and amphibians and amphibian larvae. Most current food may be introduced species such as carp, mosquitofish, and bullfrogs, because the native prey such as blackfish, thick-tailed chub, and red-legged frog are no longer available.
- **Cover:** The preferred nocturnal retreats of this active diurnal snake are thought to be holes, especially mammal burrows, crevices, and surface objects. During the day the Giant Gartersnake often basks on emergent vegetation such as cattails and tules. In hotter weather, mammal burrows and piles of vegetation may be used as daytime refuges. When disturbed it usually retreats rapidly to water.
- **Reproduction:** Courtship and mating normally occur soon after spring emergence. Young are born alive between mid-July and early September, usually in secluded sites such as under the loose bark of rotting logs or in dense vegetation at the margins of a waterway. Mean litter size is 23.
- **Water:** No information on water requirements. This species is normally found in the immediate vicinity of permanent or semi-permanent sources of water.
- **Activity Patterns:** An active diurnal snake. During the warm days of summer most activity occurs during the morning and afternoon. During the cooler weather of spring and fall, snakes restrict their activity to the warm afternoons.

Figure 3. Giant Gartersnake Range in California.

Location of the Plan Area is represented by the red dot. Source: CWHR.

- **Seasonal Movements/Migration:** Migration is not expected.
- **Home Range:** The nature of the home range of gartersnakes in California is not well known. There is likely considerable overlap in the home ranges of neighboring individuals.

[12] Natural history sourced directly from the California Department of Fish and Wildlife's species account in the *California Wildlife Habitat Relationships* system.
[13] https://www.fws.gov/sacramento/es_species/Accounts/Amphibians-Reptiles/giant_garter_snake/

- **Territory:** Not thought to be territorial. Although this species is not well studied, other gartersnakes have not been observed exhibiting behaviors suggesting territoriality.
- **Niche:** Giant Gartersnakes are taken as prey by mammals, birds, and other snakes despite the release of a repulsive musk from the postanal glands of disturbed individuals. Their competitive relationships with other snakes (especially other gartersnakes) are not well understood.
- **Comments:** The Giant Gartersnake now is very scarce throughout its range in the Central Valley. Perhaps California's most aquatic gartersnake, populations have been eliminated or decimated by the elimination of natural sloughs and marshy areas. Heavy use of pesticides is suspected as a contributing factor in the decline of this once-abundant gartersnake of the Central Valley. Protection of waterfowl habitat may allow it to survive in a small portion of its original range.

Status in the Plan Area

While there are recent CNDDB records along the canal at the northern edge of the Plan Area, and DNA for the species was detected over two years in three locations outside of the Plan Area and one location in the central portion of the Plan Area, habitat in the Plan Area has a low suitability for Giant Gartersnake. Further, intensive sampling efforts (40,703 total trap days), accompanied by a high catch of Valley Gartersnake (*Thamnophis sirtalis fitchi*), but zero captures of Giant Gartersnake, indicate there there is low potential for occurrence of Giant Gartersnake population within the Plan Area, though the species may use interior canals infrequently for dispersal.

The CNDDB record along the northern limits of the Plan Area is associated with a large canal that is hydrologically connected to Fisherman's Lake, where there is a known population of the species. This canal is significantly larger than the interior canals in the Plan Area with extensive areas of wetland vegetation. It also has steep sides that may impede use of adjacent uplands by this species.

Status in the Natomas Basin and Regional Study Area

CNDDB records (**Figure 4**) indicate historical occurrence for Giant Gartersnake throughout the northern three quarters of the NBHCP. In the RSA outside of the NBHCP, records are limited to the northern and southwestern ends.

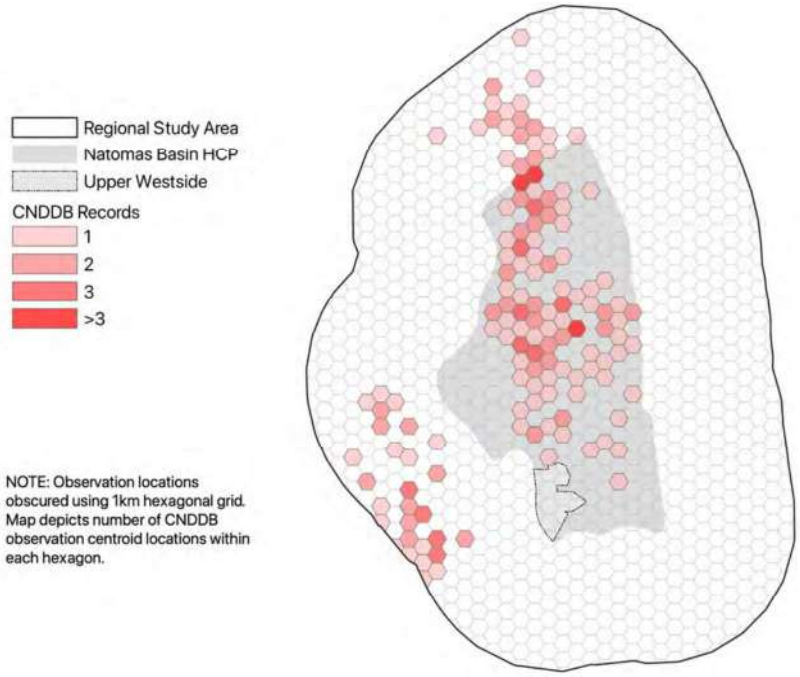
Habitats used by Giant Gartersnake in the RSA (**Table 6**) include Annual Grassland, Freshwater Marsh, Lacustrine, Valley Foothill Riparian, and Wet Meadow. Habitat suitability in the RSA for Giant Gartersnake based on CWHR modeling is depicted in **Exhibit 9. Habitat Suitability – Giant Gartersnake.**

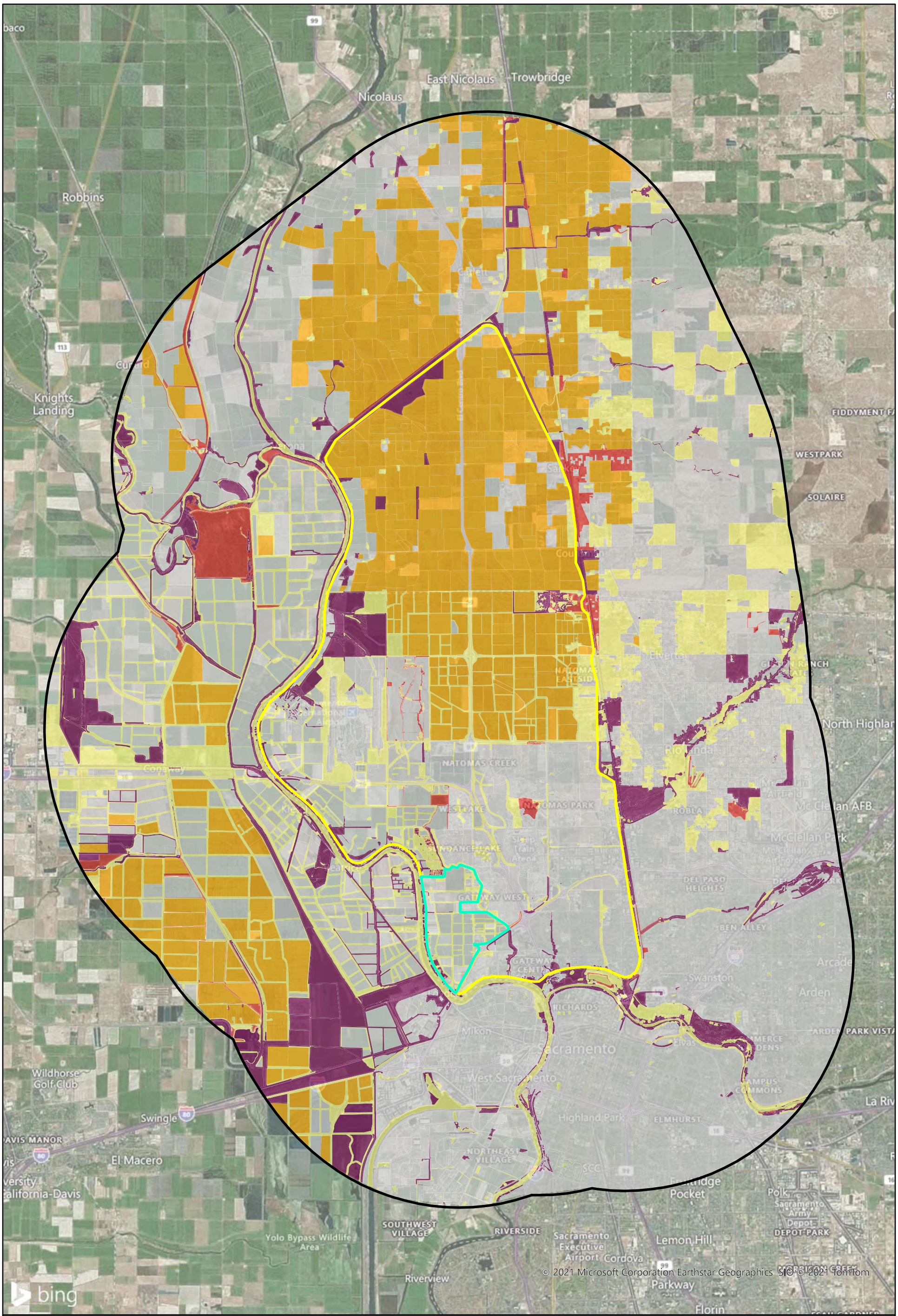
Table 6. Habitat Suitability Matrix for Giant Gartersnake

Habitat	CWHR Habitat Metrics		Suitability (0-1)			
	Size	Canopy	Reproduction	Cover	Feeding	Mean
Annual Grassland	1	M	0.33	0.33	0.33	0.33
Freshwater Marsh	1	M	1	1	1	1
Lacustrine	1	-	0	0.33	0.33	0.22
Valley Foothill Riparian	2	M	1	1	1	1
Valley Foothill Riparian	3	M	1	1	1	1
Valley Foothill Riparian	4	M	1	1	1	1
Valley Foothill Riparian	5	M	1	1	1	1

Wet Meadow	1	M	1	1	1	1

Figure 4. CNDDB Occurrences for Giant Gartersnake





Source: Bing Maps Hybrid, California DWR, Wood Rodgers

0 1 2 Miles

1 inch = 2 miles

BARGAS Environmental Consulting

Regional Study Area

Upper Westside Specific Plan Area

Natomas Basin

Habitat Suitability

No Suitability

Low

Medium

High

Exhibit 9
Habitat Suitability – Giant Gartersnake

Upper Westside

Map Created: 1/14/2022, Map Revised: N/A, Bargas Project Number: 1024-18

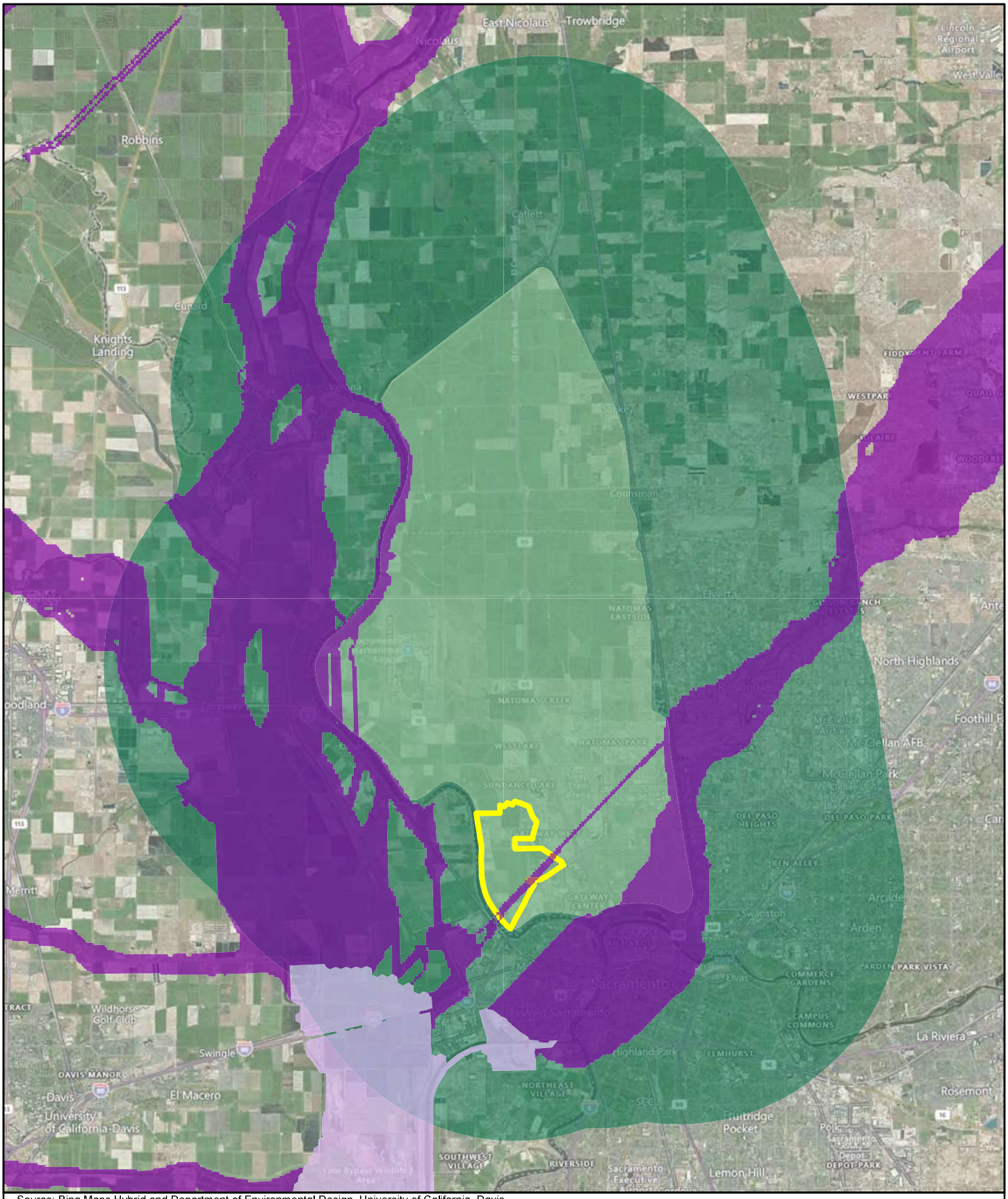
5.7 Wildlife Movement and Habitat Corridors

Effects on wildlife movement are an important consideration when assessing any anthropogenic effect on biological resources. At a small enough scale, any project or activity can potentially affect the movement of wildlife if any wildlife are present. In general, however, the term "wildlife movement corridor" denotes an area of habitat that is important for the movement of wildlife between larger habitat areas. Wildlife movement corridors are important for maintaining population levels and genetic diversity.

