Draft Environmental Impact Report

Appendix

Biological Resources – Botanical/Wildlife

Pacheco Reservoir Expansion Project

November 2021

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Chapter 1. List of Biological Resources – Botany-Wildlife Attachments

This appendix consists of a series of attachments for Section 3.5 Biological Resources – Botanical-Wildlife and are described below.

- **Attachment A - Botanical and Wildlife Special-Status Species Habitat Assessment**
  Provides a summary of the results of the botanical and wildlife special-status species surveys, which included focused site assessments for California red-legged frog (*Rana draytonii*) (CRLF) and California tiger salamander (*Ambystoma californiense*), conducted in 2019 and 2020 for the Project.
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- **Attachment B - Terrestrial Habitat Mapping**
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    - Exhibit A – Vegetation Communities and Other Habitat Types Map Figures
- **Attachment C - Aquatic Resources Delineation**
  Describes potential waters of the U.S and waters of the State present within the upstream and downstream areas.
    - Exhibit A. Delineation Maps

  - Exhibit B. Photos

- **Attachment D - Final Eagle Survey Results**
  Describes the results of the focused eagle surveys conducted in 2020 for the upstream and downstream areas.

- **Attachment E - Vegetation Communities and Other Land Cover Types**
  Illustrates the vegetation communities and aquatic resources (i.e., potential waters of the U.S. and waters of the state) that were mapped using desktop resources that are present within the access and utility areas.

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Appendix

Biological Resources – Botanical/Wildlife Appendix

Attachment A

Botanical and Wildlife Special-Status Species Habitat Assessment

Pacheco Reservoir Expansion Project

November 2021

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Abbreviations and Acronyms

CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CRLF	California red-legged frog (*Rana draytonii*)
CRPR	California Rare Plant Rank
CTS	California tiger salamander (*Ambystoma californiense*)
ESA	federal Endangered Species Act
Project	Pacheco Reservoir Expansion Project
Report	Botanical and Wildlife Special-Status Species Habitat Assessment Report
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

Chapter 1 Introduction

This Botanical and Wildlife Special-Status Species Habitat Assessment Report (Report) was prepared in support of the Pacheco Reservoir Expansion Project (Project). This Report has been prepared to provide a summary of the results of the botanical and wildlife special-status species surveys, which included focused site assessments for California red-legged frog (*Rana draytonii*) (CRLF) and California tiger salamander (*Ambystoma californiense*) (CTS), conducted in 2019 and 2020 for the Project. The results of the 2019 and 2020 surveys and site assessments are also intended to be used to develop the mitigation framework necessary to support Project implementation. Information is provided in separate Attachments for the terrestrial habitat mapping, aquatic resources delineations, stream habitat mapping, and focused eagle surveys.

Chapter 2 Methods

The study area for the purposes of this Report, generally encompasses the existing Pacheco Reservoir and upstream areas (i.e., generally north of the existing North Fork Dam) surrounding the reservoir up to the expanded reservoir boundary plus an approximately 500-foot buffer. The study area also encompasses approximately 17 miles of Pacheco Creek along the 100-year floodplain from the existing North Fork Dam downstream to San Felipe Lake. In total, the study area encompasses approximately 6,835 acres and includes the currently proposed impact areas associated with construction of the proposed dam and inundation area (i.e., the study area does not include future land owner access routes or auxiliary roads or transmission lines). See Figure 2-1 for the study area.

Numerous surveys were conducted within the study area in 2019 and 2020. Most of these efforts were focused on identification of rare, threatened, and endangered species and on mapping the extent of habitats and wetlands. Table 2-1 outlines surveys and assessments that have been performed in the study area, type of survey/assessment conducted and the time frame that they were conducted. A summary of results for each survey/assessment is described in Chapter 3. In addition to the surveys/assessments listed in Table 2-1, separate reports have been prepared for terrestrial habitat mapping, aquatic resources delineation, stream habitat mapping and eagle field investigations. The information documented in these reports were used to inform the determination of potential for special-status species and their habitat to occur in the study area.

Table 2-1. Field Surveys/Assessments Conducted and Date

Species	Survey Type	Date
Special-Status Botanical Species	Focused special-status plant botanical surveys and non-native invasive plant mapping.	March 16 to April 6, 2020, May 4 to May 22, 2020, and July 20 to August 14, 2020.
Special-Status Amphibian Species	Protocol habitat assessment and reconnaissance surveys.	March 10, 11, 12, 30; April 1, 2; and May 7, 8, 2020.
Special-Status Reptile Species	Habitat assessment surveys.	March 10, 11, 12, 30; April 1, 2; and May 7, 8, 2020.
Special-Status Mammalian Species	Habitat assessment surveys.	March 10, 11, 12, 30, April 1, 2, and May 7, 8, 2020.
Special-Status Insect Species	Habitat assessment surveys.	March 16 to April 6, 2020, May 4 to May 22, 2020, and July 20 to August 14, 2020.

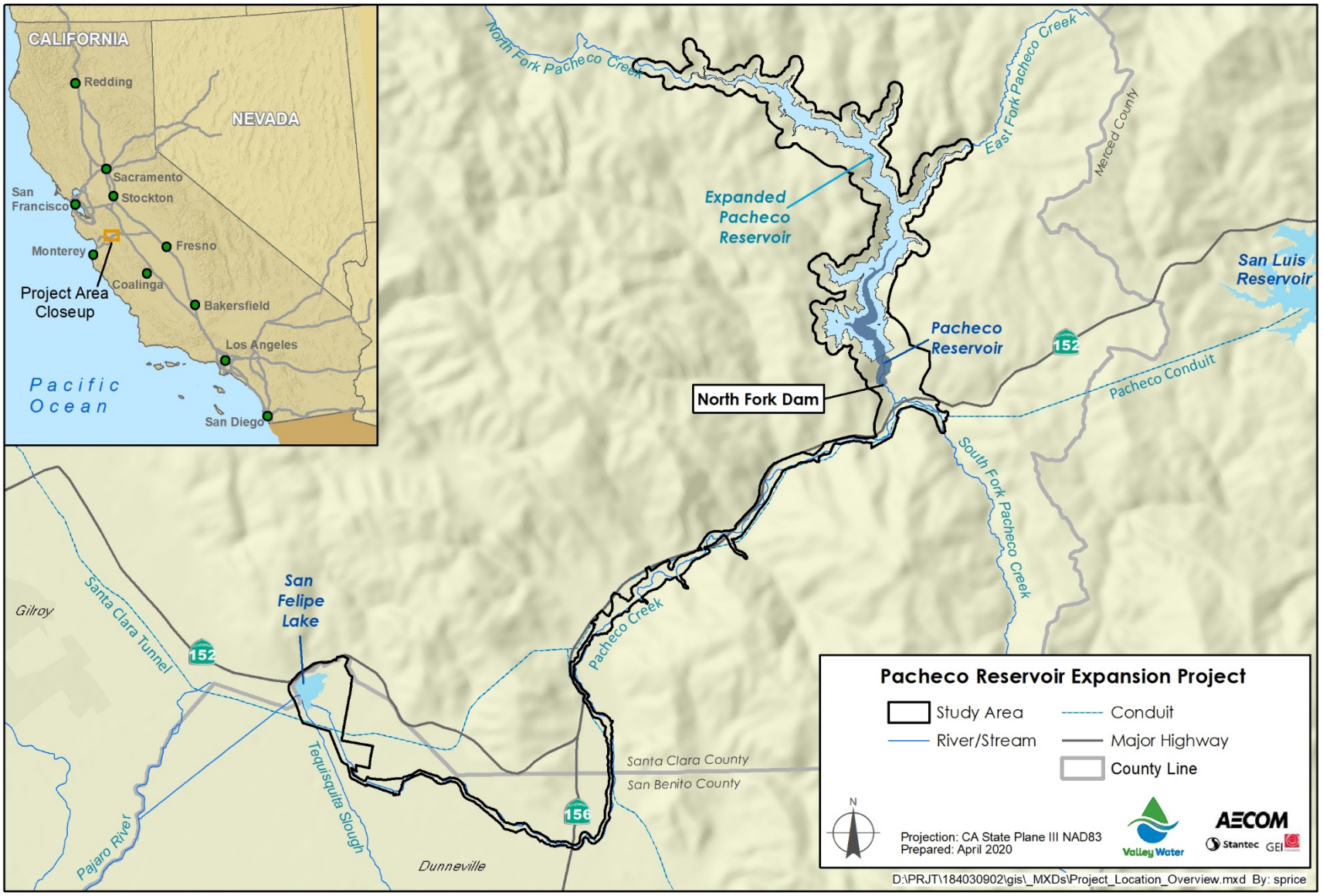

Figure 2-1. Pacheco Reservoir Expansion Project Botanical and Wildlife Habitat Assessment Study Area

2.1 Special-Status Species Desktop and Literature Review

Special-status plant and wildlife species that may occur in the study area were determined, in part, by reviewing natural resource agency databases, literature, and other relevant sources. The following information sources were reviewed:

- *Three Sisters, San Felipe, Mustang Peak, and Pacheco Peak California* U.S. Geological Survey (USGS) 7.5-minute topographic quadrangles within the study area;
- Aerial photographs of the study area and vicinity;
- U.S. Fish and Wildlife Service (USFWS) list of endangered and threatened species that may occur in the vicinity of the study area (USFWS 2020a) (Exhibit A);
- USFWS Critical Habitat Mapper (USFWS 2020b);
- California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB) plant and wildlife records (CNDDB 2020a) (Exhibit A) and the California Native Plant Society (CNPS) online Inventory of Rare and Endangered Plants (CNPS 2020) records for the *Three Sisters, San Felipe, Mustang Peak, and Pacheco Peak California* USGS 7.5-minute topographic quadrangles and the quadrangles immediately adjacent (i.e., reviewed 18 quadrangles total) (Exhibit A);
- California Wildlife Habitat Relationships System (CDFW 2014);
- Species and land cover descriptions identified in the Santa Clara Valley Habitat Plan (Santa Clara County 2012); and
- Information from *The Jepson Manual: Vascular Plants of California* (Baldwin et. al. 2012) including applicable errata and supplements (Jepson Flora Project 2020).

A list of special-status species that could occur or are known to occur in the study area and vicinity was developed based on the literature and database review. The list was further refined based on field surveys to identify if potential habitat for those species exists in the study area.

2.2 Special-Status Species

Regionally occurring special-status species were identified based on a review of pertinent literature, the USFWS species list, CNDDB and CNPS database records, and current field survey efforts. The status of each special-status species was verified using the following:

- *State and Federally Listed Endangered, Threatened and Rare Plants of California* (CDFW 2020b)
- *Special Vascular Plants, Bryophytes, and Lichens List* (CDFW 2020c)
- *Special Animals List* (CDFW 2020d)
- *State and Federally Listed Endangered and Threatened Animals of California* (CDFW 2020e).

For each species, habitat requirements were assessed and compared to the habitats in the study area to determine if potential habitat for the species is present. For the purpose of this evaluation, special-status plant species include plants that are (1) listed as threatened or endangered under the California Endangered Species Act (CESA) or the federal Endangered

Species Act (ESA), (2) proposed for federal listing as threatened or endangered, (3) state or federal candidate species, (4) designated as rare by the CDFW, and (5) California Rare Plant Rank (CRPR) 1A, 1B, 2A, 2B, 3 or 4 species. Special-status wildlife species include species that are (1) listed as threatened or endangered under the CESA or ESA, (2) proposed for federal listing as threatened or endangered, (3) state or federal candidate species, (4) identified by the CDFW as species of special concern or fully protected species; or (5) have been identified by resource agencies as having the potential to be proposed for listing in the immediate future.

Based on the desktop and pertinent literature review 64 special-status plant species and 50 special-status wildlife species were analyzed for their potential to occur within the study area. Out of the 64 special-status plant species, 49 were determined to have potential to occur based on the vegetation communities identified in the study area (Table 2-2). Out of the 50 special-status wildlife species, 36 were determined to have potential to occur based on the vegetation communities/habitat present in the study area (Table 2-3). Exhibit B through Exhibit E provides further details on the special-status species that have potential to occur in the respective study areas, including the results/finding of the focused botanical surveys. Potential for each of the special-status species to occur in Table 2-2 and Table 2-3 is based on the following criteria:

- **Present:** The species is known to be present or has been recently observed in the study area.
- **High:** The species has been observed and documented within 5 miles of the study area within the last 5 years and habitat for the species is present in the study area.
- **Moderate:** The study area is located within the range of the species, there are documented occurrences within 5 miles of the study area, and potential habitat for the species exists in the study area.
- **Low:** The study area is located within the range of the species, but no past documented occurrences have been recorded within 5 miles and only low quality (e.g., small, fragmented patches or habitats under the influence of frequent anthropogenic disturbances) are present in the study area.
- **Absent:** Focused surveys determined the species is absent from the study area, the species is acknowledged to be extirpated locally or the study area is located outside of the species range, or potential habitat to support the species is not present in the study area.

Table 2-2. Special-Status Plant Species with Potential to Occur in the Study Area

Common Name Scientific Name	Listing Status[1]	Habitat	Elevation	Bloom	Potential to Occur in Study Area
Santa Clara thorn-mint *(Acanthomintha lanceolata)*	–/–/4.2	Chaparral, cismontane woodland, coastal scrub, talus, rocky slopes, outcrops. Often in serpentinite.	260–3935 feet.	Mar–Jun.	**Moderate.** The study area is within the known range of this plant species. There is potential suitable habitat for this plant species within the study area in the form of chaparral, cismontane woodland, and small, infrequent scree slopes. There are no CNDDB occurrences of this plant species within 5 miles of the study area. However, there are two modern collections of this plant species within 5 miles of the study area. (On a scale of 1.0 to 6.5, this plant species has a mean ultramafic affinity of 3.4: a strong indicator. It is included within a group of 123 taxa with 65 to 74 percent (%) of their occurrences on ultramafics (such as serpentine). Serpentine soils and serpentine specific vegetation communities are not present in the study area.
Howell's onion *(Allium howellii var. howellii)*	–/–/4.3	Valley and foothill grassland (often clay or serpentinite).	160–7,220 feet.	Mar–Apr.	**Moderate.** The study area is within the northern extent of the range of this plant species. There is potential suitable habitat for this plant species within the study area in the form of valley and foothill grassland occurring in clay soils in the San Felipe Lake area. There are no CNDDB occurrences of this plant species within 5 miles of the study area.
Pajaro manzanita *(Arctostaphylos pajaroensis)*	–/–/1B.1	Chaparral (on sandy substrates such as sandstone outcrops).	95–2,495 feet.	Dec–Mar.	**No Potential.** The study area is outside of the known range of this plant species. There is no potential suitable habitat for this plant species within the study area. There are no CNDDB records of this plant species within 5 miles of the study area.
Marsh sandwort *(Arenaria paludicola)*	E/E/1B.1	Sandy openings in freshwater or brackish marshes and swamps.	0–550 feet.	May–Aug.	**Low.** The study area is within the historic range of this plant species, but it is believed to have been extirpated from the Bay Area. There is potential suitable habitat for this plant species within the study area in the form of freshwater marsh in the San Felipe Lake area. There are no CNDDB occurrences of this plant species within 5 miles of the study area; the nearest known occurrences are greater than 30 air miles west-northwest of the study area.

Table 2-2. Special-Status Plant Species with Potential to Occur in the Study Area (contd.)

Common Name Scientific Name	Listing Status[1]	Habitat	Elevation	Bloom	Potential to Occur in Study Area
Alkali milk-vetch *(Astragalus tener var. tener)*	–/–/1B.2	Playas, valley, and foothill grassland (adobe clay), vernal pools; alkaline habitats.	0–195 feet.	Mar–Jun.	**Moderate.** The study area is within the known range of this plant species and there is potential suitable habitat within the western portion of the study area associated with San Felipe Lake. There are no CNDDB occurrences of this plant species within 5 miles of the study area.
Big-scale balsamroot *(Balsamorhiza macrolepis)*	–/–/1B.2	Chaparral, cismontane woodland, valley, and foothill grassland, sometimes serpentinite.	145–5,100 feet.	Mar–Jun.	**Moderate.** The study area is within the known range of this plant species and there is potential suitable habitat within the central portion of the study area north of SR 152. There are no CNDDB occurrences of this plant species within 5 miles of the study area.
Santa Cruz Mountains pussypaws *(Calyptridium parryi var. hesseae)*	–/–/1B.1	Sandy or gravelly openings in chaparral, cismontane woodland.	1,500–5,020 feet.	May–Aug.	**Low.** The study area is within the known geographic range of this plant species, but the study area lacks the elevational profile that this plants species utilizes. Only portions of the highest ridges within the central study area associated with Pacheco Reservoir and the North Fork Pacheco Creek exceed 1,000 feet in elevation. The highest point within the study area is 1,275 feet. There is potential suitable habitat within the study area in the form of chaparral and cismontane woodland. There are no CNDDB occurrences of this plant species within 5 miles of the study area. Known from eleven occurrences; a definitive collection has not been documented for decades.
Chaparral harebell *(Campanula exigua)*	–/–/1B.2	Chaparral (rocky, usually serpentinite).	900–4,100 feet.	May–Jun.	**Moderate.** The study area is within the known range of this plant species. There is potential suitable habitat for this plant species within the study area in the form of chaparral scrub and small, infrequent rocky scree slopes. There are two CNDDB occurrences of this plant species from 1987 within 5 miles of the study area. On a scale of 1.0 to 6.5, this plant species has a mean ultramafic affinity of 3.9: a broad endemic/strong indicator. It is included within a group of 71 taxa with 75-84% of their occurrences on ultramafics (such as serpentine). Serpentine soils and serpentine specific vegetation communities are not present in the study area.

Table 2-2. Special-Status Plant Species with Potential to Occur in the Study Area (contd.)

Common Name Scientific Name	Listing Status[1]	Habitat	Elevation	Bloom	Potential to Occur in Study Area
Tiburon paintbrush *(Castilleja affinis ssp. neglecta)*	E/T/1B.2	Valley and foothill grasslands in serpentinite.	195–1,310 feet.	Apr–Jun.	**No Potential.** The study area is within the known range of this plant species. There is no suitable habitat within the study area for this plant species. There are no CNDDB occurrences of this plant species within 5 miles of the study area. On a scale of 1.0 to 6.5, this plant species has a mean ultramafic affinity of 6.1: a strict endemic. It is included within a group of 164 taxa with 95% of their occurrences on ultramafics (such as serpentine). Serpentine soils and serpentine specific vegetation communities are not present in the study area.
Pink creamsacs *(Castilleja rubicundula ssp. rubicundula)*	–/–/1B.2	Openings in chaparral, cismontane woodland, meadows and seeps, valley, and foothill grassland; serpentinite substrates.	65–2,985 feet.	Apr–Jun.	**Low.** The study area is within the known range of this plant species. There is potential suitable habitat for this plant species within the study area in the form of valley and foothill grassland, chaparral, and cismontane woodland. There are no CNDDB occurrences of this plant species within 5 miles of the study area. On a scale of 1.0 to 6.5, this plant species has a mean ultramafic affinity of 5.6: a strict endemic. It is included within a group of 164 taxa with 95% of their occurrences on ultramafics (such as serpentine). Serpentine soils and serpentine specific vegetation communities are not present in the study area.
Coyote ceanothus *(Ceanothus ferrisiae)*	E/–/1B.1	Chaparral, coastal scrub, and valley and foothill grasslands, serpentinite.	390–1,510 feet.	Jan–May.	**No Potential.** The study area is outside of the known range of this plant species. This plant species is known from four extant occurrences in the southeastern Bay Area approximately 15 air miles west-northwest of the study area. The study area lacks potential suitable habitat for this plant species in the form of serpentine soils. On a scale of 1.0 to 6.5, this plant species has a mean ultramafic affinity of 6.1: a strict endemic. It is included within a group of 164 taxa with 95% of their occurrences on ultramafics (such as serpentine). There are no CNDDB occurrences of this plant species within 5 miles of the study area. Serpentine soils and serpentine specific vegetation communities are not present in the study area.