Regionally, wildlife movement was modeled by ecologists at UC Davis in 2010[14]. The dataset was produced to analyze the impact of scale effects on conservation planning by analyzing conservation networks at local and regional scales within the central valley of California to analyze the impact of scale effects on conservation planning using industry-standard MARXAN and least corridor analysis technologies. The result, shown in **Exhibit 10. Central Valley Core Reserves and Corridors**, depicts a potential – albeit narrow – corridor through the southeast portion of the Plan Area. This appears, intuitively, to have been a direct connection between natural areas associated with the Dry Creek watershed and the Sacramento River. Since the time the analysis was completed, much of the area within that modeled corridor has been extensively developed and the modeled corridor is no longer valid. In essence, the Plan Area does not act as a wildlife corridor as classically considered.

At a smaller scale, the Plan Area has potential – via agriculture irrigation ditches – to support movement of wildlife species that use small waterways. Specifically, Giant Gartersnake DNA was identified in and adjacent to Reclamation District 1000's West Drainage Canal and within the drainage ditch adjacent to Bryte Bend Road, both sites outside of the Plan Area. The eDNA surveys in the BSA outside of the Plan Area returned three positive detections in 2019 (Hansen 2019) and one positive detection in 2020 (Hansen 2020). A comprehensive 2-year Giant Gartersnake trapping study found no species presence in the Plan Area, however their DNA was found in the canal north of the Plan Area and in a central portion of the Plan Area, and hence the snakes could potentially be using the agricultural irrigation ditches as dispersal corridors.

[14] CDFW BIOS dataset ds2693



Source: Bing Maps Hybrid and Department of Environmental Design, University of California, Davis

0 1.5 3 Miles

1 inch = 3 miles

BARGAS Environmental Consulting

- Upper Westside Specific Plan Area
- Natomas Basin
- Regional Study Area
- Core Reserve
- Corridor

Exhibit 10
Central Valley Core Reserves and Corridors

Upper Westside Effects Analysis

Map Created: 8/25/2021, Map Revised: 1/14/2022, Bargas Project Number: 1024-18

6 CEQA Analysis: Effects and Minimization Measures

6.1 Types of Effects Analyzed

CEQA describes three types of potential project effects that are pertinent to biological resources and are analyzed in this Assessment:

- **Direct Effects:** Section 15064(d)(1) of the CEQA Guidelines describes a direct effect as "a physical change in the environment which is caused by and immediately related to the project." In the context of the proposed project described in this report, direct effects include adverse effects that would occur to plants, wildlife, and vegetation communities within or immediately adjacent to the proposed Project footprint and other work areas.
- **Indirect Effects:** Section 15064(d)(2) of the CEQA Guidelines describes an indirect effect as any "physical change in the environment, which is not immediately related to the project, but which is caused indirectly by the project. If a direct physical change in the environment, in turn, causes another change in the environment, then the other change is an indirect physical change in the environment." Indirect effects, also known as secondary effects, are reasonably foreseeable and caused by a project but occur at a different time or place. Examples of indirect effects pertinent to many development projects could include a change in drainage patterns that ultimately affect vegetation communities not otherwise affected by the project or a reduction in native wildlife species resulting from a decrease in habitat.
- **Cumulative Effects:** Section 15355 of the CEQA Guidelines describe a cumulative effect as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." The CEQA Guidelines further state the following regarding cumulative effects:
    - The individual effects may be changes resulting from a single project or a number of separate projects.
    - The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.

  Section 15064 (h)(1) of CEQA Guidelines states that "the lead agency shall consider whether the cumulative impact is significant and whether the effects of the project are cumulatively considerable." 'Cumulatively considerable' means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects and the effects of probable future projects". Section 15064 (h)(2) states that "a lead agency may determine…that a project's contribution to a significant cumulative impact will be rendered less than cumulatively considerable and thus is not significant."

6.2 Thresholds of Significance

Appendix G of the CEQA Guidelines (as amended through January 2019) is frequently cited by public agencies to determine whether a project may have a significant impact on biological resources. Under Appendix G, a project may have a significant impact on biological resources if it would:

1. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations by the CDFW or USFWS.

2. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS.
3. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
4. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
5. Conflict with any local policies or ordinances protecting biological resources, such as tree preservation policy or ordinance.
6. Conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or state habitat conservation plan.

6.3 Key Metrics for Assessing Project Effects

Prior to assessing the significance of Project effects on biological resources, it is important to understand the factors to be considered in the analysis. Primary among these are direct impacts to vegetation communities/habitats due to grading, conservation measures being implemented by the Applicant to offset Project effects, and the regional context of the Project. These factors are discussed below.

6.3.1 Grading Impacts and Avoidance

Current plans for the Project proposing grading 1,486.7 acres of existing vegetation communities/land uses in the Plan Area. This proposes direct impacts to 72% of the Plan Area, with the remaining 28% to remain in its current state. These impacts are summarized in **Table 7**. As proposed, Project-related grading would impact the following habitat types:

- **Irrigated Row and Field Crops** comprise 892.1 acres of the Plan Area. The Project proposes direct impacts to 658.2 acres, or 73.8% of this habitat in the Plan Area. The Project would preserve 233.9 acres, or 26.2% of this habitat in the Plan Area.
- **Irrigated Hayfield** comprises 511.1 acres of the Plan Area. The Project proposes direct impacts to 402.6 acres, or 78.8% of this habitat in the Plan Area. The Project would preserve 108.5 acres, or 21.2% of this habitat in the Plan Area.
- **Annual Grassland** comprises 232.8 acres of the Plan Area. The Project proposes direct impacts to 168.6 acres, or 72.4% of this habitat in the Plan Area. The Project would preserve 64.2 acres, or 27.6% of this habitat in the Plan Area.
- **Pasture** comprises 193.3 acres of the Plan Area. The Project proposes direct impacts to 169.5 acres, or 87.7% of this habitat in the Plan Area. The Project would preserve 23.8 acres, or 12.3% of this habitat in the Plan Area.
- **Urban** comprises 143.5 acres of the Plan Area. The Project proposes direct impacts to 43.8 acres, or 30.5% of this habitat in the Plan Area. The Project would preserve 99.7 acres, or 69.5% of this habitat in the Plan Area.
- **Valley Foothill Riparian** comprises 50.0 acres of the Plan Area. The Project proposes direct impacts to 7.0 acres, or 14.1% of this habitat in the Plan Area. The Project would preserve 43.0 acres, or 85.9% of this habitat in the Plan Area.

- **Riverine** comprises 20.1 acres of the Plan Area. The Project proposes direct impacts to 18.2 acres, or 90.7% of this habitat in the Plan Area. The Project would preserve 1.9 acres, or 9.3% of this habitat in the Plan Area.
- **Vineyard** comprises 17.6 acres of the Plan Area. The Project proposes direct impacts to 17.6 acres, or 100% of this habitat in the Plan Area. The Project would preserve 0.0 acres, or 0% of this habitat in the Plan Area.
- **Deciduous Orchard** comprises 4.7 acres of the Plan Area. The Project proposes direct impacts to 1.1 acres, or 24.5% of this habitat in the Plan Area. The Project would preserve 3.6 acres, or 75.5% of this habitat in the Plan Area.

Table 7. Vegetation Community Impacts and Avoidance

Mapped Type	Acres Existing	Acres Impacted	Percent Impacted	Acres Preserved	Percent Preserved
Irrigated Row and Field Crops	892.1	658.2	73.8%	233.9	26.2%
Irrigated Hayfield	511.1	402.6	78.8%	108.5	21.2%
Annual Grassland	232.8	168.6	72.4%	64.2	27.6%
Pasture	193.3	169.5	87.7%	23.8	12.3%
Urban	143.5	43.8	30.5%	99.7	69.5%
Valley Foothill Riparian	50.0	7.0	14.1%	43.0	85.9%
Riverine	20.1	18.2	90.7%	1.9	9.3%
Vineyard	17.6	17.6	100.0%	0.0	0%
Deciduous Orchard	4.7	1.1	24.5%	3.6	75.5%
TOTAL	**2064.9**	**1486.7**	**72.0%**	**578.2**	**28.0%**

6.3.2 Conservation Strategy

The Project proposes to offset all potentially significant biological effects in the following manner:

- On-site (within the Plan Area) preservation of habitats in areas not directly impacted by grading.
- The permanent preservation of habitats in one or more Off-Site Reserves.

A Conservation Strategy is being prepared to outline the resource conservation goals and objectives for the Upper Westside Specific Plan, describe conservation measures to avoid, minimize and/or reduce resource impacts during project implementation, and discuss establishment, implementation, maintenance and long-term management for any reserve properties identified to mitigate impacts. For biological resources, the Conservation Strategy is guided by the biological goals and objective to avoid and minimize the take of covered species, and will be developed in consultation with local, state, and federal regulatory agencies.

6.4 Regional Context

To understand the significance of various biological effects of the Project, it is important to understand the Project's regional biological context. This includes disturbance, habitats, species, and other biotic factors within a distance of the Project that are biologically meaningful. For this Assessment, we have frequently referred to the Regional Study Area (or RSA), which includes the Natomas Basin and a five-mile buffer. While the Natomas Basin itself is of the greatest importance herein, the Plan Area is located at the extreme southwestern edge of the basin. As such,

considering only the basin itself would ignore resources immediately across the Sacramento River. Additionally, considering the value of resources in the RSA provides an opportunity to pursue conservation activities beyond limits of the Natomas Basin.

6.5 Project Effects on Candidate, Sensitive, or Special Status Species

This section addresses the portion of the CEQA Guidelines requiring an assessment of whether the Project will *have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations by the CDFW or USFWS.*

6.5.1 Summary Statement of Effects

Section 5 of this Assessment reviewed the potential for occurrence of 54 special status plant and wildlife species:

- 21 special status species were determined to have no potential to occur. Effects on these species due to Project implementation would not be expected.
- 20 special status species were determined to have low potential to occur and are unlikely to be affected by Project implementation.
- 5 special status species were determined to have moderate potential to occur and could be affected by the Project if found.
- 4 special status species were determined to have high potential to occur and are likely to be affected by Project implementation.
- 4 special status species were determined to be present in the Plan Area and are likely to be affected by Project implementation.

Proposed Off-Site Reserves, as well as on-site measures, will result in a net benefit for all special status species discussed in this Assessment.

6.5.2 Detailed Discussion of Effects and Avoidance and Minimization Measures

The Project proposes Off-Site Reserves that will permanently preserve habitat for special status plant and wildlife species on lands of sufficient quality and quantity to offset proposed direct Project effects on biological resources in the Plan Area. The acreage, location and composition of the Off-Site Reserves will be determined during consultation with local, state, and federal regulatory agencies.

USFWS and CDFW may need to be consulted regarding the potential for the proposed project to result in the take of listed species and any avoidance measures or mitigation measures suggested by USFWS and CDFW should be implemented.

6.5.2.1 Special Status Species with No Potential to Occur in the Plan Area

As detailed in Section 5 above, the following 21 special status species were determined to have no potential to occur in the Plan Area: Ferris' Milkvetch, Peruvian Dodder, Boggs Lake Hedge Hyssop, Delta Tule Pea, Legenere, Colusa Grass, Slender Orcutt Grass, Sacramento Orcutt Grass, Suisun Marsh Aster, Conservancy Fairy Shrimp, Vernal Pool Tadpole Shrimp, Midvalley Fairy Shrimp, Chinook Salmon, Steelhead, Longfin Smelt, Western Spadefoot, California Tiger Salamander, Western Yellow-billed Cuckoo, California Black Rail, Western Snowy Plover, and Least Bell's Vireo. These species have no potential to be adversely affected by the Project and will not be discussed further.

6.5.2.2 Special Status Species with Low Potential to Occur in the Plan Area

Twenty (20) special status species were determined to have low potential to occur in the Plan Area:

- **Woolly Rose-Mallow**: the Plan Area contains marginal habitat for this species and there are few records in the region. This species' presence is unlikely. This species could potentially benefit from habitat preservation in proposed off-site reserves.
- **Mason's Lilaeopsis:** the Plan Area contains marginal habitat for this species and there are few records in the region. This species' presence is unlikely. This species could potentially benefit from habitat preservation in proposed off-site reserves.
- **Sanford's Arrowhead:** the Plan Area contains marginal habitat for this species and there are few records in the region. This species' presence is unlikely. This species could potentially benefit from habitat preservation in proposed off-site reserves.
- **Sanford's Arrowhead:** primary threats to the species are agriculture and drainage channelization, which are predominant land uses in the Plan Area. Further, some of the irrigation canals and ditches within the Plan Area are periodically maintained (i.e. accumulated sediment removed, vegetation along banks mowed/trimmed), with some not always inundated with water (dependent upon the agricultural irrigation needs), reducing their suitability as potential habitat. As such, potential for the occurrence of this species is low in remainder of the Plan Area. This species could potentially benefit from habitat preservation in proposed off-site reserves.
- **Heartscale:** While grassland habitat was mapped in the Plan Area (Section 5.4), this habitat represents a temporary state of fallow agricultural fields and does not occur on the correct soils (Section 5.2) for this species. Other habitats preferred by this species are not present in the Plan Area. As such, this species is unlikely to occur and has been determined to have low potential for occurrence within the Plan Area. This species could potentially benefit from habitat preservation in proposed off-site reserves.
- **Brittlescale:** While grassland habitat was mapped in the Plan Area (Section 5.4), this habitat represents a temporary state of fallow agricultural fields and does not occur on the correct soils (Section 5.2) for this species. Other habitats preferred by this species are not present in the Plan Area. As such, this species is unlikely to occur and has been determined to have low potential for occurrence within the Plan Area. This species could potentially benefit from habitat preservation in proposed off-site reserves.
- **Bristly Sedge:** While grassland habitat was mapped in the Plan Area (Section 5.4), this habitat represents a temporary state of fallow agricultural fields and does not occur on the correct soils (Section 5.2) for this species. Other habitats preferred by this species are not present in the Plan Area. As such, this species is unlikely to occur and has been determined to have low potential for occurrence within the Plan Area. This species could potentially benefit from habitat preservation in proposed off-site reserves.
- **Pappose Tarplant:** While grassland habitat was mapped in the Plan Area (Section 5.4), this habitat represents a temporary state of fallow agricultural fields and does not occur on the correct soils (Section 5.2) for this species. Other habitats preferred by this species are not present in the Plan Area. As such, this species is unlikely to occur and has been determined to have low potential for occurrence within the Plan Area. This species could potentially benefit from habitat preservation in proposed off-site reserves.
- **Palmate-bracted Bird's-Beak:** While grassland habitat was mapped in the Plan Area (Section 5.4), this habitat represents a temporary state of fallow agricultural fields and does not occur on the correct soils (Section 5.2) for this species. Other habitats preferred by this species are not present in the Plan Area. As

such, this species is unlikely to occur and has been determined to have low potential for occurrence within the Plan Area. This species could potentially benefit from habitat preservation in proposed off-site reserves.

- **Dwarf Downingia:** While grassland habitat was mapped in the Plan Area (Section 5.4), this habitat represents a temporary state of fallow agricultural fields and does not occur on the correct soils (Section 5.2) for this species. Other habitats preferred by this species are not present in the Plan Area. As such, this species is unlikely to occur and has been determined to have low potential for occurrence within the Plan Area. This species could potentially benefit from habitat preservation in proposed off-site reserves.
- **Jepson's Coyote Thistle:** While grassland habitat was mapped in the Plan Area (Section 5.4), this habitat represents a temporary state of fallow agricultural fields and does not occur on the correct soils (Section 5.2) for this species. Other habitats preferred by this species are not present in the Plan Area. As such, this species is unlikely to occur and has been determined to have low potential for occurrence within the Plan Area. This species could potentially benefit from habitat preservation in proposed off-site reserves.
- **San Joaquin Spearscale:** While grassland habitat was mapped in the Plan Area (Section 5.4), this habitat represents a temporary state of fallow agricultural fields and does not occur on the correct soils (Section 5.2) for this species. Other habitats preferred by this species are not present in the Plan Area. As such, this species is unlikely to occur and has been determined to have low potential for occurrence within the Plan Area. This species could potentially benefit from habitat preservation in proposed off-site reserves.
- **Heckard's Pepper Grass:** While grassland habitat was mapped in the Plan Area (Section 5.4), this habitat represents a temporary state of fallow agricultural fields and does not occur on the correct soils (Section 5.2) for this species. Other habitats preferred by this species are not present in the Plan Area. As such, this species is unlikely to occur and has been determined to have low potential for occurrence within the Plan Area. This species could potentially benefit from habitat preservation in proposed off-site reserves.
- **Baker's Navarretia:** While grassland habitat was mapped in the Plan Area (Section 5.4), this habitat represents a temporary state of fallow agricultural fields and does not occur on the correct soils (Section 5.2) for this species. Other habitats preferred by this species are not present in the Plan Area. As such, this species is unlikely to occur and has been determined to have low potential for occurrence within the Plan Area. This species could potentially benefit from habitat preservation in proposed off-site reserves.
- **Bearded Popcorn Flower:** While grassland habitat was mapped in the Plan Area (Section 5.4), this habitat represents a temporary state of fallow agricultural fields and does not occur on the correct soils (Section 5.2) for this species. Other habitats preferred by this species are not present in the Plan Area. As such, this species is unlikely to occur and has been determined to have low potential for occurrence within the Plan Area. This species could potentially benefit from habitat preservation in proposed off-site reserves.
- **California Alkaligrass:** While grassland habitat was mapped in the Plan Area (Section 5.4), this habitat represents a temporary state of fallow agricultural fields and does not occur on the correct soils (Section 5.2) for this species. Other habitats preferred by this species are not present in the Plan Area. As such, this species is unlikely to occur and has been determined to have low potential for occurrence within the Plan Area. This species could potentially benefit from habitat preservation in proposed off-site reserves.
- **Saline Clover:** While grassland habitat was mapped in the Plan Area (Section 5.4), this habitat represents a temporary state of fallow agricultural fields and does not occur on the correct soils (Section 5.2) for this species. Other habitats preferred by this species are not present in the Plan Area. As such, this species is unlikely to occur and has been determined to have low potential for occurrence within the Plan Area. This species could potentially benefit from habitat preservation in proposed off-site reserves.

- **Crampton's Tuctoria:** While grassland habitat was mapped in the Plan Area (Section 5.4), this habitat represents a temporary state of fallow agricultural fields and does not occur on the correct soils (Section 5.2) for this species. Other habitats preferred by this species are not present in the Plan Area. As such, this species is unlikely to occur and has been determined to have low potential for occurrence within the Plan Area. This species could potentially benefit from habitat preservation in proposed off-site reserves.
- **Vernal Pool Fairy Shrimp:** with the absence of vernal pools in the Plan Area, this species is unlikely to be present, however, it cannot be entirely dismissed because it sometimes appears in temporary post-rain water accumulations such as tire ruts, which would not allow this species to complete its life cycle. This species could potentially benefit from habitat preservation in proposed off-site reserves.
- **Valley Elderberry Longhorn Beetle**: the Plan Area has not been observed to contain suitable habitat, including host plants, for this species. Surveys have not been performed throughout the entire Plan Area and elderberry plants can become quickly established in new areas. This species could potentially benefit from habitat preservation in proposed off-site reserves.
- **Giant Gartersnake:** Giant Gartersnakes were not located within the Plan Area after a two-year trapping effort but may use the agricultural irrigation ditches in the Plan Area for dispersal. This species is discussed in greater detail in **Section 6.5.2.6.**

6.5.2.3 Special Status Species with Moderate Potential to Occur in the Plan Area

Five (5) special status species were determined to have moderate potential to occur in the Plan Area:

- **Aleutian Cackling Goose:** while there is potential foraging habitat for this species in the Plan Area, there are no recorded occurrences in the Natomas Basin so it is unlikely to occur in the Plan Area. Implementation of the Project would impact potential winter foraging habitat, though foraging by this species in the Plan Area has not been documented. This species could potentially benefit from habitat preservation in proposed off-site reserves.
- **White-faced Ibis:** there is no nesting habitat but potential foraging habitat for this species in the Plan Area, however, this species rarely occurs in the Natomas Basin and is unlikely to occur in the Plan Area. Implementation of the Project would impact potential winter foraging habitat, though foraging by this species in the Plan Area has not been documented. This species could potentially benefit from habitat preservation in proposed off-site reserves.
- **Burrowing Owl:** this species is rarely recorded in the southwestern portion of the Natomas Basin, though some habitat is present. This species could potentially benefit from habitat preservation in proposed off-site reserves.
- **Bank Swallow:** there is no nesting habitat for this species in the Plan Area. Implementation of the Project would not affect foraging of this species, if it were to otherwise occur.
- **Tricolored Blackbird:** there is no nesting habitat for this species in the Plan Area. Implementation of the Project would impact potential winter foraging habitat, though foraging by this species in the Plan Area has not been documented. This species could potentially benefit from habitat preservation in proposed off-site reserves.

6.5.2.4 Special Status Species with High Potential to Occur in the Plan Area

Four (4) special status species were determined to have high potential to occur in the Plan Area:

- **Northwestern Pond Turtle**: this species has not been documented in the Plan Area, however, habitat is present and it is known to occur nearby. Effects on this species would be minimized by implementation of measures proposed for Giant Gartersnake in **Section 6.5.2.6**.
- **Loggerhead Shrike:** there is minimal nesting habitat and abundant potential foraging habitat for this species in the Plan Area. It has, however, been rarely recorded in the Natomas Basin. Effects on this species would be minimized by implementation of measures proposed for Swainson's Hawk in **Section 6.5.2.6**.
- **Yellow-headed Blackbird:** Implementation of the Project would impact potential winter foraging habitat, though foraging by this species in the Plan Area has not been documented. This species could potentially benefit from habitat preservation in proposed off-site reserves.
- **Yellow Warbler:** there is no breeding habitat in the Plan Area for this species. Its high potential to occur is based on its occurrence in adjacent riparian woodlands along the Sacramento River. Implementation of the Project would not adversely affect this species.

6.5.2.5 Special Status Species Present in the Plan Area

Four (4) special status species were determined to be present in the Plan Area:

- **American White Pelican:** American White Pelicans are a transient and highly mobile species in many areas of California outside of the breeding season. There is no breeding habitat for this species in the Plan Area. Implementation of the Project would not have a significant adverse effect on this species.
- **Swainson's Hawk:** As a keystone species in the Natomas Basin, this species is discussed in greater detail in **Section 6.5.2.6.**
- **White-tailed Kite:** Effects on this species would be minimized by implementation of measures proposed for Swainson's Hawk in **Section 6.5.2.6**.
- **Northern Harrier:** Effects on this species would be minimized by implementation of measures proposed for Swainson's Hawk in **Section 6.5.2.6**.

6.5.2.6 Effects, Avoidance, and Minimization Measures

6.5.2.6.1 Special Status Species Pre-Construction Surveys

As recommended by the NBHCP, not less than 30 days or more than 6 months prior to commencement of construction activities on sites in the Plan Area, a pre-construction survey of the specific site shall be conducted to determine the status and presence of, and likely impacts to, all potentially occurring special status species on the site. However, pre-construction surveys for an individual species may be completed up to one year in advance if the sole period for reliable detection of that species is between May 1 and December 31.

The results of the pre-construction surveys along with recommended minimization measures shall be documented in a report and shall be submitted to the appropriate agencies. Based upon the survey results, the project will identify applicable take avoidance and other site specific minimization measures, required to be carried out on the site.

Reconnaissance level surveys should be conducted prior to species specific surveys to determine what habitats are present on a specific development site and what, if any, more intensive survey activities should be conducted to accurately determine the status of the special status species on the site. Note: negative species-specific survey results may not obviate the requirement to implement minimization measures prescribed where a pre-construction survey indicates that habitat for a particular listed species exists onsite.

6.5.2.6.2 General Measures to Minimize Take

In order to generally minimize the impacts of development on special status species, the following requirements shall apply as recommended by the NBHCP:

a. Tree Preservation: Valley Oaks and other large trees should be preserved whenever possible. Preserve and restore stands of riparian trees used by Swainson's Hawks and other animals for nesting, particularly adjacent to Fisherman's Lake.

b. Native Plants: Improve the wildlife value of landscaped parks, buffers, and developed areas by planting trees and shrubs which are native to the Natomas Basin and therefore are used by native animals.

c. Protect Raptor Nests: Avoid the raptor nesting season when scheduling construction near nests..

d. Protected Plant/Animal Species, also referred to as "Special Status Species": Search for protected plants species during flowering season prior

6.5.2.6.3 Swainson's Hawk

The Project would directly impact Swainson's Hawk through potential removal of a minimum of one Swainson's Hawk nest tree. Based on the habitat modeling presented in Section 5.3.6.1, the Project could impact 791.6 acres of 1,130.6 extant acres of Swainson's Hawk habitat (**Table 8**). Impacts include 381.9 acres of modeled high-quality habitat, and 409.7 acres of modeled low-quality habitat. The Project would preserve 338.9 acres of modeled Swainson's Hawk habitat, including 187.6 acres of modeled high-quality habitat and 151.4 acres of modeled low-quality habitat.

Regionally, habitat modeling indicates 127,997.3 potential acres of Swainson's Hawk habitat are found within the RSA, with 28,500.6 acres in the Natomas Basin. The Plan Area supports:

- 0.8% of the modeled habitat for Swainson's Hawk in the RSA.
- 4% of the modeled habitat for Swainson's Hawk in the Natomas Basin.

Table 8. Impacts and Conservation of Modeled Swainson's Hawk Habitat

Area	Habitat Quality	Total Acres
Plan Area	High	569.5
	Low	561.1
Total		1130.5
Grading Limits	High	381.9
	Low	409.7
Total		791.6
Natomas Basin	High	18746.1
	Low	9749.0
	Medium	5.5

Area	Habitat Quality	Total Acres
Total		28500.6
Regional Study Area	High	93187.5
	Low	34774.6
	Medium	35.2
Total		127997.3

Other potential adverse effects on Swainson's Hawk due to Project implementation include the following:

- **Construction-Related Effects:** Project construction has the potential to displace and/or disturb nesting Swainson's Hawks. Nest disturbance from the operation of heavy construction equipment and continued activity near nest sites could cause nest abandonment or interfere with the incubation and feeding of young in a way that reduces nesting success.
- **Decreased Habitat Quality:** Due to the indirect effects of habitat-adjacent anthropogenic land uses, including direct recreational disturbance, the introgression of non-native plants into natural areas, non-native predators such as domestic dogs and cats, excessive light, and noise.
- **Reduction of Prey Base:** Conversion of higher-suitability habitats to lower-suitability habitats would be accompanied by a reduction in prey base that may reduce nest survival or the fat reserves required by hawks for their fall migration to Central Mexico, without any change in overall habitat acreage.

The following measures are proposed to avoid and minimize construction-related effects on Swainson's Hawks:

- **Measures to Minimize Nest Disturbance:** The Applicant will undertake the following measures to minimize disturbance to nesting Swainson's Hawks, if present during Project construction.
    - Surveys shall be conducted by a qualified biologist on and adjacent to the Plan Area and a 0.5-mile buffer of any other properties associated with the Project where construction or restoration activities resulting in ground disturbance, mechanized land clearing, or vegetation management would occur. The surveys shall be conducted consistent with the *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (SHTAC 2000) in the calendar year that construction is scheduled to commence.
    - If breeding Swainson's Hawks (i.e., exhibiting nest building or nesting behavior) are identified, no new disturbances (e.g., heavy equipment operation associated with construction) will occur within 0.5 mile of an active nest between March 15 and September 15, or until a qualified biologist, with concurrence by CDFW, has either determined that young have fledged or that the nest is no longer occupied, or that construction can commence with precautions developed in coordination with CDFW in place. Routine disturbances such as agricultural activities, commuter traffic, and routine facility maintenance activities within 0.5 mile of an active nest are not restricted.
    - Where disturbance of a Swainson's Hawk nest cannot be avoided, such disturbance shall be temporarily avoided (i.e., defer construction activities until after the nesting season), and then, if unavoidable, the nest tree may be destroyed during the non-nesting season. For purposes of this provision, the Swainson's Hawk nesting season is defined as the beginning of Swainson's Hawk Survey Period II to the end of Survey Period V (March 20 to July 31, Swainson's Hawk Technical

Advisory Committee [2000]). If a nest tree (any tree that has an active nest in the year the impact is to occur) must be removed, tree removal shall only occur between August 1 and March 19.