Table 2-2. Special-Status Plant Species with Potential to Occur in the Study Area (contd.)

Common Name Scientific Name	Listing Status[1]	Habitat	Elevation	Bloom	Potential to Occur in Study Area
Monterey ceanothus *(Ceanothus rigidus)*	–/–/4.2	Sandy substrates in closed-cone coniferous forest, chaparral, coastal scrub; sandy substrates.	0–1,805 feet.	Feb–Apr.	**No Potential.** The study area is outside of the known range of this plant species, which is currently understood to be within Monterey and Santa Cruz counties. There is no suitable habitat for this plant species within the study area. There are no CNDDB occurrences of this plant species within 5 miles of the study area.
Monterey spineflower (*Chorizanthe pungens var. pungens)*	T/–/1B.2	Chaparral (maritime), cismontane woodland, coastal dunes, coastal scrub, valley, and foothill grassland; sandy soils.	0–1,475 feet.	Apr–Aug.	**No Potential.** The study area is outside of the known range of this plant species. This plant species is endemic to the central coast of California in San Luis Obispo (presumably extirpated), Monterey, and Santa Cruz counties. The study area lacks suitable habitat for this plant species. There are no CNDDB occurrences of this plant species within 5 miles of the study area.
Mt. Hamilton thistle (*Cirsium fontinale var. campylon)*	–/–/1B.2	Serpentine seeps and streams.	325–2,920 feet.	Apr–Oct.	**No Potential.** The study area is within the known geographic range of this plant species. The study area lacks potential suitable habitat for this plant species in the form of serpentine seeps and streams. On a scale of 1.0 to 6.5, this plant species has a mean ultramafic affinity of 5.9: a strict endemic. It is included within a group of 164 taxa with 95% of their occurrences on ultramafics (such as serpentine). Serpentine soils and serpentine specific vegetation communities are not present in the study area. There are no CNDDB occurrences for this plant species within 5 miles of the study area.
Brewer's clarkia *(Clarkia breweri)*	–/–/4.2	Chaparral, cismontane woodland, coastal scrub. Often in serpentine soils.	705–3,660 feet.	Apr–Jun.	**Moderate.** The study area is within the known range of this plant species and there is potential suitable habitat within the study area. There are no CNDDB occurrences of this plant species within 5 miles of the study area. On a scale of 1.0 to 6.5, this plant species has a mean ultramafic affinity of 3.8: a broad endemic/strong indicator. It is included within a group of 71 taxa with 75-84% of their occurrences on ultramafics (such as serpentine). Serpentine soils and serpentine specific vegetation communities are not present in the study area.

Table 2-2. Special-Status Plant Species with Potential to Occur in the Study Area (contd.)

Common Name Scientific Name	Listing Status[1]	Habitat	Elevation	Bloom	Potential to Occur in Study Area
Santa Clara red ribbons *(Clarkia concinna ssp. automixa)*	–/–/4.2	Chaparral, cismontane woodland.	295–4,920 feet.	Apr–Jun.	**Moderate.** The study area is within the known range of this plant species. There is potential suitable habitat for this plant species within the study area in the form of chaparral and cismontane woodland. Species has been observed at Palassou Ridge (approximately 15 air miles west of the study area) in 2004 by Valley Water botanists. There are no CNDDB occurrences of this plant species within 5 miles of the study area.
Lewis' clarkia *(Clarkia lewisii)*	–/–/4.3	Broadleafed upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, coastal scrub.	95–3,920 feet.	May–Apr.	**Moderate.** The study area is within the northernmost extent of the range of this plant species. There is potential suitable habitat for this plant species within the study area in the form of cismontane woodland and chaparral. There are no CNDDB occurrences of this plant species within 5 miles of the study area.
Small-flowered morning-glory *(Convolvulus simulans)*	–/–/4.2	Openings in chaparral, coastal scrub, valley, and foothill grassland; clay, serpentinite seeps.	95–2,430 feet.	Mar–Jul.	**Moderate.** The study area is within the known range of this plant species. There is potential suitable habitat for this plant species within the study area in the form of cismontane woodland and valley and foothill grassland (especially the valley grassland occurring in clay soils mapped within the San Felipe Lake area). There are no CNDDB occurrences of this plant species within 5 miles of the study area. On a scale of 1.0 to 6.5, this plant species has a mean ultramafic affinity of 3.7: a transition from a broad endemic to a strong indicator. It is included within a group of 71 taxa with 75 to 84% of their occurrences on ultramafics (such as serpentine). Serpentine soils and serpentine specific vegetation communities are not present in the study area.
Rattan's cryptantha *(Cryptantha rattanii)*	–/–/4.3	Cismontane woodland, riparian woodland, valley, and foothill grassland.	500–3,000 feet.	Apr–Jul.	**Moderate.** The study area is within the known range of this plant species. There is potential suitable habitat for this plant species within the study area in the form of valley and foothill grassland, riparian woodland, and cismontane woodland. There are no CNDDB occurrences of this plant species within 5 miles of the study area.

Table 2-2. Special-Status Plant Species with Potential to Occur in the Study Area (contd.)

Common Name Scientific Name	Listing Status[1]	Habitat	Elevation	Bloom	Potential to Occur in Study Area
Hospital Canyon larkspur *(Delphinium californicum ssp. interius)*	–/–/1B.2	Openings in chaparral, cismontane woodland (mesic), coastal scrub.	635–3,595 feet.	Apr–Jun.	**Moderate.** The study area is within the known range of this plant species. There is potential suitable habitat for this plant species within the study area in the form of chaparral and cismontane woodland. Species has been documented north and south of Pacheco Pass. There is one CNDDB occurrence of this plant species within 5 miles of the study area.
Santa Clara Valley dudleya *(Dudleya abramsii ssp. setchellii)*	E/–/1B.1	Rocky outcrops within cismontane woodland, valley, and foothill grassland, predominantly in serpentinite.	195–1,495 feet.	Apr–Oct.	**Low.** The study area is within the known range of this plant species. There is potential suitable habitat within the study area in the form of rocky outcrops within valley and foothill grassland and cismontane woodland. There is one CNDDB occurrences of this plant species within 5 miles of the study area. On a scale of 1.0 to 6.5, this plant species has a mean ultramafic affinity of 6.1: a strict endemic. It is included within a group of 164 taxa with 95% of their occurrences on ultramafics (such as serpentine). Serpentine soils and serpentine specific vegetation communities are not present in the study area.
Tracy's eriastrum *(Eriastrum tracyi)*	–/R/3.2	Chaparral, cismontane woodland, valley and foothill grassland, open areas on shale or alluvium.	1,030–5,840 feet.	May–Jul.	**Low.** The study area is within the known geographic range of this plant species but is only marginally within the lower elevational range; only portions of the highest ridges within the central study area associated with Pacheco Reservoir and the North Fork Pacheco Creek exceed 1,000 feet in elevation. The highest point within the study area is 1,275 feet. There is potential suitable habitat for this plant species within the study area in the form of chaparral, cismontane woodland, valley and foothill grassland and open areas with alluvium. There are no CNDDB occurrences of this plant species within 5 miles of the study area.
Eastwood's goldenbush *(Ericameria fasciculata)*	–/–/1B.1	Openings in closed cone coniferous forest, chaparral (maritime), coastal dunes and coast scrub (sandy openings).	100–900 feet.	Jul–Oct.	**No Potential.** The study area is outside of the known range of this plant species. The study area lacks suitable habitat for this plant species. There are no CNDDB occurrences of this plant species within 5 miles of the study area.

Table 2-2. Special-Status Plant Species with Potential to Occur in the Study Area (contd.)