- If a Swainson's Hawk nest tree is to be removed and fledglings are present, the tree may not be removed until September 15 or until a qualified biologist in coordination with CDFW has determined that the young have fledged and are no longer dependent upon the nest tree.
- If construction or other project-related activities which may disturb nesting birds are proposed within a ¼-mile buffer zone of an active nest, intensive monitoring (funded by the Applicant) by a qualified biologist will be required. Exact implementation of this measure will be based on specific information at the construction area.

- **Measures to Minimize Loss of Nest Trees:** The Applicant will undertake the following measures to minimize loss of Swainson's Hawk nest trees.
  - Valley oaks, tree groves, riparian habitat, and other large trees will be preserved wherever possible. The Applicant shall preserve and restore stands of riparian trees used by Swainson's Hawks and other animals, particularly near Fisherman's Lake and elsewhere in the Plan Area where large oak groves, tree groves, and riparian habitat have been identified in the Plan Area.
  - The raptor nesting season shall be avoided when scheduling construction near nests in accordance with applicable guidelines published by CDFW and USFWS or through consultation with those agencies.
  - Annually, prior to the Swainson's Hawk nesting season (March 15 to September 15) and until the Project is complete, the Applicant will notify the County of Sacramento and CDFW of the location of all Swainson's Hawk nest(s) and implement the specific mitigation measures to avoid and minimize take of the species.

In addition to avoiding on-site effects during construction, the Project proposes the identification and creation of Off-Site Reserves in consultation with local, state, and federal regulatory agencies, as discussed in **Section 2** of this Assessment. Habitats within the Off-Site Reserves would be of sufficient quality and quantity to offset all potential impacts to suitable habitat for Swainson's Hawk. The Sacramento County Swainson's Hawk Ordinance requires project proponents to provide title or easement to approved Swainson's Hawk mitigation lands with one acre preserved for each one acre impacted.

Overall, based on the analysis of habitat quality and availability for Swainson's Hawk conducted for this Assessment, the Project would not affect the viability of the Swainson's Hawk population in the Natomas Basin and would contribute to the overall success of Swainson's Hawk population in the Natomas Basin and beyond.

6.5.2.6.4 Giant Gartersnake

While Giant Gartersnake has not been documented in the Plan Area, the species could use agricultural irrigation ditches in the Plan Area for dispersal. Based on the habitat modeling presented in Section 5.3.6.2, the Project would directly impact 193.9 acres of 302.8 extant acres of modeled Giant Gartersnake habitat (**Table 9**). Impacts include 7.0 acres of modeled high-quality habitat, and 186.9 acres of modeled low-quality habitat. The Project would preserve 108.9 acres of modeled Giant Gartersnake habitat, including 43.0 acres of modeled high-quality habitat and 66 acres of modeled low-quality habitat.

Regionally, habitat modeling indicates 97,953.1 potential acres of Giant Gartersnake habitat are found within the RSA, with 28,808 acres in the Natomas Basin. The Plan Area supports:

- 0.3% of the modeled habitat for Giant Gartersnake in the RSA.
- 1% of the modeled habitat for Giant Gartersnake in the Natomas Basin.

Table 9. Impacts and Conservation of Modeled Giant Gartersnake Habitat

Area	Habitat Quality	Total Acres
Plan Area	High	50.0
	Low	252.8
Total		302.8
Grading Limits	High	7.0
	Low	186.9
Total		193.9
Natomas Basin	High	2461.3
	Low	4520.9
	Medium	21825.8
Total		28808.0
Regional Study Area	High	17011.2
	Low	24377.6
	Medium	56564.4
Total		97953.1

Other potential adverse effects on Giant Gartersnake due to Project implementation include the following:

- **Construction-Related Effects:** During Project construction, Giant Gartersnakes – if present – could be killed or injured by vehicle strikes, crushed beneath heavy machinery, and/or entombed in or excavated from their winter retreats.
- **Habitat Quality:** due to the indirect effects of habitat-adjacent anthropogenic land uses, including direct recreational disturbance, the introgression of non-native plants into natural areas, non-native predators such as domestic dogs and cats, excessive light, and noise. Additionally, water channels lose their habitat value for Giant Gartersnake when cleaned of aquatic vegetation, during low/no flow periods or when high water releases eliminate or alter basking sites, refugia, foraging areas or juvenile microhabitat (USFWS 1999a). In the Natomas Basin, canal and drain maintenance, and irrigation practices, involve periodic clearing of vegetation along waterways, and short-term, seasonal and inter-annual changes in flow in waterways. A recent habitat assessment of canals and drains throughout the Natomas Basin indicates that operation and management practices are reducing habitat quality along a substantial portion of these waterways (Jones & Stokes 2005). Water diversions may also reduce the abundance of the snakes' aquatic prey. Water diversions or changes in land use within the area served by a canal or drain watershed may alter

flows or even cause a canal or drain to be abandoned. Residential developments may also result in increased runoff of hydrocarbons and of chemicals used for lawns and gardens, and increased stormwater volume (and associated increases in flow depths and velocities) because of high coverage of impervious surfaces.

The following measures are proposed to avoid and minimize construction-related effects on Giant Gartersnake:

- Within the Natomas Basin, all construction activity involving disturbance of habitat, such as site preparation and initial grading, is restricted to the period between May 1 and September 30. This is the active period for the Giant Gartersnake, and direct mortality is lessened because snakes are expected to actively move and avoid danger.
- Pre-construction surveys for Giant Gartersnake must be completed for all development projects by a qualified biologist approved by USFWS and CDFW. If any Giant Gartersnake habitat is found within a specific site, the following additional measures shall be implemented to minimize disturbance of habitat and harassment of Giant Gartersnake, unless such project is specifically exempted by USFWS.
    - Between April 15 and September 30, all irrigation ditches, canals, or other aquatic habitats should be completely dewatered, with no puddled water remaining, for at least 15 consecutive days prior to the excavation or filling in of the dewatered habitat. The Applicant will ensure dewatered habitat does not continue to support Giant Gartersnake prey, which could detain or attract snakes into the area. If a site cannot be completely dewatered, netting and salvage of prey items may be necessary. This measure reduces the suitability of the habitat by reducing available prey. As a result of the loss of prey species, Giant Gartersnake may be induced to vacate the area of their own volition.
    - For sites that contain Giant Gartersnake habitat, no more than 24-hours prior to start of construction activities (site preparation and/or grading), the project area shall be surveyed for the presence of Giant Gartersnake. If construction activities stop on the project site for a period of two weeks or more, a new Giant Gartersnake survey shall be completed no more than 24-hours prior to the re-start of construction activities.
    - Confine clearing to the minimal area necessary to facilitate construction activities. Flag and designate avoided Giant Gartersnake habitat within or adjacent to the project as Environmentally Sensitive Areas. This area shall be avoided by all construction personnel.
    - Construction personnel completing site preparation and grading operations shall receive USFWS approved environmental awareness training. This training instructs workers on how to identify Giant Gartersnakes and their habitats, and what to do if a Giant Gartersnake is encountered during construction activities. During this training, an on-site biological monitor shall be designated.
    - A qualified biological monitor shall be present during grading activities within 200 feet of aquatic Giant Gartersnake habitat to ensure that construction activities do not encroach into unauthorized areas. If a live Giant Gartersnake is found during construction activities, the biological monitor shall immediately notify USFWS. The biological monitor shall have the authority to stop construction in the vicinity of the snake. The snake shall be monitored and given a chance to leave the area on its own. If the snake does not leave on its own within one working day, the biological monitor shall consult with the USFWS to determine any necessary additional measures. The biological monitor shall also report any Giant Gartersnake mortality within one working day to USFWS. Any project-related activity that results in Giant Gartersnake mortality shall cease so that this activity can be modified to the extent practicable to avoid future mortality.

- If a live Giant Gartersnake is found during construction activities, immediately notify the USFWS and the project's biological monitor. The biological monitor, or his/her assignee, shall stop construction in the vicinity of the snake. Monitor the snake and allow the snake to leave on its own. The monitor shall remain in the area for the remainder of the workday to make sure the snake is not harmed or, if it leaves the site, does not return. Escape routes for Giant Gartersnake should be determined in advance of construction, and snakes should always be allowed to leave on their own. If a Giant Gartersnake does not leave on its own within one working day, further consultation with USFWS is required.
- Fill, or construction debris may be used by Giant Gartersnake as an over-wintering site. Therefore, upon completion of construction activities, remove any temporary fill and/or construction debris from the site. If this material is situated near undisturbed Giant Gartersnake habitat and it is to be removed between October 1 and April 30, it shall be inspected by a qualified biologist to assure that Giant Gartersnake are not using it as hibernaculae.

In addition to avoiding on-site effects during construction, the Project proposes the identification and creation of Off-Site Reserves in consultation with local, state, and federal regulatory agencies, as discussed in **Section 2** of this Assessment. Habitats within the Off-Site Reserves would be of sufficient quality and quantity to offset all potential impacts to suitable habitat for Giant Gartersnake.

Preservation of habitat has benefits in addition to those of habitat enhancement. In the Natomas Basin, a particularly important benefit of habitat preservation is that it ensures that the habitat will continue to exist, and it buffers total habitat availability from year-to-year fluctuations. For Giant Gartersnake, privately owned habitat in the Natomas Basin is primarily rice and associated canals, and there are no assurances that rice cultivation will continue on any particular site. Furthermore, agricultural markets will cause the total acreage of rice, and consequently of Giant Gartersnake habitat, to fluctuate substantially from year to year. Such environmental fluctuations strongly influence populations and reduce their viability. In contrast, preserved lands will provide habitat on a much more consistent basis, and thus reduce the magnitude of fluctuations in habitat availability.

Both habitat enhancement and preservation also can contribute to population viability by reducing anthropogenic causes of mortality. Preservation reduces human disturbance and minimizes activities that could harm or kill snakes. Habitat enhancement and management also reduces or eliminates agricultural activities that can harm or kill snakes. In addition, the preservation and enhancement of habitat typically results in larger blocks of higher quality habitat, and this should reduce long distance movements by snakes, which would also reduce the risk of mortality associated with those movements. Dispersal and other long-distance movements are dangerous for snakes, particularly where road crossings are involved (Bonnet et al. 1999, Rosen and Lowe 1994).

6.5.2.6.5 Measures to Reduce Take to Valley Elderberry Longhorn Beetle

While Valley Elderberry Longhorn Beetle is unlikely to occur in the Plan Area, as recommended by the NBHCP the proposed project shall comply with conservation practices for the Valley Elderberry Longhorn Beetle set forth in the conditions of the *USFWS Compensation Guidelines for the Valley Elderberry Longhorn Beetle*, dated 1999, as it may be updated from time to time. This policy assumes that any elderberry bushes found within the range of the species are likely to provide beetle habitat, and any destruction or loss of such elderberry shrub habitat must be mitigated according to the Guidelines. The principle conditions of the Guidelines are summarized below.

Prior to the commencement of construction activities, a pre-construction survey shall be conducted. If such survey determines Valley Elderberry Longhorn Beetle habitat is present, the following measures, as appropriate, to avoid take and minimize of individuals shall apply:

- Impacts to Valley Elderberry Longhorn Beetle habitat including any direct and indirect effects on VELB critical habitat will be avoided whenever possible. To the maximum extent practicable, projects will be designed to avoid stands of elderberry bushes and to avoid isolation of the plants from other nearby populations. Pre-construction surveys at the construction impact site will be conducted to assess the appropriate amount of mitigation.
- If elderberry plants cannot be avoided, they shall be transplanted during the dormant season (November 1 to February 15) to an area protected in perpetuity and approved by the USFWS.
- Replacement seedling plants will be provided at a ratio of 2 to 1 to 5 to 1 depending on the extent of beetle utilization of the plants moved or lost. A 1,800-square-foot area will be provided for each transplanted elderberry shrub or every five elderberry seedling plants.
- Annual monitoring of Valley Elderberry Longhorn Beetle habitat will be provided in the planted mitigation sites for a ten year period.
- Replacement elderberry shrubs will meet a 60% survival rate by the end of the ten year period and the 60% survival rate shall be required for the term of the applicable permit.

6.5.2.6.6 Measures to Reduce Take of Burrowing Owl

While Burrowing Owl is unlikely to occur in the Plan Area, as recommended by the NBHCP, prior to the commencement of construction activities a CDFW approved qualified biologist shall perform a pre-construction survey of the site to determine if any Burrowing Owls are using the site for foraging or nesting. The pre-construction survey shall be submitted to the appropriate agencies prior to the commencement of construction activities and a mitigation program shall be developed, if applicable, prior to initiation of any physical disturbance on the site.

Occupied burrows shall not be disturbed during nesting season (February 1 through August 31) unless a qualified biologist approved by the CDFW verifies through non-invasive measures that either: 1) the birds have not begun egg-laying and incubation; or 2) that juveniles from the occupied burrows are foraging independently and are capable of independent survival.

If nest sites are found, the CDFW shall be contacted regarding suitable mitigation measures, which may include a 300 foot buffer from the nest site during the breeding season (February 1 - August 31), or a relocation effort for the burrowing owls if the birds have not begun egg-laying and incubation or the juveniles from the occupied burrows are foraging independently and are capable of independent survival. If on-site avoidance is required, the location of the buffer zone will be determined by a qualified biologist. The developer shall mark the limit of the buffer zone with yellow caution tape, stakes, or temporary fencing. The buffer will be maintained throughout the construction period.

If relocation of the owls is approved for the site by CDFW, the developer shall hire a qualified biologist to prepare a plan for relocating the owls to a suitable site. The relocation plan must include: (a) the location of the nest and owls proposed for relocation; (b) the location of the proposed relocation site; (c) the number of owls involved and the time of year when the relocation is proposed to take place; (d) the name and credentials of the biologist who will be retained to supervise the relocation; (e) the proposed method of capture and transport for the owls to the new site; (f) a description of the site preparations at the relocation site (e.g., enhancement of existing burrows, creation of artificial burrows, one-time or long-term vegetation control, etc.); and (g) a description of efforts and funding support proposed to monitor the relocation. Relocation options may include passive relocation to another area of the site not subject to disturbance through one way doors on burrow openings, or construction of artificial burrows in accordance with the CDFW's October 17, 1995, *Staff Report on Burrowing Owl Mitigation*.

Where on-site avoidance is not possible, disturbance and/or destruction of burrows shall be offset through development of suitable habitat on upland reserves. Such habitat shall include creation of new burrows with adequate foraging area (a minimum of 6.5 acres) or 300 feet radii around the newly created burrows. Additional habitat design and mitigation measures are described in the CDFW's October 17, 1995, *Staff Report on Burrowing Owl Mitigation.*

6.5.2.6.7 Measures to Reduce Take on Loggerhead Shrike

While Loggerhead Shrike is unlikely to occur in the Plan Area, as recommended by the NBHCP, prior to the commencement of construction activities, a pre-construction survey shall be conducted. If surveys identify an active Loggerhead Shrike nest that will be impacted by the proposed activities, the project proponent shall install brightly colored construction fencing that establishes a boundary 100 feet from the active nest. No disturbance shall occur within the 100 foot fenced area during the nesting season of March 1 through July 31. A qualified biologist, with concurrence of USFWS must determine young have fledged or that the nest is no longer occupied prior to disturbance of the nest site.

6.5.2.6.8 Measures to Reduce Take on Aleutian Cackling Goose

While Aleutian Cackling Goose is unlikely to occur in the Plan Area, as recommended by the NBHCP, prior to the commencement of construction activities, a pre-construction survey shall be conducted. If such survey determines Aleutian Cackling Goose are present, the project proponent shall consult with USFWS and/or CDFW to determine appropriate measures to avoid and minimize take of individuals. Such measures shall be appropriate for the use (e.g., foraging, roosting, etc.) and activity of the species, since this species is a seasonal visitor to the region.

6.5.2.6.9 Measures to Reduce Take on White-faced Ibis

While White-faced Ibis is unlikely to occur in the Plan Area, as recommended by the NBHCP, prior to the commencement of construction activities, a pre-construction survey shall be conducted. If surveys determine the presence of active nest sites of White-faced Ibis, disturbance within 1/4 mile of nests will be avoided within the nesting season of May 15 through August 31 or until a qualified biologist, with concurrence of Wildlife Agencies, has determined that young have fledged or that the nest is no longer occupied.

6.5.2.6.10 Measures to Reduce Take on Bank Swallow

Bank Swallow nesting colony habitat is not present in the Plan Area. If activities related to Project implementation could occur in the vicinity of Bank Swallow nesting colonies off-site, disturbance to Bank Swallow nesting colonies will be avoided within the nesting season of May 1 through August 31 (or until a qualified biologist, with concurrence of USFWS and CDFW, has determined that young have fledged or that the nest is no longer occupied) during all activities conducted in the Plan Area.

If surveys identify an active Bank Swallow nesting colony that will be impacted, the proponent shall install brightly colored construction fencing that establishes a boundary 250 feet from the active nesting colony. No disturbance associated with project shall occur within the 250 foot fenced area during the nesting season of May 1 through August 31. Additionally, disturbance within ½ mile upstream or downstream of the colony will be avoided if the colony is located upon a natural waterway.

6.5.2.6.11 Measures to Reduce Take on Northwestern Pond Turtle

As recommended by the NBHCP, take of the Northwestern Pond Turtle as a result of habitat destruction during construction activities, including the removal of irrigation ditches and drains, and during ditch and drain maintenance, will be minimized by the dewatering requirement described for Giant Gartersnake.

6.5.2.6.12 Measures to Reduce Take of Vernal Pool Fairy Shrimp, Vernal Pool Tadpole Shrimp, and Midvalley Fairy Shrimp

Vernal pool habitat and related species have not been detected in the Plan Area. As recommended by the NBHCP, however, prior to the commencement of construction activities, a pre-construction survey shall be conducted if applicable habitat is determined to be present. If such survey determines Vernal Pool Fairy Shrimp, Vernal Pool Tadpole Shrimp, and Midvalley Fairy Shrimp are present, the project proponent shall consult with USFWS to determine appropriate measures to avoid and minimize take of individuals.

6.5.2.6.13 Measures to Reduce Take on Sanford's Arrowhead and Other Special Status Plant Species

Prior to the commencement of construction activities, seasonally appropriate special status plant surveys shall be conducted. If no special-status plants are observed, the botanist should document the findings in a letter report to be sent to the project proponent and no additional measures are recommended. If a species is found within areas of potential construction disturbance, it should be avoided to the greatest extent feasible. If the plants cannot be avoided, then a qualified botanist should prepare an avoidance and mitigation plan detailing protection and avoidance measures, transplanting procedures, success criteria, and long-term monitoring protocols.

If Sanford's arrowhead plants are identified through a pre-construction survey, notice to USFWS, CDFW and the California Native Plant Society shall be provided. Under such circumstances, the proponent shall allow the transplantation of plants prior to site disturbance.

6.5.3 Significance Statement

With the implementation of the Project's proposed conservation measures, the Project will not have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations by the CDFW or USFWS.

6.6 Project Effects on Riparian Habitat or Other Sensitive Natural Community

This section addresses the portion of the CEQA Guidelines requiring an assessment of whether the Project will *have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS*.

6.6.1 Summary Statement of Effects

As proposed, the Project has potential to directly impact 14.1% of the Valley Foothill Riparian habitat mapped within the Plan Area. This is the only adverse effect on riparian habitat or other sensitive natural communities identified for the Project. This adverse effect would be minimized through the implementation of one or more mitigation measures.

6.6.2 Detailed Discussion of Effects and Avoidance and Minimization Measures

The desktop review identified Northern Hardpan Vernal Pool, Northern Claypan Vernal Pool, and Great Valley Cottonwood Riparian Forest as the only sensitive vegetation communities recorded within the area analyzed. As described previously in **Section 5.4.4,** none of these communities are present within the Plan Area.

Valley Foothill Riparian is a riparian habitat that comprises 50.0 acres of the Plan Area. The Project proposes direct impacts to 7.0 acres, or 14.1% of this habitat in the Plan Area. The Project would preserve 43.0 acres, or 85.9% of this habitat in the Plan Area. To offset the direct impact to 7.0 acres of Valley Foothill Riparian habitat, the Applicant shall do one or more of the following:

- Modify the grading plan to avoid impacting Valley Foothill Riparian habitat.

- Habitat replacement equal to the amount impacted, associated with mitigation for jurisdictional impacts as described in **Section 6.7**.
- Preservation of Valley Foothill Riparian habitat of equivalent quantity and quality in one or more Off-Site Reserves.

6.6.3 Significance Statement

With the implementation of the Project's proposed conservation measures, the Project will not have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS.

6.7 Project Effects on State or Federally Protected Wetlands

This section addresses the portion of the CEQA Guidelines requiring an assessment of whether the Project will *have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.*

6.7.1 Summary Statement of Effects

As proposed, the Project would have direct impacts to a total of 18.21 acres and 88,732 linear feet of potential other waters of the U.S. subject to USACE jurisdiction. To offset this impact, the Project proposes in-kind preservation of jurisdictional waters within the Plan Area or at Off-Site Reserves.

6.7.2 Detailed Discussion of Effects and Avoidance and Minimization Measures

The proposed Project is likely to have adverse effects, either directly or through indirect impacts to downstream water quality, to state and federally protected aquatic resources. Based upon the verified aquatic resources delineation (USACE 2020) and subsequent desktop assessment, a total of 18.21 acres and 88,732 linear feet of potential other waters of the U.S. subject to USACE jurisdiction pursuant to CWA Section 404 are present within the proposed grading limits of the Project. Of the USACE-verified (USACE 2020) potential jurisdictional other waters of the U.S., 11.11 acres and 41,504 linear feet are anticipated to be directly impacted by the Project. A total of 7.1 acres and 47,228 linear feet of desktop assessed potential jurisdictional other waters of the U.S. are anticipated to be directly impacted by the Project. These features are also potential other waters of the state subject to Central Valley RWQCB (CVRWQCB) jurisdiction and aquatic / riparian habitat subject to CDFW jurisdiction pursuant to CWA Section 401 and California Fish and Game Code Section 1600 respectively.

As currently proposed, the Project is anticipated to directly impact portions of what was mapped within the Plan Area for features R5UBFx-14, -20, -21, -26, -27, -28, -30, -32, -33, and -38; whereas the entire area that was mapped within the Plan Area for the remaining features is anticipated to be directly impacted by the Project. **Table 10** below provides a summary of the area of each feature identified within the proposed grading limit of the Project. **Exhibit 5** displays each feature identified within the Plan Area with the proposed grading limit indicated by the hatching.

Table 10. Potential Jurisdictional Aquatic Resources within Proposed Grading Limits

Feature Name	Area (acres)*	Length (linear feet)
R5UBFx-1	0.20	1106
R5UBFx-2	0.43	2337
R5UBFx-3	0.54	2985

Feature Name	Area (acres)*	Length (linear feet)
R5UBFx-4	0.88	2724
R5UBFx-5	0.27	1184
R5UBFx-6	0.32	1773
R5UBFx-7	0.53	1786
R5UBFx-8	0.68	1475
R5UBFx-9	0.42	1392
R5UBFx-10	0.22	1894
R5UBFx-11	2.77	7563
R5UBFx-12	0.36	1323
R5UBFx-13	2.05	6857
R5UBFx-14	0.62	2249
R5UBFx-15	1.69	7399
R5UBFx-16	0.72	2414
R5UBFx-17	0.15	1328
R5UBFx-18	0.02	100
R5UBFx-20	0.00	3
R5UBFx-21	0.05	158
R5UBFx-22	0.77	2559
R5UBFx-23	0.56	2428
R5UBFx-24	0.55	2370
R5UBFx-25	0.93	2880
R5UBFx-26	0.45	5226
R5UBFx-27	0.05	132
R5UBFx-28	0.00	31
R5UBFx-29	0.11	941
R5UBFx-30	0.00	8
R5UBFx-31	0.18	1297
R5UBFx-32	0.00	21
R5UBFx-33	0.37	4633
R5UBFx-34	0.15	2227
R5UBFx-35	0.44	5486
R5UBFx-36	0.64	8004
R5UBFx-37	0.08	2286

Feature Name	Area (acres)*	Length (linear feet)
R5UBFx-38	0.01	153
Total Direct Impacts from Proposed Grading Limits:	**18.21**	**88,732**

Source: Bargas 2020 and 2022. *Acreages for features R5UBFx-1 through -18 overlapping the Surveyed Area have been verified by the USACE as potential jurisdictional aquatic resources through PJD, SPK-2020-00237. The remaining acreage of features R5UBFx-1 through -18 are subject to modification pending formal verification by USACE. Features R5UBFx-20 through -38 are anticipated to require a formal aquatic resources delineation survey to obtain a PJD from USACE. Feature R5UBFx-19 was removed from the aquatic resources delineation for verification as the feature was confirmed to no longer exist during the June 2020 supplemental site visit.

Based on the results of the Applicant's USACE-verified aquatic resources delineation, the Applicant shall commit to replace, restore, or enhance on a "no net loss" basis, in accordance with the USACE and the CVRWQCB, as appropriate for each agency's jurisdiction, the acreage of all waters of the U.S. and wetland habitats, including USACE jurisdictional "isolated" wetlands that would be removed with implementation of the Project. Wetland restoration, enhancement, and/or replacement shall be at a location and by methods acceptable to the USACE, CDFW, and CVRWQCB, as determined during the Section 404, Section 1600, and Section 401 permitting processes.

The Applicant shall prepare and submit a habitat mitigation and monitoring plan to the USACE for the creation of jurisdictional waters at a mitigation ratio no less than 1:1 acres of created waters of the U.S., including wetlands, to each acre filled. The mitigation plans shall demonstrate how the USACE criteria for jurisdictional waters will be met through implementation. Wetland mitigation achieved through the establishment of Off-Site Reserves can satisfy this measure if conducted in such a way that it meets both habitat function and the USACE criteria for creation of waters of the U.S. The wetland creation section of the habitat mitigation and monitoring plan shall include the following:

- target areas for creation,
- a complete biological assessment of the existing resources on the target areas,
- specific creation and restoration plans for each target area,
- performance standards for success that will illustrate that the compensation ratios are met, and
- a monitoring plan including schedule and annual report format.

Consultations with the agencies may result in the need to acquire one or more of the following permits and regulatory approvals:

- **USACE CWA 404 Permit:** Authorization for the fill of jurisdictional waters of the U.S. shall be secured prior to placing any fill in jurisdictional wetlands from the USACE through the CWA Section 404 permitting process. Timing for compliance with the specific conditions of the 404 permit shall be per conditions specified by the USACE as part of permit issuance. It is expected that the Project would require an Individual Permit because wetland impacts would total more than 0.5 acre. In its final stage and once approved by the USACE, the mitigation plan is expected to detail proposed wetland restoration, enhancement, and/or replacement activities that would ensure no net loss of jurisdictional wetlands function and values in an agency-approved location. As required by Section 404, approval and implementation of the wetland mitigation and monitoring plan shall ensure no net loss of jurisdictional waters of the U.S., including USACE jurisdictional wetlands. Mitigation for impacts to USACE jurisdictional "isolated" wetlands shall be included in the same mitigation plan. All mitigation requirements identified through this process shall be implemented before construction

begins in any areas containing wetland features. Any additional measures required as part of the issuance of the permit shall be implemented.

- **CVRWQCB CWA Section 401 Water Quality Certification:** Prior to construction in any areas containing wetland features, the Applicant shall obtain a water quality certification pursuant to Section 401 of the CWA for the project. Any measures required as part of the issuance of the water quality certification shall be implemented.
- **CDFW Section 1602 LSAA**: The Applicant shall obtain a Streambed Alteration Agreement under Section 1600 et seq. of the California Fish & Game Code for impacts to Waters of the State as defined under Section 1602 of the California Fish & Game Code. Any measures required as part of the issuance of the Agreement shall be implemented.
- **CVRWQCB Waste Discharge Requirements**: The Applicant shall file a report of waste discharge with the CVRWQCB for activities affecting "isolated" waters of the state, if applicable.

6.7.3 Significance Statement

With the implementation of the Project's proposed conservation measures, the Project will not have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

6.8 Project Effects on Wildlife Movement and Nursery Sites

This section addresses the portion of the CEQA Guidelines requiring an assessment of whether the Project will *interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites*.

6.8.1 Summary Statement of Effects

The Project would not impact wildlife movement corridors. Proposed mitigation measures will avoid Project impacts to nesting birds.

6.8.2 Detailed Discussion of Effects and Avoidance and Minimization Measures

As discussed in **Section 5.7**, ecologists at UC Davis conducted a GIS-based study of wildlife corridors in the Central Valley in 2010. This study showed a potential – albeit narrow – corridor through the southeast portion of the Plan Area. Since the time the analysis was completed, much of the area within that modeled corridor has been extensively developed and the modeled corridor is no longer valid. In essence, the Plan Area does not act as a wildlife corridor as classically considered.

The Project could impact nesting birds protected by the federal Migratory Bird Treaty Act. The following avoidance and minimization measures shall be implemented prior to site disturbance to avoid impacts to nesting raptors and other birds in the Plan Area or immediately adjacent properties.