Common Name Scientific Name	Listing Status[1]	Habitat	Elevation	Bloom	Potential to Occur in Study Area
Elegant wild buckwheat *(Eriogonum elegans)*	–/–/4.3	Cismontane woodland, valley, and foothill grassland; usually sandy or gravelly substrates, often washes, sometimes roadsides.	655–5,005 feet.	May–Nov.	**Low.** The study area is within the known range of this plant species, broadly defined as including the entire South Coast Ranges, San Francisco Bay Area (no documented occurrences), and Western Transverse Ranges. However, this plant species has never been reliably documented north of Hollister or east of the North San Benito sub-basin and an occurrence within the study area would amount to a notable extension of its' known range. There is potential suitable habitat for this plant species within the study area in the form of gravelly and sandy substrates associated with the North Fork Pacheco Creek and contributory drainages. Counties within which this plant species has been documented include Monterey, Santa Barbara, San Benito, and Ventura. There are no CNDDB occurrences of this plant species within 5 miles of the study area.
Western Heermann's buckwheat *(Eriogonum heermannii var. occidentale)*	–/–/1B.2	Openings in cismontane woodland, often serpentinite; usually roadsides or alluvium floodplains, rarely clay or shale slopes.	340–2,610 feet.	Jul–Oct.	**No Potential.** The study area is outside of the known range of this plant species. This plant species is known from 12 extant occurrences in Fresno, Monterey, and San Benito counties. There are no contemporary collections of this plant species north of central San Benito County. There are no CNDDB occurrences of this plant species within 5 miles of the study area. Serpentine soils and serpentine specific vegetation communities are not present in the study area.
Pinnacles buckwheat *(Eriogonum nortonii)*	–/–/1B.3	Chaparral, valley, and foothill grassland, often shallow sandy or gravelly substrates and in recent burn areas.	980–3,200 feet.	Apr–Aug.	**No Potential.** The study area is not within the known range of this plant species. This plant species is restricted to the Monterey and San Benito County Coast Ranges within the Sierra de Salinas, Gabilan, and Santa Lucia Ranges. There is no potential suitable habitat within the study area for this plant species. There are no CNDDB occurrences within 5 miles of the study area.

Table 2-2. Special-Status Plant Species with Potential to Occur in the Study Area (contd.)

Common Name Scientific Name	Listing Status[1]	Habitat	Elevation	Bloom	Potential to Occur in Study Area
Hoover's button-celery *(Eryngium aristulatum var. hooveri)*	–/–/1B.1	Vernal pools, seasonal wetlands, occasionally alkaline.	0–150 feet.	Jun–Jul.	**Present**. This plant species occurs in the westernmost portion of the study area near San Felipe Lake and was also documented in the same location during botanical surveys by Valley Water botanist in 2019. This plant species is also known from three CNDDB occurrences within the westernmost portion of the study area in the vicinity of San Felipe Lake.
Spiny-sepaled button-celery *(Eryngium spinosepalum)*	–/–/1B.2	Valley and foothill grassland, vernal pools.	260–3,200 feet.	Apr–Jun.	**Moderate.** The easternmost portion of the study area is within the known range of this plant species. There is potential suitable habitat for this plant species within the study area in the form of the margins of Pacheco Reservoir. There is one CNDDB occurrence of this plant species within 5 miles of the study area.
San Joaquin spearscale *(Extriplex joaquinana)*	–/–/1B.2	Chenopod scrub, meadows and seeps, playas, valley, and foothill grassland; alkaline habitats.	0–2,740 feet.	Apr–Oct.	**Present.** The study area is within the known range of this plant species. There is potential suitable habitat from this plant species within the study are in the form of alkaline wetlands associated with the San Felipe Lake area. Species was observed by Valley Water botanists in 2019 within the study area at San Felipe Lake. There are two CNDDB occurrences of this plant species within 5 miles of the study area.
Stinkbells *(Fritillaria agrestis)*	–/–/4.2	Chaparral, cismontane woodland, pinyon and juniper woodland, valley, and foothill grassland; clay substrates, sometimes serpentinite.	30–5,100 feet.	Mar–Jun.	**Moderate**. The study area is within the known range of this plant species. There is potential suitable habitat for this plant species within the study area in the form of chaparral, cismontane woodland, and valley and foothill grassland (especially the valley grassland occurring in clay soils mapped within the San Felipe Lake area). There are no CNDDB occurrences of this plant species within 5 miles of the study area. On a scale of 1.0 to 6.5, this plant species has a mean ultramafic affinity of 2.7: a strong indicator. It is included within a group of 123 taxa with 65 to 74% of their occurrences on ultramafics (such as serpentine). Serpentine soils and serpentine specific vegetation communities are not present in the study area.

Table 2-2. Special-Status Plant Species with Potential to Occur in the Study Area (contd.)

Common Name Scientific Name	Listing Status[1]	Habitat	Elevation	Bloom	Potential to Occur in Study Area
Fragrant fritillary *(Fritillaria liliacea)*	–/–/1B.2	Cismontane woodland, coastal prairie, coastal scrub, valley, and foothill grassland, often serpentinite.	0–1,345 feet.	Feb–Apr.	**Moderate.** The study area is within the known range of this plant species. There is potential suitable habitat for this plant species within the study area in the form of cismontane woodland and valley and foothill grassland where clay content is sufficiently high. There are no CNDDB occurrences of this plant species within 5 miles of the study area. On a scale of 1.0 to 6.5, this plant species has a mean ultramafic affinity of 1.8: a weak indicator. It is included within a group of 150 taxa with 55 to 64% of their occurrences on ultramafics (such as serpentine). Serpentine soils and serpentine specific vegetation communities are not present in the study area.
Phlox-leaf serpentine bedstraw *(Galium andrewsii ssp. gatense)*	–/–/4.2	Chaparral, cismontane woodland, lower montane coniferous forest; rocky, serpentinite substrates.	490–4,755 feet.	Feb–Apr.	**Low.** The study area is within the known range of this plant species. There is potential suitable habitat for this plant species within the study area in the form of chaparral and cismontane woodland. There are no CNDDB occurrences of this plant species within 5 miles of the study area. On a scale of 1.0 to 6.5, this plant species has a mean ultramafic affinity of 5.1: a broad endemic. It is included within a group of 82 taxa with 85 to 94% of their occurrences on ultramafics (such as serpentine). Serpentine soils and serpentine specific vegetation communities are not present in the study area.
Loma prieta hoita *(Hoita strobilina)*	–/–/1B.1	Chaparral, cismontane woodland, riparian woodland; usually serpentinite, mesic substrates.	95–2,820 feet.	May–Jul.	**Moderate.** The study area is within the known range of this plant species. There is potential suitable habitat for this plant species within the study area in the form of cismontane and riparian woodland. There are no CNDDB occurrences of this plant species within 5 miles of the study area. On a scale of 1.0 to 6.5, this plant species has a mean ultramafic affinity of 2.5: a strong indicator. It is included within a group of 123 taxa with 65 to 74% of their occurrences on ultramafics (such as serpentine). Serpentine soils and serpentine specific vegetation communities are not present in the study area.

Table 2-2. Special-Status Plant Species with Potential to Occur in the Study Area (contd.)

Common Name Scientific Name	Listing Status[1]	Habitat	Elevation	Bloom	Potential to Occur in Study Area
Vernal barley *(Hordeum intercedens)*	–/–/3.2	Saline flats and depressions, alkaline flats, coastal dunes, coastal scrub, valley, and foothill grasslands; vernal pools.	15–3,280 feet.	Mar–Jun.	**Moderate.** The study area is within the known range of this plant species. There is potential suitable habitat for this plant species within the study area in the form of alkaline wetlands associated with the San Felipe Lake area. There are no CNDDB occurrences of this plant species within 5 miles of the study area.
Coastal Iris *(Iris longipetala)*	–/–/4.2	Coastal prairie, lower montane coniferous forest, meadows, and seeps; mesic habitats.	0–1,970 feet.	Mar–May.	**Moderate.** The study area is within the known range of this plant species. There is potential suitable habitat for this plant species in the wetland and riparian areas within the study area. There are no CNDDB occurrences of this plant species within 5 miles of the study area.
Legenere *(Legenere limosa)*	–/–/1B.1	Vernal pools, ponds, margins of small, shallow lakes.	0–2,885 feet.	Apr–Jun.	**Moderate.** The study area is within the known range of this plant species. There is potential suitable habitat for this plant species within the study area in the form of the margins of San Felipe Lake, the margins of Pacheco Reservoir, and a small artificial pond just south of the North Fork Pacheco Creek in the northern portion of the study area. There are no vernal pools within the study area. Species was observed within a stock pond by Valley Water biologists at Palassou Ridge (approximately 15 miles west of the study area) in 2002. There are no CNDDB occurrences of this plant species within 5 miles of the study area.
Serpentine leptosiphon *(Leptosiphon ambiguous)*	–/–/4.2	Cismontane woodland, coastal scrub, valley, and foothill grassland, usually serpentinite.	390–3,705 feet.	Mar–Jun.	**Low.** The study area is within the known range of this plant species. There is potential suitable habitat for this plant species within the study area in the form of valley and foothill grassland and cismontane woodland. There are no CNDDB occurrences of this plant species within 5 miles of the study area. On a scale of 1.0 to 6.5, this plant species has a mean ultramafic affinity of 6.1: a strict endemic. It is included within a group of 164 taxa with 95% of their occurrences on ultramafics (such as serpentine). Serpentine soils and serpentine specific vegetation communities are not present in the study area.

Table 2-2. Special-Status Plant Species with Potential to Occur in the Study Area (contd.)

Common Name Scientific Name	Listing Status[1]	Habitat	Elevation	Bloom	Potential to Occur in Study Area
Large-flowered leptosiphon *(Leptosiphon grandifloras)*	–/–/4.2	Typically found in sandy soils within coastal strand, foothill woodland, northern coastal scrub, coastal sage scrub, closed-cone pine forest, valley grassland, or coastal prairie habitats.	0-4,000 feet.	Apr-Aug.	**Moderate.** The study area is within the range of the species. This species has been identified both north and south of Pacheco Pass during previous efforts. There are no CNDDB occurrences of this plant species within 5 miles of the study area.
Mt. Hamilton coreopsis *(Leptosyne hamiltonii)*	–/–/1B.2	Rocky cismontane woodland.	1,800–4,265 feet.	Mar–May.	**No Potential.** The study area is within the known geographic range of this plant species, but the study area lacks the elevational profile within which this plant species is known to occur. All the CNDDB occurrences of this plant species are between 1,800 to 2,600 feet. Only portions of the highest ridges within the central study area associated with Pacheco Reservoir and the North Fork of Pacheco Creek exceed 1,000 feet in elevation. The highest point within the study area is 1,275 feet. The study area lacks potential suitable habitat in the form of rocky cismontane woodland. There are no CNDDB occurrences of this plant species within 5 miles of the study area.
Woolly-headed lessingia *(Lessingia hololeuca)*	–/–/3	Broadleafed upland forest, coastal scrub, lower montane coniferous forest, valley, and foothill grassland. Sometimes on clay, serpentine, or alkaline soil.	45–1,000 feet.	Jun–Oct.	**Moderate.** The study area is within the known range of this plant species. There is potential suitable habitat within the study area in the form of valley and foothill grassland. There are no CNDDB occurrences of this plant species within 5 miles of the study area. On a scale of 1.0 to 6.5, this plant species has a mean ultramafic affinity of 2.5: a strong indicator. It is included within a group of 123 taxa with 65 to 74% of their occurrences on ultramafics (such as serpentine). Serpentine soils and serpentine specific vegetation communities are not present in the study area.

Table 2-2. Special-Status Plant Species with Potential to Occur in the Study Area (contd.)

Common Name Scientific Name	Listing Status[1]	Habitat	Elevation	Bloom	Potential to Occur in Study Area
Smooth lessingia *(Lessingia micradenia var. glabrata)*	–/–/1B.2	Chaparral, cismontane woodland, valley, and foothill grassland; serpentinite substrates, often roadsides.	390–1,380 feet.	Apr–Jun.	**Low**. The study area is within the known range of this plant species. There is potential suitable habitat for this plant species within the study area in the form of roadsides, valley and foothill grassland, chaparral, and cismontane woodland. There are no CNDDB occurrences within 5 miles of the study area. On a scale of 1.0 to 6.5, this plant species has a mean ultramafic affinity of 5.1: a broad endemic. It is included within a group of 82 taxa with 85 to 94% of their occurrences on ultramafics (such as serpentine). Serpentine soils and serpentine specific vegetation communities are not present in the study area.
Spring lessingia *(Lessingia tenuis)*	–/–/4.3	Openings in chaparral, cismontane woodland, lower montane coniferous forest.	980–7,055 feet.	May–Jul.	**Moderate.** The study area is within the known range of this plant species. The majority of the elevational profile of the study area is below the known elevational range at which this plant species occurs; only portions of the highest ridges within the central study area associated with Pacheco Reservoir and the North Fork Pacheco Creek exceed 1,000 feet in elevation. The highest point within the study area is 1,275 feet. There is potential suitable habitat for this plant species within the study area in the form of openings in chaparral and cismontane woodland. There are no CNDDB occurrences of this plant species within 5 miles of the study area.
Indian Valley bush-mallow *(Malacothamnus aboriginum)*	–/–/1B.2	Chaparral, cismontane woodland in rocky, granitic substrates, often in burned areas.	490–5,575 feet.	Apr–Oct.	**Moderate**. The study area is within the known published range of this plant species. There is potential suitable habitat for this plant species within the study area in the form of chaparral and cismontane woodland. There are no CNDDB occurrences of this plant species within 5 miles of the study area.

Table 2-2. Special-Status Plant Species with Potential to Occur in the Study Area (contd.)

Common Name Scientific Name	Listing Status[1]	Habitat	Elevation	Bloom	Potential to Occur in Study Area
Hall's bush-mallow *(Malacothamnus hallii)*	–/–/1B.2	Chaparral, coastal scrub.	30–2,495 feet.	Apr–Sep.	**Present.** Observed along access road below existing dam by Valley Water during surveys conducted on September 3. 2019 (Janell Hillman, personal communication, January 8 ,2020). The study area is within the known range of this plant species. There is potential suitable habitat for this plant species within the study area in the form of chaparral. There are four CNDDB occurrences of this plant species within 5 miles of the study area, including one from 2016 and two CNDDB occurrences within the study area.
Marsh microseris *(Microseris paludosa)*	–/–/1B.2	Closed-cone coniferous forest, cismontane woodland, coastal scrub, valley, and foothill grassland.	15–1,165 feet.	Apr–Jun.	**Moderate.** The study area is within the known range of this plant species. There is potential suitable habitat for this plant species within the study area in the form of cismontane woodland and valley and foothill grassland. There are no CNDDB occurrences of this plant species within 5 miles of the study area.
Woodland woolythreads *(Monolopia gracilens)*	–/–/1B.2	Openings in broadleafed upland forest, chaparral, cismontane woodland, North Coast coniferous forest; valley and foothill grassland; occasionally on serpentine.	325–3,935 feet.	Feb–Jul.	**Moderate.** The study area is within the known range of this plant species. There is potential suitable habitat for this plant species within the study area in the form of valley and foothill grassland, chaparral, and cismontane woodland. There are no CNDDB occurrences of this plant species within 5 miles of the study area (there is one CNDDB occurrence 5.8 miles west-southwest of the study area). On a scale of 1.0 to 6.5, this plant species has a mean ultramafic affinity of 2.4: a weak indicator. It is included within a group of 150 taxa with 55 to 64% of their occurrences on ultramafics (such as serpentine). Serpentine soils and serpentine specific vegetation communities are not present in the study area.

Table 2-2. Special-Status Plant Species with Potential to Occur in the Study Area (contd.)

Common Name Scientific Name	Listing Status[1]	Habitat	Elevation	Bloom	Potential to Occur in Study Area
Lime Ridge navarretia *(Navarretia gowenii)*	–/–/1B.1	Chaparral. Clay vertic, serpentine soils.	590–1,000 feet.	May–Jun.	**Moderate.** The known range of this recently described plant species is not currently well understood. This plant species is known from three CNDDB occurrences in Contra Costa and Stanislaus counties and a recent collection from San Benito County. There is potential suitable habitat for this plant species in the study area in the form of chaparral. There are no CNDDB occurrences of this plant species within 5 miles of the study area. There is one CNDDB occurrence less than six miles northeast of central portion of study area. Serpentine soils and serpentine specific vegetation communities are not present in the study area.
Shining Navarretia *(Navarretia nigelliformis ssp. radians)*	–/–/1B.2	Cismontane woodland, valley and foothill grassland, vernal pools, sometimes clay soils.	210–3,280 feet.	Mar–Jul.	**Moderate**. The study area is within the known range of this plant species. There is potential suitable habitat for this plant species within the study area in the form of cismontane woodland and valley and foothill grassland (especially the valley grassland occurring in clay soils mapped within the San Felipe Lake area). There are no CNDDB occurrences of this plant species within 5 miles of the study area. There are no vernal pools within the study area.
Prostrate vernal pool navarretia *(Navarretia prostrata)*	–/–/1B.1	Coastal scrub, meadows and seeps, valley, and foothill grassland (alkaline); vernal pools; mesic areas.	0–3,970 feet.	Apr–Jul.	**Present.** This plant species was documented in 2014 and again in 2019 by Valley Water botanists within the study area at San Felipe Lake. There are no CNDDB occurrences of this plant species within 5 miles of the study area.
San Benito pentachaeta *(Pentachaeta exilis ssp. aeolica)*	–/–/1B.2	Cismontane woodland, valley, and foothill grassland.	1,570–2,805 feet.	Mar–May.	**Low.** The study area is within the known geographic range of this plant species, but the study area lacks the elevational profile that this plants species utilizes. Only portions of the highest ridges within the central study area associated with Pacheco Reservoir and the North Fork Pacheco Creek exceed 1,000 feet in elevation. The highest point within the study area is 1,275 feet. There is potential suitable habitat for this plant species within study area in the form of valley and foothill grassland and cismontane woodland. There are no CNDDB occurrences of this plant species within 5 miles of the study area.

Table 2-2. Special-Status Plant Species with Potential to Occur in the Study Area (contd.)

Common Name Scientific Name	Listing Status[1]	Habitat	Elevation	Bloom	Potential to Occur in Study Area
Mt. Diablo phacelia *(Phacelia phacelioides)*	–/–/1B.2	Chaparral, cismontane woodland, rocky substrates, often serpentinite.	1,640–4,495 feet.	Apr–May.	**No Potential.** The study area is within the known geographic range of this plant species, but the study area lacks the elevational profile within which this plant species is known to occur. Only portions of the highest ridges within the central study area associated with Pacheco Reservoir and the North Fork Pacheco Creek exceed 1,000 feet in elevation. The highest point within the study area is 1,275 feet. There is potential suitable habitat for this plant species within the study area in the form of small, infrequent scree slopes and rocky outcrops. There are no CNDDB occurrences of this plant species within 5 miles of the study area. On a scale of 1.0 to 6.5, this plant species has a mean ultramafic affinity of 4.2: a transition from broad endemic to a strong indicator. It is included within a group of 71 taxa with 75 to 84% of their occurrences on ultramafics (such as serpentine). Serpentine soils and serpentine specific vegetation communities are not present in the study area.
Michael's rein orchid *(Piperia michaelii)*	–/–/4.2	Coastal bluff scrub, closed-cone coniferous forest, chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest.	0–3,000 feet.	Apr–Aug.	**Moderate.** The study area is within the known range of this plant species. There is potential suitable habitat for this plant species within the study area in the form of chaparral and cismontane woodland. There are no CNDDB occurrences of this plant species within 5 miles of the study area.
San Francisco popcornflower *(Plagiobothrys diffuses)*	–/E/1B.1	Sparsely vegetated, mesic sites in coastal prairie, valley, and foothill grassland (serpentine bunchgrass).	195–1,180 feet.	Mar–Jun.	**No Potential.** The study area is outside of the range of this plant species. The study area lacks suitable habitat for this plant species. There are no CNDDB records of this plant species within 5 miles of the study area. Serpentine soils and serpentine specific vegetation communities are not present in the study area.