- A nesting bird survey shall be conducted within the Plan Area (raptors and non-raptors) and a 500-foot buffer (raptors only) prior to commencing with earth-moving or construction work if this work would occur during the typical nesting season (between February 1 and August 31).
- If nesting birds are identified during the surveys, a qualified biologist will determine an appropriate disturbance-free buffer zone and clearly demarcate that buffer zone in the field for avoidance by construction activities.

- The size of an established buffer may be altered if a qualified biologist conducts behavioral observations and determines the nesting birds are well acclimated to disturbance. If this occurs, the biologist shall prescribe a modified buffer that allows sufficient room to prevent undue disturbance/harassment to the nesting birds. If the buffer is reduced, the qualified biologist shall remain on site to monitor the behavior of the nesting birds during construction in order to ensure that the reduced buffer does not result in take of eggs or nestlings.
- No construction or earth-moving activity shall occur within the established buffer until it is determined by a qualified biologist that the young have fledged (are no longer dependent on the nest or the adults for feeding) and have attained sufficient flight skills to avoid project construction zones. This typically occurs by August 31. This date may be earlier or later and shall be determined by a qualified biologist. If a qualified biologist is not hired to monitor the nesting raptors, then the full buffer(s) shall be maintained in place from February 1 through the month of August. The buffer may be removed, and work may proceed as otherwise planned within the buffer on September 1.

6.8.3 Significance Statement

The Project will not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites.

6.9 Project Effects on Local Policies or Ordinances Protecting Biological Resources

This section addresses the portion of the CEQA Guidelines requiring an assessment of whether the Project will *conflict with any local policies or ordinances protecting biological resources, such as tree preservation policy or ordinance*.

6.9.1 Summary Statement of Effects

Development of the Project has the potential to conflict with the Sacramento County Tree Preservation and Protection Ordinance and the Sacramento County Swainson's Hawk Ordinance. Conflicts with these plans will be avoided by implementing the measures required by each.

6.9.2 Detailed Discussion of Effects and Avoidance and Minimization Measures

As previously described in **Section 3.4**, Sacramento County has two ordinances pertaining to protection of biological resources:

- **Tree Preservation and Protection Ordinance:** Sacramento County's tree preservation and protection ordinance is intended to prevent the loss of native oak trees. The ordinance protects any living native oak tree having at least one trunk of six inches or more in diameter measured four and one-half feet above the ground, or a multi-trunked native oak tree having an aggregate diameter of ten inches or more, measured four and one-half feet above the ground. The Applicant will comply with the ordinance by implementing one of the following:
    - Minor modifications to the grading plan to avoid impacting protected trees.
    - Tree replacement, if required, as part of Valley Foothill Riparian habitat impact mitigation as discussed in **Section 6.6.**
    - Preservation of protected trees of equivalent quantity and quality in one or more Off-Site Reserves.

- **Swainson's Hawk Ordinance:** Sacramento County's Swainson's Hawk ordinance requires project proponents to provide title or easement to approved Swainson's Hawk mitigation lands with one acre preserved for each one acre impacted for impacts of 40 acres or greater. Compliance with this ordinance is described above in the **Section 6.5.2.6**.

6.9.3 Significance Statement

With the implementation of the Project's proposed conservation measures, the Project will not conflict with any local policies or ordinances protecting biological resources, such as tree preservation policy or ordinance.

6.10 Project Effects on the Provisions of an Adopted Habitat Conservation Plan

This section addresses the portion of the CEQA Guidelines requiring an assessment of whether the Project will *conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or state habitat conservation plan.*

6.10.1 Summary Statement of Effects

The Project is located within the boundaries of the Natomas Basin Habitat Conservation Plan and provides potential habitat for a number of covered species.

6.10.2 Detailed Discussion of Effects and Avoidance and Minimization Measures

The Project does not seek take coverage under the federal Section 10(a)(1)(B) permit and the State Section 2081 Permit issued as part of the NBHCP process. To maintain consistency with the NBHCP and MAPHCP, the Applicant will endeavor to avoid conflicts with the provisions of those existing HCPs while USACE is conducting formal Section 7 consultation with USFWS under FESA regarding potential take as a result of the Project.

Because the Project would result in additional development and reserve establishment that was not addressed in the NBHCP, a programmatic effects analysis is also being prepared to evaluate its potential effects on the Covered Species and their habitats, the attainment of the goals and objectives of the NBHCP and MAPHCP, and on the viability of the populations of Covered Species in the Natomas Basin. Such mitigation would address the effect of reduced agricultural lands on the biological viability of the NBHCP.

The NBHCP and MAPHCP share the same overall goal of creating a multi-species conservation program to mitigate impacts to covered species that may result from development in the Natomas Basin. The goals of each HCP will be incorporated into the take coverage sought by the Applicant for the Project. Though there may be differences in the approach to these goals, such as the consideration of off-site mitigation, the intent of take coverage for the Project will be consistent with the existing biological goals and objectives of the NBHCP and MAPHCP.

6.10.3 Significance Statement

With the implementation of the Project's proposed conservation measures, the Project will not conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or state habitat conservation plan.

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Appendix A. Faunal Compendium

The table below lists in taxonomic order the 100 wildlife species, including 2 reptiles, 92 birds, 6 mammals, detected during surveys conducted by Bargas from 2019 to 2021. Many species were detected off-site in the vicinity of the Plan Area, but likely could be found within the Plan Area at some point during their life cycle.

	Common Name	Scientific Name
REPTILIA (Reptiles)		
SQUAMATA (Lizards and Snakes)		
PHRYNOSOMATIDAE (North American Spiny Lizards)		
	Western Fence Lizard	Sceloporus occidentalis
TESTUDINES (Turtles and Tortoises)		
EMYDIDAE (Box and Basking Turtles)		
	Red-eared Slider	Trachemys scripta
AVES (Birds)		
ANSERIFORMES (Screamers, Swans, Geese, and Ducks)		
ANATIDAE (Geese, Ducks, and Swans)		
	Snow Goose	Anser caerulescens
	Canada Goose	Branta canadensis
	Cinnamon Teal	Spatula cyanoptera
	Gadwall	Mareca strepera
	Mallard	Anas platyrhynchos
GALLIFORMES (Gallinaceous Birds)		
ODONTOPHORIDAE (New World Quail)		
	California Quail	Callipepla californica
PHASIANIDAE (Partridges, Grouse, Turkeys, and Old World Quail)		
	Ring-necked Pheasant	Phasianus colchicus
	Wild Turkey	Meleagris gallopavo
PODICIPEDIFORMES (Grebes)		
PODICIPEDIDAE (Grebes)		
	Pied-billed Grebe	Podilymbus podiceps
COLUMBIFORMES (Pigeons and Doves)		
COLUMBIDAE (Pigeons and Doves)		
	Rock Pigeon	Columba livia
	Eurasian Collared-Dove	Streptopelia decaocto
	Mourning Dove	Zenaida macroura
APODIFORMES (Swifts and Hummingbirds)		
APODIDAE (Swifts)		
	White-throated Swift	Aeronautes saxatalis
TROCHILIDAE (Hummingbirds)		

		Common Name	Scientific Name
		Anna's Hummingbird	Calypte anna
		Rufous Hummingbird	Selasphorus rufus
	GRUIFORMES (Rails, Cranes, and Allies)		
		RALLIDAE (Rails, Gallinules, and Coots)	
		American Coot	Fulica americana
	CHARADRIIFORMES (Shorebirds, Gulls, Auks, and Allies)		
		CHARADRIIDAE (Lapwings and Plovers)	
		Killdeer	Charadrius vociferus
		SCOLOPACIDAE (Sandpipers, Phalaropes, and Allies)	
		Whimbrel	Numenius phaeopus
	SULIFORMES (Frigatebirds, Boobies, and Cormorants)		
		PHALACROCORACIDAE (Cormorants)	
		Double-crested Cormorant	Phalacrocorax auritus
	PELECANIFORMES (Pelicans, Herons, Ibises, and Allies)		
		PELECANIDAE (Pelicans)	
		American White Pelican	Pelecanus erythrorhynchos
		ARDEIDAE (Herons, Bitterns, and Allies)	
		American Bittern	Botaurus lentiginosus
		Great Blue Heron	Ardea herodias
		Great Egret	Ardea alba
		Snowy Egret	Egretta thula
	CATHARTIFORMES (New World Vultures)		
		CATHARTIDAE (New World Vultures)	
		Turkey Vulture	Cathartes aura
	ACCIPITRIFORMES (Kites, Hawks, Eagles, and Allies)		
		PANDIONIDAE (Ospreys)	
		Osprey	Pandion haliaetus
		ACCIPITRIDAE (Kites, Hawks, Eagles, and Allies)	
		White-tailed Kite	Elanus leucurus
		Northern Harrier	Circus hudsonius
		Cooper's Hawk	Accipiter cooperii
		Red-shouldered Hawk	Buteo lineatus
		Swainson's Hawk	Buteo swainsoni
		Red-tailed Hawk	Buteo jamaicensis
		Rough-legged Hawk	Buteo lagopus
	STRIGIFORMES (Owls)		
		STRIGIDAE (Typical Owls)	
		Great Horned Owl	Bubo virginianus

	Common Name	Scientific Name
CORACIIFORMES (Rollers, Motmots, Kingfishers, and Allies)		
ALCEDINIDAE (Kingfishers)		
	Belted Kingfisher	Megaceryle alcyon
PICIFORMES (Woodpeckers)		
PICIDAE (Woodpeckers)		
	Downy Woodpecker	Dryobates pubescens
	Nuttall's Woodpecker	Dryobates nuttallii
	Northern Flicker	Colaptes auratus
	Acorn Woodpecker	Melanerpes formicivorus
FALCONIFORMES (Caracaras and Falcons)		
FALCONIDAE (Caracaras and Falcons)		
	Prairie Falcon	Falco mexicanus
	American Kestrel	Falco sparverius
PASSERIFORMES (Passerine Birds)		
TYRANIDAE (Tyrant Flycatchers)		
	Black Phoebe	Sayornis nigricans
	Say's Phoebe	Sayornis saya
	Western Kingbird	Tyrannus verticalis
CORVIDAE (Crows and Jays)		
	California Scrub-Jay	Aphelocoma californica
	Yellow-billed Magpie	Pica nuttalli
	American Crow	Corvus brachyrhynchos
	Common Raven	Corvus corax
PARIDAE (Chickadees and Titmice)		
	Oak Titmouse	Baeolophus inornatus
ALAUDIDAE (Larks)		
	Horned Lark	Eremophila alpestris
HIRUNDINIDAE (Swallows)		
	Northern Rough-winged Swallow	Stelgidopteryx serripennis
	Tree Swallow	Tachycineta bicolor
	Barn Swallow	Hirundo rustica
	Cliff Swallow	Petrochelidon pyrrhonota
AEGITHALIDAE (Long-tailed Tits and Bushtits)		
	Bushtit	Psaltriparus minimus
REGULIDAE (Kinglets)		
	Golden-crowned Kinglet	Regulus satrapa
	Ruby-crowned Kinglet	Regulus calendula
BOMBYCILLIDAE (Waxwings)		

	Common Name	Scientific Name
	Cedar Waxwing	Bombycilla cedrorum
SITTIDAE (Nuthatches)		
	White-breasted Nuthatch	Sitta carolinensis
TROGLODYTIDAE (Wrens)		
	House Wren	Troglodytes aedon
	Bewick's Wren	Thryomanes bewickii
MIMIDAE (Mockingbirds and Thrashers)		
	Northern Mockingbird	Mimus polyglottos
STURNIDAE (Starlings)		
	European Starling	Sturnus vulgaris
TURDIDAE (Thrushes)		
	Western Bluebird	Sialia mexicana
	American Robin	Turdus migratorius
PASSERIDAE (Old World Sparrows)		
	House Sparrow	Passer domesticus
MOTACILLIDAE (Wagtails and Pipits)		
	American Pipit	Anthus rubescens
FRINGILLIDAE (Fringilline and Cardueline Finches and Allies)		
	House Finch	Haemorhous mexicanus
	Lesser Goldfinch	Spinus psaltria
	American Goldfinch	Spinus tristis
PASSERELIDAE (New World Sparrows)		
	Lark Sparrow	Chondestes grammacus
	Dark-eyed Junco	Junco hyemalis
	White-crowned Sparrow	Zonotrichia leucophrys
	Golden-crowned Sparrow	Zonotrichia atricapilla
	Savannah Sparrow	Passerculus sandwichensis
	Song Sparrow	Melospiza melodia
	Lincoln's Sparrow	Melospiza lincolnii
	California Towhee	Melozone crissalis
	Spotted Towhee	Pipilo maculatus
ICTERIDAE (Blackbirds)		
	Western Meadowlark	Sturnella neglecta
	Hooded Oriole	Icterus cucullatus
	Bullock's Oriole	Icterus bullockii
	Yellow-headed Blackbird	Xanthocephalus xanthocephalus
	Red-winged Blackbird	Agelaius phoeniceus
	Brewer's Blackbird	Euphagus cyanocephalus

		Common Name	Scientific Name
		Great-tailed Grackle	Quiscalus mexicanus
		Brown-headed Cowbird	Molothrus ater
	PARULIDAE (Warblers)		
		Common Yellowthroat	Geothlypis trichas
		Yellow Warbler	Setophaga petechia
		Yellow-rumped Warbler	Setophaga coronata
	CARDINALIDAE (Cardinals and Allies)		
		Black-headed Grosbeak	Pheucticus melanocephalus
		Blue Grosbeak	Passerina caerulea
MAMMALIA (Mammals)			
	LAGOMORPHA (Rabbits and Hares)		
	LEPORIDAE (Hares and Rabbits)		
		Black-tailed Jackrabbit	Lepus californicus
	RODENTIA (Rodents)		
	SCIURIDAE (Squirrels)		
		California Ground-Squirrel	Otospermophilus beecheyi
		Eastern Fox Squirrel	Sciurus niger
	CASTORIDAE (Beavers)		
		North American Beaver	Castor canadensis
	CARNIVORA (Carnivores)		
	MUSTELIDAE (Weasels, Otters, and Badgers)		
		American Mink	Neovison vison
		North American River Otter	Lontra canadensis

Appendix B: Floral Compendium

The table below lists in alphabetical order the 58 plant species observed during surveys conducted by Bargas from 2019 to 2021.