Table 2-2. Special-Status Plant Species with Potential to Occur in the Study Area (contd.)

Common Name Scientific Name	Listing Status[1]	Habitat	Elevation	Bloom	Potential to Occur in Study Area
Hairless popcornflower *(Plagiobothrys glaber)*	–/–/1A	Meadows and seeps (alkaline), marshes and swamps (coastal salt).	45–590 feet.	Mar–May.	**Moderate.** The study area is within the known range of this plant species. Although this plant species is currently listed as presumed extinct, there is potential suitable habitat within the study area in the form of the alkaline wetlands associated with the San Felipe Lake area. Additionally, there is one CNDDB occurrence of this plant species within 5 miles of the southernmost portion of the study area in the vicinity of Hollister Airport.
California alkali grass *(Puccinellia simplex)*	–/–/1B.2	Alkaline, vernally mesic; sinks, flats, and lake margins, chenopod scrub, meadows and seeps, valley and foothill grassland and vernal pool habitats.	0–3,050 feet.	Mar–May.	**Moderate.** The study area is within the known range of this plant species and there is potential suitable habitat within the western portion of the study area associated with San Felipe Lake. There are no CNDDB occurrences of this plant species within 5 miles of the study area.
Rock sanicle *(Sanicula saxatilis)*	–/R/1B.2	On open rocky ridges, scree and talus within broadleafed upland forest, chaparral, valley, and foothill grassland	2,030–3,855 feet.	Apr–May.	**No Potential.** The study area is within the known geographic range of this plant species, but the study area lacks the elevational profile within which this plant species is known to occur. This plant species is known from nine occurrences on Mt. Diablo, Mt. Hamilton, and Mt. Umunhum. All collection localities are known from elevations at or above 2,000 feet; only portions of the highest ridges within the central study area associated with Pacheco Reservoir and the North Fork Pacheco Creek exceed 1,000 feet in elevation. The highest point within the study area is 1,275 feet. There are no CNDDB occurrences of this plant species within 5 miles of the study area.

Table 2-2. Special-Status Plant Species with Potential to Occur in the Study Area (contd.)

Common Name Scientific Name	Listing Status[1]	Habitat	Elevation	Bloom	Potential to Occur in Study Area
Most beautiful jewelflower *(Streptanthus albidus ssp. peramoenus)*	–/–/1B.2	Chaparral, cismontane woodland, valley and foothill grassland, serpentinite substrates.	310–3,280 feet.	Mar–Sep.	**Moderate.** The study area is within the known range of this plant species. There is potential suitable habitat for this plant species within the study area in the form of valley and foothill grassland and cismontane woodland. There are no CNDDB occurrences of this plant species within 5 miles of the study area. On a scale of 1.0 to 6.5, this plant species has a mean ultramafic affinity of 4.3: a transition from broad endemic to a strong indicator. It is included within a group of 71 taxa with 75 to 84% of their occurrences on ultramafics (such as serpentine). Serpentine soils and serpentine specific vegetation communities are not present in the study area.
Mt. Hamilton jewelflower *(Streptanthus callistus)*	–/–/1B.3	Chaparral, cismontane woodland in gravel sedimentary scree.	1,965–2,590 feet.	Apr–May.	**Absent.** The study area is within the known geographic range of this plant species, but the study area lacks the elevational profile that this plants species utilizes. All the CNDDB occurrences of this plant species are between 1,820 to 3,585 feet. Only portions of the highest ridges within the central study area associated with Pacheco Reservoir and the North Fork Pacheco Creek exceed 1,000 feet in elevation. The highest point within the study area is 1,275 feet. There are no CNDDB occurrences of this plant species within 5 miles of the study area.
Metcalf Canyon jewelflower *(Streptanthus glandulosus ssp. albidus)*	E/–/1B.1	Valley and foothill grassland, serpentinite.	145–2,625 feet.	Apr–Jul.	**Low**. The study area is within the known range of this plant species. There is potential suitable habitat for this plant species within the study area in the form of valley and foothill grassland. There are no CNDDB occurrences of this plant species within 5 miles of the study area. On a scale of 1.0 to 6.5, this plant species has a mean ultramafic affinity of 5.3: a broad endemic. It is included within a group of 82 taxa with 85 to 94% of their occurrences on ultramafics (such as serpentine). Serpentine soils and serpentine specific vegetation communities are not present in the study area.

Table 2-2. Special-Status Plant Species with Potential to Occur in the Study Area (contd.)

Common Name Scientific Name	Listing Status[1]	Habitat	Elevation	Bloom	Potential to Occur in Study Area
Two-fork clover *(Trifolium amoenum)*	E/–/1B.1	Coastal bluff scrub, wetland-riparian, valley, and foothill grassland, sometimes serpentinite.	15–1,360 feet.	Apr–Jun.	**No Potential.** The study area is within the known historic range of this plant species, but it is believed to have been extirpated in Santa Clara County. There are no CNDDB occurrences of this plant species within 5 miles of the study area. Last natural collection made in 1993 in Sonoma County. On a scale of 1.0 to 6.5, this plant species has a mean ultramafic affinity of 1.3: a weak indicator/indifferent. It is included within a group of 79 taxa with 50 to 54% of their occurrences on ultramafics (such as serpentine). Serpentine soils and serpentine specific vegetation communities are not present in the study area.
Saline clover *(Trifolium hydrophilum)*	–/–/1B.2	Marshes and swamps, valley, and foothill grassland (mesic, alkaline), vernal pools.	0–985 feet.	Apr–Jun.	**Moderate.** The study area is within the known range of this plant species. There is potential suitable habitat for this plant species in the form of alkaline wetlands associated with the San Felipe lake area. There are two CNDDB occurrences for this plant species within 5 miles of the study area.
Parry's rough tarplant *(Centromadia parryi ssp. rudis)*	–/–/4.2	Valley and foothill grassland (vernally mesic, alkaline), vernal pools, sometimes disturbed sites, roadsides	0–1,650 feet.	May–October (November).	**Present.** This plant species occurs in the northern portion of the study area on the west side of the North Fork Pacheco Creek. There are no CNDDB occurrences of this plant species within 5 miles of the study area.
Sylvan microseris *(Microseris sylvatica)*	–/–/4.2	Chaparral, cismontane woodland, Great Basin scrub, pinyon and juniper woodland, valley, and foothill grassland (serpentinite).	145–4,925 feet.	Mar–Jun.	**Low.** The study area is within the known historic range of this plant species, but it is believed to have been extirpated in Santa Clara County. There is potential suitable habitat for this plant species within the study area in the form of valley and foothill grassland, chaparral, and cismontane woodland. There are no CNDDB occurrences within 5 miles of the study area. Serpentine soils and serpentine specific vegetation communities are not present in the study area.

Table 2-2. Special-Status Plant Species with Potential to Occur in the Study Area (contd.)

Common Name Scientific Name	Listing Status[1]	Habitat	Elevation	Bloom	Potential to Occur in Study Area
Cotula navarretia *(Navarretia cotulifolia)*	–/–/4.2	Chaparral, cismontane woodland, valley, and foothill grassland. Adobe (clay) soils.	10–6,005 feet.	May–Jun.	**Moderate.** The study area is within the known range of this plant species. There is potential suitable habitat for this plant species within the study area, especially valley grassland occurring in clay soils in the San Felipe Lake area. There are no CNDDB occurrences of this plant species within 5 miles of the study area. There are two historic collections of this plant species within 5 miles of the study area.

Notes:
[1] Status Codes: Federal and State Codes: E = Endangered; T = Threatened; R= Rare;.
CRPR Codes:
List 1A Plants presumed extinct in California.
List 1B Plants rare, threatened, or endangered in California and elsewhere.
List 2 Plants rare, threatened, or endangered in California but more common elsewhere.
List 3 Plants for which we need more information – Review list.
List 4 Plants of limited distribution.
Extensions: x.1 - Seriously endangered in California; x.2 - Fairly endangered in California; x.3 - Not very endangered in California.

Key:
CNDDB = California Natural Diversity Database
SR 152 = State Route 152

Table 2-3. Special-Status Wildlife Species with Potential to Occur in the Study Area

Common Name Scientific Name	Listing Status[1] (Fed/State)	Habitat Requirements	Potential for Occurrence
Invertebrates			
Vernal pool fairy shrimp (*Branchinecta lynchi*)	T/–	Grass or mud-bottomed swales, earth slump or basalt-flow depression pools in grasslands.	**Absent.** The study area is located outside of the known species range in Santa Clara County. No CNDDB occurrences are documented in or within 5 miles of the study area.
Monarch butterfly (*Danaus plexippus plexippus*)	-/NL	Monarch butterflies depend on milkweed sp. as a nectar and host plant, along with other species for nectar plants for adults including thistle sp. (*Carduus* sp.) and purple loosestrife (*Lythrum salicaria*). Migratory and breeding habitat consists of the same characteristics: Milkweed sp., nectar plants, and places to roost (trees and shrubs). The host and nectar plants for monarchs grow in a variety of vegetation communities including forests, woodlands, chaparral, and grasslands.	**Moderate:** The study area is within the range of the species and has been identified as having the potential to be proposed for listing in the immediate future. There is a moderate potential for western monarch butterfly to occur within the project study area. Potential suitable breeding and migration habitat occur adjacent to and upstream of Pacheco Reservoir. Downstream of the reservoir, habitat becomes fragmented due to SR 152 and developed areas, creating marginal breeding and migration habitat. The study area does not support overwintering habitat. The species is not currently tracked in CNDDB.
Bay checkerspot butterfly (*Euphydryas editha bayensis*)	T/–	Found in shallow, serpentine-derived soils in valley and foothill grassland; strong association to host plants dwarf plantain (*Plantago erecta*) and purple owl's clover (*Castelleja densiflora* or *C. exerta*).	**Low:** Pacheco Creek downstream of the existing North Fork Dam is within the species range (i.e., the species range does not extend into the areas around Pacheco Reservoir). In addition, serpentine grasslands are absent from the study area, reducing the potential habitat for this serpentine-associated species. No CNDDB occurrences are documented in or within 5 miles of the study area.
Western bumble bee (*Bombus occidentalis*)	-/CE	Once common and widespread, this species has declined precipitously from central California to southern B.C.	**Low.** The study area is within the historical range of the species. In California, populations of this species are currently largely restricted to high elevation sites in the Sierra Nevada. One CNDDB observation of this species is located approximately 15 miles northwest of the study area.
Crotch bumble bee (*Bombus crotchii*)	-/CE	Coastal California east to the Sierra-Cascade crest and south into Mexico. Food plant genera include *Antirrhinum*, *Phacelia*, *Clarkia*, *Dendromecon*, *Eschsholzia*, and *Erogonum*.	**Low.** The study area is within the historical range of the species. This species was historically common throughout much of the southern two-thirds of California, but no appears to be absent from most of it, especially in the center of its historic range. One observation of this species is located approximately 10 miles northwest of the study area. No CNDDB occurrences are documented in or within 5 miles of the study area.

Table 2-3. Special-Status Wildlife Species with Potential to Occur in the Study Area (contd.)

Common Name Scientific Name	Listing Status[1] (Fed/State)	Habitat Requirements	Potential for Occurrence
Amphibians			
California tiger salamander (*Ambystoma californiense*) Critical Habitat	T/T	Requires seasonally inundated aquatic habitats: ponds, wetlands, and vernal pools for breeding with associated upland terrestrial habitat. Utilizes small mammal burrows within upland habitat.	**High**. The species has been observed and documented within 5 miles of the study area within the last 5 years and (seasonally inundated aquatic pond) habitat for the species is present in the study area. There are 36 CNDDB occurrences of this species either in or within 5 miles of the study area.
Foothill yellow-legged frog **(***Rana boylii*)	–/CT	Requires perennial partly shaded, shallow streams and riffles with a rocky substrate in a variety of habitats. Need at least some cobble-sized substrate for egg laying.	**Moderate**. The species has been observed and documented within 5 miles of the study area within the last 5 years and the study area is within the range for the species. There is 1 CNDDB occurrences of this species either in or within 5 miles of the study area from 1950. Suitable aquatic habitat occurs primarily upstream of North Fork Dam along North Fork Pacheco Creek. Suitable dispersal and foraging habitat for this species occurs downstream of North Fork Dam in the form of cobble and sand bank, rock outcrops, and deeper pools; however, this portion of the creek lacks breeding habitat due to flow regimes that negatively affect breeding.
California red-legged frog (*Rana draytonii*) Critical Habitat	T/SSC	Requires perennial or near-perennial aquatic habitats, especially for breeding: streams, freshwater pools, and ponds over 1-foot deep with overhanging vegetation.	**Present**. The species was observed within the study area on May 7, 2020 and documented within 5 miles of the study area within the last 5 years. Habitat for the species is present in the study area in the form of perennial stream or pond. There are 90 CNDDB occurrences of this species either in or within 5 miles of the study area.
Western spadefoot toad (*Spea hammondii*)	–/SSC	Grasslands with temporary pools within mixed woodland, coastal sage scrub, chaparral, lowlands, and floodplains in gravelly or sandy soils. Require both temporary pools for reproduction and upland habitat for constructing burrows and foraging.	**Absent.** A small portion of this species range is located in the southern portions of the study area within San Benito County. No CNDDB occurrences are known from the study area or within 5 miles of the study area.

Table 2-3. Special-Status Wildlife Species with Potential to Occur in the Study Area (contd.)

Common Name Scientific Name	Listing Status[1] (Fed/State)	Habitat Requirements	Potential for Occurrence
Amphibians (contd.)			
Coast range newt (*Taricha torosa*)	–/SSC	Found in grasslands, woodlands, and conifer forest; requires ponds, reservoirs, and slow-moving streams for breeding.	**Absent.** The range for this subspecies is outside the study area.
Reptiles			
Western pond turtle **(***Emys marmorata*)	–/SSC	Slow water aquatic habitat with available basking sites. Hatchlings require shallow water with dense submergent or short emergent vegetation. Require an upland oviposition site in the vicinity of the aquatic site.	**Present.** The species is known to be present and has been observed in the study area near the confluence of the North and South Fork Pacheco Creek during a site visit on 8/8/2019. There are 23 CNDDB occurrences of this species either in or within 5 miles of the study area.
Blunt-nosed leopard lizard (*Gambelia sila*)	E/E, FP	Found in sparsely vegetated plains, alkali flats, grasslands, low foothills, canyon floors, and large washes. They inhabit areas with sandy soils and scattered vegetation and are usually absent from thickly vegetated habitats. They use small rodent burrows for shelter, predator avoidance, and behavioral thermoregulation.	**Absent**. The study area is located outside of the known species range east of the Diablo Mountain Range. No CNDDB occurrences are known from the study area or within 5-miles.
Silvery legless lizard (*Aniella pulchra pulchra)*	–/SSC	Occurs in areas with sandy or loose loamy soils, often areas under sparse vegetation including beaches, chaparral, or pine-oak woodland; often near riparian vegetation along stream terraces.	**Low**. The study area is located within the range of the species and potential (chaparral, oak woodland, and riparian) habitat for the species exists in the study area. No CNDDB occurrences are known from the study area or within 5-miles.
San Joaquin coachwhip *(Masticophis flagellum ruddocki*)	–/SSC	Found in grassland, dessert, scrub, chaparral, and pasture habitats.	**Moderate**. The study area is located within the range of the species; potential (grassland, chaparral, and pasture) habitat for the species exists in the study area. No CNDDB occurrences are known from the study area or within 5 miles.

Table 2-3. Special-Status Wildlife Species with Potential to Occur in the Study Area (contd.)

Common Name Scientific Name	Listing Status[1] (Fed/State)	Habitat Requirements	Potential for Occurrence
Reptiles (contd.)			
Coast horned lizard (*Phrynosoma blainvillii*)	–/SSC	Found in a wide variety of habitats, most common in lowlands along sandy washes with scattered low bushes. Uses open areas for sunning, bushes for cover, patches of loose soil for burial, and abundant supply of ants and other insects. Occurs in the Sierra Nevada foothills throughout the central and southern California coast.	**Low**. The study area is located within the range of the species; potential (grassland and riparian) habitat for the species exists in the study area. There are three CNDDB occurrences known from within 5 miles of the study area.
Birds			
Grasshopper sparrow (*Ammodramus savannarum*)	–/SSC	Nests and forages in grasslands, meadows, fallow fields, and pastures; also known to inhabit grasslands with scattered shrubs.	**Moderate**. The study area is located within the range of the species and potential (nesting and foraging) habitat for the species exists in the study area. There are no CNDDB occurrences within 5 miles of the study area
Bank swallow **(***Riparia riparia*)	–/T	Colonial nester on vertical banks or cliffs with fine-textured soils near water.	**Absent.** The study area is located within the range of the species however large vertical banks for nesting are absent from the study area. No CNDDB occurrences are known from within the study area or within 5 miles.
Tricolored blackbird (*Agelaius tricolor*)	–/T	Breeds near fresh water in dense emergent vegetation. Requires open water, protected nesting substrate, and foraging area with insect prey within a few km of the colony.	**High.** The species has been observed and documented within 5 miles of the study area within the last 5 years and year-round (grassland) and potential breeding (dense emergent vegetation) habitat for the species is present in the southwest portion of the study area of Pacheco Creek closest to San Felipe Lake. There are four CNDDB occurrences known within 5 miles of the study area. In addition to the CNDDB, the Santa Clara Valley Habitat Agency also identified an active tricolored blackbird breeding colony at Ciraulo pond, a recently acquired conservation property just upstream from the Pacheco Creek Preserve (Terry pers. comm. 2021). Cirarulo pond provides marginal habitat for tricolored blackbird nesting given the fresh emergent vegetation present in the pond is fragmented and small in size and only could support a small number of individuals. The pond also dries out frequently during dry and critical water years (i.e., during times of drought) and further limits the suitability of the vegetation in/around the pond to support the species.

Table 2-3. Special-Status Wildlife Species with Potential to Occur in the Study Area (contd.)