Common Name	Scientific Name
Velvet Leaf	Abutilon theophrasti
Kiwi	Actinidia deliciosa
Tree-of-heaven	Ailanthus altissima
Pigweed Amaranth	Amaranthus albus
Scarlet Pimpernel	Anagallis arvensis
Wild Oats	Avena fatua
River Bulrush	Bolboschoenus fluviatilis
Black Mustard	Brassica nigra
Ripgut Brome	Bromus diandrus
Soft Chess	Bromus hordeaceus
Chili Peppers	Capsicum annuum
Italian thistle	Carduus pycnocephalus
Big Leaf Sedge	Carex amplifolia
Safflower	Carthamus tinctorium
Yellow Star Thistle	Centaurea solstitialis
Watermelon	Citrullus lanatus
Field Bindweed	Convolvulus arvensis
Turkey Mullein	Croton setiger
Tall cyperus	Cyperus eragrostis
Nutgrass	Cyperus rotundus
Yellow Nutsedge	Cyperus strigosus
Jimsonweed	Datura wrightii
Horseweed	Erigeron canadensis
Broadleaf Filaree	Erodium botrys
Gum species	Eucalyptus sp.
Strawberry	Fragaria x ananassa
Bristly Ox-tongue	Helminthotheca echioides
Summer Mustard	Hirschfeldia incana

Common Name	Scientific Name
Barley	Hordeum vulgare
Baltic Rush	Juncus balticus
Prickly Lettuce	Lactuca serriola
Duckweed	Lemna minor
Annual Ryegrass	Festuca perennis
Water Primrose	Ludwigia sp.
Hyssop Loosestrife	Lythrum hyssopifolia
Cheeseweed	Malva parviflora
Bur Clover	Medicago polymorpha
Alfalfa	Medicago sativa
Rice	Oryza sativa
Reed Canary Grass	Phalaris arundinacea
American Sycamore	Platanus occidentalis
Fremont's Cottonwood	Populus fremontii
Valley Oak	Quercus lobata
Wild Radish	Raphanus sativus
Himalayan Blackberry	Rubus armeniacus
Curly Dock	Rumex crispus
Fiddle Dock	Rumex pulcher
Gooding's Black Willow	Salix gooddingi
Tule	Schoenoplectus acutus var. occidentalis
Coastal Redwood	Sequoia sempervirens
Milk Thistle	Silybum marianum
Tomato	Solanum lycopersicum
Johnsongrass	Sorghum halepense
Dandelion	Taraxacum officinale
Wheat	Triticum aestivum
Common Cattail	Typha latifolia
Foxtail Fescue	Vulpia myuros
Maize	Zea mays

Appendix C. Special Status Resource Summary

The following table summarizes the legal status and potential for occurrence of three sensitive vegetation communities, as well as 26 plant, 5 invertebrate, 3 fish, 2 amphibian, 2 reptile, and 16 bird species with special status discussed in this Assessment.

Common Name	Scientific Name	Status*	NBHCP Covered Species	Potential for Occurrence	Notes
VEGETATION COMMUNITIES					
Northern Hardpan Vernal Pool	Northern Hardpan Vernal Pool	-	-	Presumed Absent/No Potential	Eight location records in CNDDB desktop review. Nearest is six miles northeast of Plan Area.
Northern Claypan Vernal Pool	Northern Claypan Vernal Pool	-	-	Presumed Absent/No Potential	Single location record in CNDDB desktop review four miles east of Plan Area.
Great Valley Cottonwood Riparian Forest	Great Valley Cottonwood Riparian Forest	-	-	Presumed Absent/No Potential	Single location record in CNDDB desktop review, mapped along the far shore of the Sacramento River bend immediately southeast of the Plan Area.
PLANTS					
Ferris' Milkvetch	Astragalus tener var. ferrisae	CRPR 1B.1	No	Presumed Absent/No Potential	Required habitat components absent in Plan Area, not observed during protocol surveys
Heartscale	Atriplex cordulata var. cordulata	CRPR 1B.2	No	Low	Not found in Surveyed Area. Unlikely to occur in remainder of Plan Area, but can't be entirely dismissed without surveys.
Brittlescale	Atriplex depressa	CRPR 1B.2	No	Low	Not found in Surveyed Area. Unlikely to occur in remainder of Plan Area, but can't be entirely dismissed without surveys.
Bristly Sedge	Carex comosa	CRPR 2B.1	No	Low	Not found in Surveyed Area. Unlikely to occur in remainder of Plan Area, but can't be entirely dismissed without surveys.
Pappose Tarplant	Centromadia parryi ssp. parryi	CRPR 1B.2	No	Low	Not found in Surveyed Area. Unlikely to occur in remainder of Plan Area, but can't be entirely dismissed without surveys.
Palmate-bracted Bird's-Beak	Chloropyron palmatum	FE, SE, CRPR 1B.1	No	Low	Not found in Surveyed Area. Unlikely to occur in remainder of Plan Area, but can't be entirely dismissed without surveys.
Peruvian Dodder	Cuscuta obtusiflora var. glandulosa	CRPR 2B.2	No	Presumed Absent/No Potential	Required habitat components absent in Plan Area, not observed during protocol surveys
Dwarf Downingia	Downingia pusilla	CRPR 2B.2	No	Low	Not found in Surveyed Area. Unlikely to occur in remainder of Plan Area, but can't be entirely dismissed without surveys.

Common Name	Scientific Name	Status*	NBHCP Covered Species	Potential for Occurrence	Notes
Boggs Lake Hedge Hyssop	Gratiola heterosepala	SE, CRPR 1B.2	**Yes**	Presumed Absent/No Potential	Required habitat components absent in Plan Area, not observed during protocol surveys
Jepson's Coyote Thistle	Eryngium jepsonii	CRPR 1B.2	No	Low	Not found in Surveyed Area. Unlikely to occur in remainder of Plan Area, but can't be entirely dismissed without surveys.
San Joaquin Spearscale	Extriplex joaquinana	CRPR 1B.2	No	Low	Not found in Surveyed Area. Unlikely to occur in remainder of Plan Area, but can't be entirely dismissed without surveys.
Woolly Rose-Mallow	Hibiscus lasiocarpos var. occidentalis	CRPR 1B.2	No	Low	Marginal habitat present within the Plan Area, and previously recorded occurrences near the Plan Area
Delta Tule Pea	Lathyrus jepsonii var. jepsonii	CRPR 1B.2	**Yes**	Presumed Absent/No Potential	Required habitat components absent in Plan Area, not observed during protocol surveys
Legenere	Legenere limosa	CRPR 1B.1	**Yes**	Presumed Absent/No Potential	Required habitat components absent in Plan Area, not observed during protocol surveys
Heckard's Pepper Grass	Lepidium latipes var. heckardii	CRPR 1B.2	No	Low	Not found in Surveyed Area. Unlikely to occur in remainder of Plan Area, but can't be entirely dismissed without surveys.
Mason's Lilaeopsis	Lilaeopsis masonii	CRPR 1B.1	No	Low	Marginal habitat may present within the Plan Area, and previously recorded occurrences near the Plan Area
Baker's Navarretia	Navarretia leucocephala ssp. bakeri	CRPR 1B.1	No	Low	Not found in Surveyed Area. Unlikely to occur in remainder of Plan Area, but can't be entirely dismissed without surveys.
Colusa Grass	Neostapfia colusana	FT, SE, CRPR 1B.1	**Yes**	Presumed Absent/No Potential	Required habitat components absent in Plan Area, not observed during protocol surveys
Slender Orcutt Grass	Orcuttia tenuis	FT, SE, CRPR 1B.1	**Yes**	Presumed Absent/No Potential	Plan Area is outside species' elevational/distributional range, required habitat components absent in Plan Area, not observed during protocol surveys
Sacramento Orcutt Grass	Orcuttia viscida	FE, SE, CRPR 1B.1	**Yes**	Presumed Absent/No Potential	Plan Area is outside species' elevational/distributional range, required habitat components absent in Plan Area, not observed during protocol surveys
Bearded Popcorn Flower	Plagiobothrys hystriculus	CRPR 1B.1	No	Low	Not found in Surveyed Area. Unlikely to occur in remainder of Plan Area, but can't be entirely dismissed without surveys.

Common Name	Scientific Name	Status*	NBHCP Covered Species	Potential for Occurrence	Notes
California Alkaligrass	Puccinellia simplex	CRPR 1B.2	No	Low	Not found in Surveyed Area. Unlikely to occur in remainder of Plan Area, but can't be entirely dismissed without surveys.
Sanford's Arrowhead	Sagittaria sanfordii	CRPR 1B.2	**Yes**	Low	Marginal habitat may present within the Plan Area, and previously recorded occurrences near the Plan Area
Suisun Marsh Aster	Symphyotrichum lentum	CRPR 1B.2	No	Presumed Absent/No Potential	Required habitat components absent in Plan Area, not observed during protocol surveys
Saline Clover	Trifolium hydrophilum	CRPR 1B.2	No	Low	Not found in Surveyed Area. Unlikely to occur in remainder of Plan Area, but can't be entirely dismissed without surveys.
Crampton's Tuctoria	Tuctoria mucronata	FE, SE, CRPR 1B.1	No	Low	Not found in Surveyed Area. Unlikely to occur in remainder of Plan Area, but can't be entirely dismissed without surveys.
INVERTEBRATES					
Conservancy Fairy Shrimp	Branchinecta conservatio	FE	No	Presumed Absent/No Potential	No suitable habitat in the Plan Area.
Vernal Pool Fairy Shrimp	Branchinecta lynchi	FT	**Yes**	Low	No suitable habitat in the Plan Area for long term population persistence, but may occur in disturbed water accumulations.
Vernal Pool Tadpole Shrimp	Lepidurus packardi	FE	**Yes**	Presumed Absent/No Potential	No suitable habitat in the Plan Area.
Midvalley Fairy Shrimp	Branchinecta mesovallensis	-	**Yes**	Presumed Absent/No Potential	No suitable habitat in the Plan Area.
Valley Elderberry Longhorn Beetle	Desmocerus californicus dimorphus	FT	**Yes**	Low	No suitable habitat has been found in the Plan Area, however, elderberry plants are widespread and grow quickly.
FISH					
Chinook Salmon	Oncorhynchus tshawytscha	FT, ST	No	Presumed Absent/No Potential	No suitable habitat in the Plan Area.
Steelhead	Oncorhynchus mykiss irideus	FT	No	Presumed Absent/No Potential	No suitable habitat in the Plan Area.
Longfin Smelt	Spirinchus thaleichthys	ST, SSC	No	Presumed Absent/No Potential	No suitable habitat in the Plan Area.
AMPHIBIANS					

Common Name	Scientific Name	Status*	NBHCP Covered Species	Potential for Occurrence	Notes
Western Spadefoot	Spea hammondii	SSC	**Yes**	Presumed Absent/No Potential	No known occurrences in the Natomas Basin and limited suitable habitat in the Plan Area.
California Tiger Salamander	Ambystoma californiense	FT, ST	**Yes**	Presumed Absent/No Potential	No known occurrences in the Natomas Basin and limited suitable habitat in the Plan Area.
REPTILES					
Giant Gartersnake	Thamnophis gigas	FT	**Yes**	Low	Unlikely to occur regularly but may infrequently use canals in Plan Area for dispersal.
Northwestern Pond Turtle	Actinemys marmorata	ST	**Yes**	High	Appropriate habitat present within and adjacent to the Plan Area
BIRDS					
Aleutian Cackling Goose	Branta hutchinsii leucopareia	FD, SSC	**Yes**	Moderate	No record in Natomas Basin, but foraging habitat is present within the Plan Area.
Western Yellow-billed Cuckoo	Coccyzus americanus occidentalis	FT, SE	No	Presumed Absent/No Potential	Considered extirpated in region. No suitable habitat in the Plan Area.
California Black Rail	Laterallus jamaicensis coturniculus	ST	No	Presumed Absent/No Potential	Outside of the range of species and no suitable habitat present.
Western Snowy Plover	Charadrius nivosus nivosus	FT	No	Presumed Absent/No Potential	Outside of the range of species and no suitable habitat present.
American White Pelican	Pelecanus erythrorhynchos	SSC	**No**	Present	Observed once in Plan Area on a channel. No breeding habitat.
White-faced Ibis	Plegadis chihi	-	Yes	Moderate	Rare in the Natomas Basin but expanding range-wide. Appropriate foraging habitat present.
Swainson's Hawk	Buteo swainsonii	ST	**Yes**	Present	Has nested in Plan Area and uses much of it for hunting.
White-tailed Kite	Elanus leucurus	FP	No	Present	Uses Plan Area for hunting. No confirmed nesting.
Northern Harrier	Circus hudsonius	SSC	No	Present	Uses Plan Area for hunting. No confirmed nesting.
Burrowing Owl	Athene cunicularia	SSC	Yes	Moderate	Present in the Natomas Basin but not near Plan Area. Could occur as transient or in winter.
Least Bell's Vireo	Vireo bellii pusillus	FE	No	Presumed Absent/No Potential	Outside of the range of species and no suitable habitat present.
Loggerhead Shrike	Lanius ludovicianus	SCC	Yes	High	Suitable habitat present. Several older eBird records near Plan Area.

Common Name	Scientific Name	Status*	NBHCP Covered Species	Potential for Occurrence	Notes
Bank Swallow	Riparia riparia	ST	**Yes**	Moderate	Appropriate foraging habitat present and several nearby eBird records. No breeding habitat in Plan Area.
Tricolored Blackbird	Agelaius tricolor	ST, SSC	**Yes**	Moderate	Appropriate foraging habitat present and several nearby eBird records. No breeding habitat in Plan Area.
Yellow-headed Blackbird	Xanthocephalus xanthocephalus	SSC	No	High	Observed east of the Plan Area during surveys. Most likely to occur in winter. No breeding habitat.
Yellow Warbler	Setophaga petechia	SSC	No	High	Common in riparian habitat along the Sacramento River.

Federal Designations:
(Federal Endangered Species Act, USFWS)

FE: Federally listed, Endangered
FT: Federally listed, Threatened

State Designations:
(California Endangered Species Act, CDFW)

SE: State-listed, Endangered
ST: State-listed, Threatened
SSC: California Species of Special Concern
FP: Fully Protected Species

California Rare Plant Rank (CRPR)

1B: Rare, threatened, or endangered in California and elsewhere
2B: Rare, threatened, or endangered in California but more common elsewhere

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 (less than 20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

Appendix D. NRCS Soils Report

United States Department of Agriculture

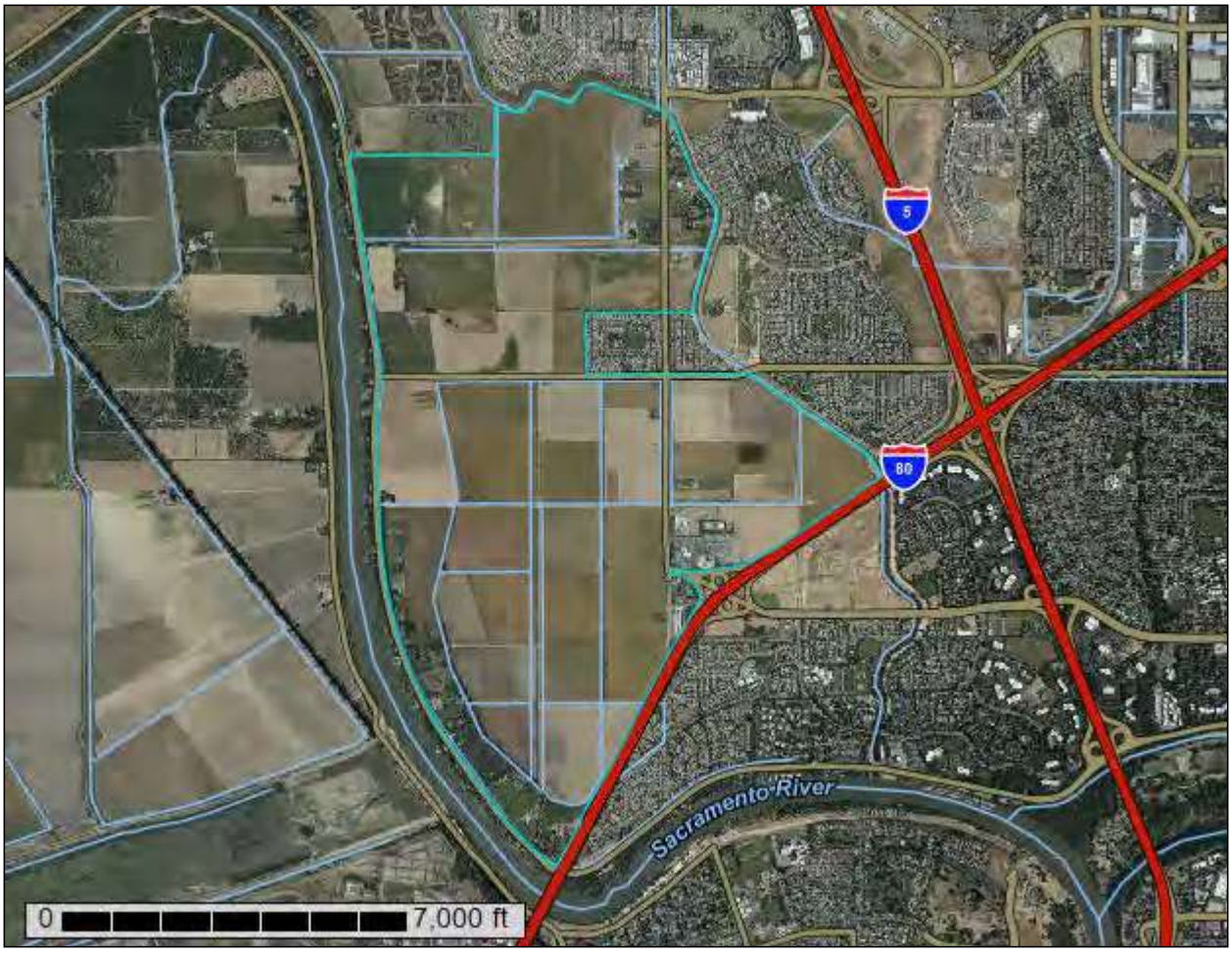
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Sacramento County, California

Upper Westside Specific Plan



January 13, 2022

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map (Upper Westside Specific Plan)

Map Scale: 1:28,200 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 400 800 1600 2400

Feet
0 1000 2000 4000 6000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Sacramento County, California
Survey Area Data: Version 20, Sep 3, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 8, 2019—May 20, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend (Upper Westside Specific Plan)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
115	Clear Lake clay, hardpan substratum, drained, 0 to 1 percent slopes	310.3	15.0%
119	Columbia sandy loam, clayey substratum, partially drained, 0 to 2 percent slopes	38.9	1.9%
127	Cosumnes silt loam, partially drained, 0 to 2 percent slopes	1,401.2	67.8%
128	Cosumnes silt loam, drained, 0 to 2 percent slopes	75.4	3.7%
137	Durixeralfs, 0 to 1 percent slopes	13.3	0.6%
141	Egbert clay, partially drained, 0 to 2 percent slopes	9.4	0.5%
161	Jacktone clay, drained, 0 to 2 percent slopes	17.2	0.8%
206	Sailboat silt loam, partially drained, 0 to 2 percent slopes, MLRA 16	189.6	9.2%
221	San Joaquin-Xerarents complex, leveled, 0 to 1 percent slopes	7.3	0.4%
247	Water	2.4	0.1%
Totals for Area of Interest		**2,065.2**	**100.0%**

Map Unit Descriptions (Upper Westside Specific Plan)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made

up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Sacramento County, California

115—Clear Lake clay, hardpan substratum, drained, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: hhlp
Elevation: 0 to 100 feet
Mean annual precipitation: 12 to 18 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 260 to 280 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Clear lake and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Clear Lake

Setting

Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 15 inches: clay
H2 - 15 to 34 inches: clay
H3 - 34 to 48 inches: clay loam
H4 - 48 to 64 inches: cemented

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: 48 to 64 inches to duripan
Drainage class: Somewhat poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: C/D
Ecological site: R017XY901CA - Clayey Basin Group
Hydric soil rating: Yes

Minor Components

Cosumnes

Percent of map unit: 8 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Hydric soil rating: Yes

San joaquin

Percent of map unit: 7 percent
Hydric soil rating: No

119—Columbia sandy loam, clayey substratum, partially drained, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hhlt
Elevation: 150 feet
Mean annual precipitation: 12 to 25 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 230 to 340 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Columbia and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Columbia

Setting

Landform: Flood plains, natural levees
Landform position (two-dimensional): Toeslope, summit
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 11 inches: sandy loam
H2 - 11 to 43 inches: stratified loamy sand to silt loam
H3 - 43 to 64 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Rare
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.9 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D
Hydric soil rating: Yes

Minor Components

Sailboat

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Hydric soil rating: Yes

Columbia

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Hydric soil rating: Yes

Valpac

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Hydric soil rating: Yes

127—Cosumnes silt loam, partially drained, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2x4l5
Elevation: 0 to 40 feet
Mean annual precipitation: 17 to 20 inches
Mean annual air temperature: 61 to 62 degrees F
Frost-free period: 271 to 330 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Cosumnes and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cosumnes

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from igneous and metamorphic rock

Typical profile

Ap - 0 to 8 inches: silt loam
C - 8 to 21 inches: stratified silty clay loam to clay
2Ab - 21 to 43 inches: stratified clay loam to clay
2Bk - 43 to 60 inches: stratified clay loam to clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Hydric soil rating: Yes

Minor Components

Clear lake

Percent of map unit: 4 percent
Landform: Basin floors
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Sailboat

Percent of map unit: 4 percent
Landform: Flood plains on delta plains, natural levees on delta plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R016XA002CA - Freshwater, Stratified, Fluventic Sites (PROVISIONAL)
Hydric soil rating: Yes

Columbia

Percent of map unit: 4 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R016XA002CA - Freshwater, Stratified, Fluventic Sites (PROVISIONAL)
Hydric soil rating: Yes

Egbert

Percent of map unit: 3 percent
Landform: Flood plains on delta plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R016XA001CA - Tidally-Influenced, Freshwater Sites (PROVISIONAL)
Hydric soil rating: Yes

128—Cosumnes silt loam, drained, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hhm3
Elevation: 10 to 70 feet
Mean annual precipitation: 15 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 250 to 300 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Cosumnes and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cosumnes

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 21 inches: stratified silty clay loam to clay
H3 - 21 to 43 inches: stratified clay loam to clay

H4 - 43 to 60 inches: stratified clay loam to clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.7 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: C
Hydric soil rating: Yes

Minor Components

Columbia

Percent of map unit: 3 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Hydric soil rating: Yes

Egbert

Percent of map unit: 3 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Hydric soil rating: Yes

Dierssen

Percent of map unit: 3 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Hydric soil rating: Yes

Sailboat

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Hydric soil rating: Yes

San joaquin

Percent of map unit: 2 percent
Hydric soil rating: No

Unnamed, sandy strata

Percent of map unit: 1 percent

Hydric soil rating: No

Unnamed, frequently flooded

Percent of map unit: 1 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Hydric soil rating: Yes

137—Durixeralfs, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: hhmd
Elevation: 20 to 150 feet
Mean annual precipitation: 10 to 20 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 250 to 300 days
Farmland classification: Not prime farmland

Map Unit Composition

Durixeralfs and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Durixeralfs

Setting

Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 6 inches: clay
H2 - 6 to 20 inches: clay loam
H3 - 20 to 60 inches: indurated

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: 20 to 60 inches to duripan
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Galt

Percent of map unit: 6 percent
Landform: Terraces
Hydric soil rating: Yes

Xerarents

Percent of map unit: 6 percent
Hydric soil rating: No

Redding

Percent of map unit: 6 percent
Hydric soil rating: No

Unnamed, very shallow loamy

Percent of map unit: 2 percent
Hydric soil rating: No

141—Egbert clay, partially drained, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hhmj
Elevation: 10 to 20 feet
Mean annual precipitation: 17 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 220 to 260 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Egbert and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Egbert

Setting

Landform: Flood plains, backswamps
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 18 inches: clay
H2 - 18 to 46 inches: silty clay loam
H3 - 46 to 60 inches: stratified sandy clay loam to clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Rare
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.0 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: R016XA001CA - Tidally-Influenced, Freshwater Sites (PROVISIONAL)
Hydric soil rating: Yes

Minor Components

Gazwell

Percent of map unit: 5 percent
Landform: Backswamps
Ecological site: R016XA001CA - Tidally-Influenced, Freshwater Sites (PROVISIONAL)
Hydric soil rating: Yes

Laugenour

Percent of map unit: 5 percent
Landform: Levees
Ecological site: R016XA002CA - Freshwater, Stratified, Fluventic Sites (PROVISIONAL)
Hydric soil rating: Yes

Clear lake

Percent of map unit: 5 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Hydric soil rating: Yes

Scribner

Percent of map unit: 5 percent
Landform: Backswamps
Ecological site: R016XA001CA - Tidally-Influenced, Freshwater Sites (PROVISIONAL)
Hydric soil rating: Yes

Valpac

Percent of map unit: 5 percent
Landform: Levees
Ecological site: R016XA002CA - Freshwater, Stratified, Fluventic Sites (PROVISIONAL)
Hydric soil rating: Yes

161—Jacktone clay, drained, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hhn5
Elevation: 10 to 100 feet
Mean annual precipitation: 12 to 20 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 250 to 300 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Jacktone and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Jacktone

Setting

Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 11 inches: clay
H2 - 11 to 34 inches: clay loam
H3 - 34 to 52 inches: indurated
H4 - 52 to 60 inches: stratified loam to clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 34 to 52 inches to duripan
Drainage class: Somewhat poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: D
Ecological site: R017XY902CA - Duripan Vernal Pools
Hydric soil rating: Yes

Minor Components

Cosumnes

Percent of map unit: 3 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Hydric soil rating: Yes

San joaquin

Percent of map unit: 3 percent
Hydric soil rating: No

Xerarents

Percent of map unit: 3 percent
Hydric soil rating: No

Clear lake

Percent of map unit: 3 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Hydric soil rating: Yes

Durixeralfs

Percent of map unit: 3 percent
Hydric soil rating: No

206—Sailboat silt loam, partially drained, 0 to 2 percent slopes, MLRA 16

Map Unit Setting

National map unit symbol: 2xlch
Elevation: -10 to 30 feet
Mean annual precipitation: 18 to 20 inches
Mean annual air temperature: 61 to 62 degrees F
Frost-free period: 320 to 330 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Sailboat and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sailboat

Setting

Landform: Flood plains on natural levees
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from igneous, metamorphic and sedimentary rock

Typical profile

Ap - 0 to 6 inches: silt loam
A - 6 to 16 inches: silt loam
C - 16 to 28 inches: silt loam
2Akb - 28 to 34 inches: clay loam
2C - 34 to 49 inches: loam
2Ck - 49 to 62 inches: loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: About 24 to 35 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very high (about 12.4 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C
Ecological site: R016XA002CA - Freshwater, Stratified, Fluventic Sites (PROVISIONAL)
Hydric soil rating: Yes

Minor Components

Scribner

Percent of map unit: 3 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R016XA002CA - Freshwater, Stratified, Fluventic Sites (PROVISIONAL)
Hydric soil rating: Yes

Egbert

Percent of map unit: 3 percent
Landform: — error in exists on —
Landform position (three-dimensional): Tread

Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R016XA002CA - Freshwater, Stratified, Fluventic Sites (PROVISIONAL)
Hydric soil rating: Yes

Gazwell

Percent of map unit: 3 percent
Landform: Backswamps
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R016XA001CA - Tidally-Influenced, Freshwater Sites (PROVISIONAL)
Hydric soil rating: Yes

Columbia

Percent of map unit: 3 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R016XA002CA - Freshwater, Stratified, Fluventic Sites (PROVISIONAL), R016XA002CA - Freshwater, Stratified, Fluventic Sites (PROVISIONAL)
Hydric soil rating: Yes

Cosumnes

Percent of map unit: 3 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

221—San Joaquin-Xerarents complex, leveled, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: hhq3
Elevation: 0 to 2,500 feet
Mean annual precipitation: 10 to 22 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 250 to 300 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

San joaquin and similar soils: 45 percent
Xerarents and similar soils: 40 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of San Joaquin

Setting

Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 23 inches: silt loam
H2 - 23 to 28 inches: clay loam
H3 - 28 to 54 inches: indurated
H4 - 54 to 60 inches: stratified sandy loam to loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches; 28 to 54 inches to duripan
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Xerarents

Setting

Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 60 inches: variable

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydric soil rating: No

Minor Components

Clear lake

Percent of map unit: 3 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Hydric soil rating: Yes

Columbia

Percent of map unit: 3 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Hydric soil rating: Yes

Sailboat

Percent of map unit: 2 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Hydric soil rating: Yes

Kimball

Percent of map unit: 2 percent
Hydric soil rating: No

Galt

Percent of map unit: 2 percent
Landform: Terraces
Hydric soil rating: Yes

Durixeralfs

Percent of map unit: 2 percent
Hydric soil rating: No

Unnamed, rarely flooded

Percent of map unit: 1 percent
Hydric soil rating: No

247—Water

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

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