Common Name Scientific Name	Listing Status[1] (Fed/State)	Habitat Requirements	Potential for Occurrence
Birds (contd.)			
Golden eagle (*Aquila chrysaetos*)	–/FP	Inhabit forests, canyons, shrublands, grasslands and oak woodlands often nests on cliffs or in the large trees with unobstructed views.	**Present.** The species is known to be present and has been observed in flight throughout the study area during multiple site visits on 2/7/2019 and 2/8/2019. Potential (nesting and foraging) habitat is present within the study area and has been documented 3.5 miles north of Pacheco Reservoir.
Short eared owl (*Asio flammeus*)	–/SSC	Nest in marshes and moist fields. Requires adjacent open areas for foraging.	**Moderate**. The study area is located within the range of the species and limited habitat is present. This species typically requires marsh or tall ungrazed, open grasslands or agricultural fields which are largely absent from the study area. There are no CNDDB occurrences within 5 miles of the study area.
Long eared-owl (*Asio otus*)	–/SSC	Nest in bottomlands with tall, dense vegetation, often dense willow, cottonwood, or dense upland conifer or woodland vegetation for roosting. Requires adjacent open areas such as grasslands, meadows, or shrublands for foraging.	**Moderate.** The study area is located within the range of the species and there is potential (nesting and foraging) habitat for the species exists in the study area. There are no CNDDB occurrences within 5 miles of the study area.
Western burrowing owl (*Athene cunicularia*)	–/SSC	Grasslands and ruderal habitats. Uses mammal burrows or other suitable underground cavities.	**Moderate**. The study area is located within the range of the species; there are documented occurrences within 5 miles of the study area, and potential grasslands, woodland and ruderal (foraging, movement and nesting) habitat for the species exists in the study area. Potential burrows were observed scattered throughout the site. There are eight CNDDB occurrences within 5 miles of the study area.
Swainson's hawk (*Buteo swainsoni*)	–/T	Breeds in stands with few trees in juniper-sage flats, riparian areas, and oak savannah; forages in adjacent livestock pasture, grassland, or grain.	**Moderate**. The study area is located within the range of the species; potential (riparian nesting and livestock grazing) habitat for the species exists in the study area. There are no CNDDB occurrences are known from the study area or within 5 miles.
Northern harrier (*Circus cyaneus*)	–/SSC	Forages in marshes, grasslands, and ruderal habitats; nests in extensive marshes and wet fields.	**Present**. The study area is located within the range of the species and potential (limited open grassland, agricultural pasture, or wetland) habitat for the species exists in the study area. This species has also been observed in the study area.

Table 2-3. Special-Status Wildlife Species with Potential to Occur in the Study Area (contd.)

Common Name Scientific Name	Listing Status[1] (Fed/State)	Habitat Requirements	Potential for Occurrence
Birds (contd.)			
Vaux's swift (Chaetura vauxi)	–/SSC	Nests in coastal conifer forests; and occasionally in chimneys; requires adjacent foraging habitat.	**Absent.** The study area is located outside of the known species range and conifer forest habitat is absent from the study area. Although this species is tracked by CNDDB, no CNDDB occurrences have been reported for this species.
Olive -sided flycatcher (*Contopus cooperi*))	–/SSC	Nests in mature conifer forest with open canopies, along forest edges; often in recently burned areas and in harvested areas.	**Absent.** The study area is located within the range of the species; however (conifer forest) to support this species is absent from the study area. Although this species is known to occasionally nest in various other tree species including oaks, and alders and willows, this species typically nests in mature conifer forests. Although this species is tracked by CNDDB, there are no CNDDB occurrences that have been reported for this species.
Yellow warbler (*Setophaga petechia*)	–/SSC	Occupies riparian habitats along streamside's and wet meadows; often found in willows and cottonwoods and willows, but also found in numerous other riparian tree species in California.	**Moderate**. The study area is located within the range of the species and potential (riparian nesting and foraging) habitat for the species exists in the study area. There are no CNDDB occurrences within 5 miles of the study area.
White-tailed kite (*Elanus leucurus*)	–/FP	Nests in tall shrubs and trees, forages in grasslands, agricultural fields, and marshes.	**Present**. The study area is located within the range of the species; and potential (nesting tree and foraging) habitat for the species exists in the study area. No CNDDB occurrences are known from the study area or within 5 miles; however, this species has been observed within the southern limits of the study area near San Felipe Lake.
Southwestern willow flycatcher (*Empidonax traillii extimus*)	E/E	Wet meadow and montane riparian habitats; dense willow thickets required for nesting and roosting.	**Absent**. The study area is located outside of the known species range. No CNDDB occurrences are known from the study area or within 5-miles.
California condor (*Gymnogyps californianus*)	E/E, FP	Nests in caves on cliff faces often surrounded by dense brush; forages up to 100 miles from nest site.	**Low.** The study area is located within the range of the species and limited cliff habitat is present in the study area. Pacheco Creek downstream of the existing North Fork Dam is within the species range (i.e., the species range does not extend into the areas around Pacheco Reservoir). No CNDDB occurrences are within 5 miles of the study area.

Table 2-3. Special-Status Wildlife Species with Potential to Occur in the Study Area (contd.)

Common Name Scientific Name	Listing Status[1] (Fed/State)	Habitat Requirements	Potential for Occurrence
Birds (contd.)			
Bald eagle (*Haliaeetus leucocephalus*)	–/E	Found near rivers, lakes, marshes, where abundant food supply is nearby. Require perching areas and nesting sites.	**Present**. The study area is located within the range of the species; there are documented occurrences within 5 miles of the study area, and/or potential (perching and nesting) habitat for the species exists in the easternmost portion of the study area near the San Luis Reservoir. There are two CNDDB occurrences known from within 5 miles of the study area and this species has been observed within the study area.
American peregrine falcon (*Falco peregrinus anatum*)	–/FP	Typically nests on ledges of large cliff faces; also nests on city buildings, bridges, and tree cavities of coastal redwoods	**Present.** The study area is located within the range of the species and limited cliff habitat is present in the study area. This species may also occupy city building, and tree cavities of coastal redwoods which are largely absent from the study area; the species may forage in the grassland and chaparral. No CNDDB occurrences are within the study area or within 5 miles. However, this species has been observed in the study area within Henry Coe State Park.
Yellow-breasted chat (*Ilcteria virens*)	–/SSC	Found in the lower elevations of mountains in riparian habitat in the foothills of the Sierra Nevada and coastal California as an uncommon summer resident and migrant. Breeds in the coastal southern and inland southern California habitats.	**Moderate**. The study area is located within the range of the species, and potential (perching and nesting) riparian habitat for the species exists in the study area. No CNDDB occurrences are within 5 miles of the study area
Loggerhead shrike *(Lanius ludovicianus)*	–/SSC	Breeds in tall shrubs and dense trees, often in shrublands or open woodlands; requires adjacent grasslands, marshes, ruderal areas for foraging.	**Moderate**. The study area is located within the range of the species, and potential (perching and nesting) shrubland and open woodland habitat for the species exists in the study area. No CNDDB occurrences are within the study area or within 5 miles.
Purple martin (*Progne subi)*)	–/SSC	Inhabits valley and montane hardwood, riparian, conifer, habitats as well as open habitats during near water bodies during migration. Nests in cavities, typically snags with woodpecker holes and sometimes cavities in nesting boxes and utility poles.	**Moderate**. The study area is located within the range of the species, and potential (foraging and breeding) habitat for the species exists in the study area. No CNDDB occurrences are known from within the study area or within 5 miles.

Table 2-3. Special-Status Wildlife Species with Potential to Occur in the Study Area (contd.)

Common Name Scientific Name	Listing Status[1] (Fed/State)	Habitat Requirements	Potential for Occurrence
Birds (contd.)			
Least Bell's vireo (*Vireo bellii pusillus*)	E/E	Found in riparian habitats along flowing water and in desert habitats, found along dry watercourses with dense vegetation. Requires dense riparian shrubbery breeding and above-ground nesting.	**Low**. The study area is located within the range of the species, there are documented occurrences within 5 miles of the study area, and low quality riparian foraging habitat (i.e., lacks the structure and vegetative density required by the species for nesting) for the species exists in the downstream reaches of study area based on biological surveys. There are two CNDDB occurrences known from within 5 miles of the study area.
Mammals			
Pallid bat (*Antrozous pallidus*)	–/SSC	Forages over many habitats; roosts in buildings, bridges, trees, rocky outcrops and rocky crevices in mines and caves.	**Moderate**. The study area is located within the range of the species, there are documented occurrences within 5 miles of the study area, and/or potential (nesting and foraging) habitat for the species exists in the study area. There is 1 one historical CNDDB occurrence (#250) in the study area from 1937 and updated occurrence 10/3/2006 located near SR 152 and Kaiser Aetna Road.
Ringtail (*Bassariscus astutus*)	–/FP	Occurs in various riparian, brush, forest, and shrub habitats at low to mid elevations. Nests in rock recesses, hollow trees, logs, snags, abandoned burrows or woodrat nests.	**Moderate.** The study area is located within the range of the species and potential habitat for the species exists in the study area in the form of riparian, brush, forest, and shrub habitats. Nesting habitat also occurs within the study area. This species is not tracked by CNDDB.
Townsend's bat (*Corynorhinus townsendii*)	–/SSC	Found in all but subalpine and alpine habitats and can be found at any season throughout its range. It is most common in mesic habitats. This species requires caves, mines, tunnels, buildings, other human-made structures including bridges, or other cave analogs (such as large hollow redwood trees) for roosting.	**High**. The species has been observed and documented within 5 miles of the study area within the last 5 years and (roosting and foraging) habitat for the species is present. There are three CNDDB occurrences documented either in or within 5 miles of the study area.
Western mastiff bat (*Eumops perotis californicus*)	–/SSC	Found in open, semi-arid to arid habitats, including conifer, deciduous woodland, coastal scrub, grasslands, palm oasis, chaparral, desert scrub and urban. Nests in cliff faces crevices, high buildings, trees, and tunnels for roosting.	**Low.** The study area is located within the range of the species and low-quality (e.g., disturbed, agricultural) (limited nesting and foraging) habitat is present. There are no CNDDB occurrence for this species within the study area or within 5-miles.

Table 2-3. Special-Status Wildlife Species with Potential to Occur in the Study Area (contd.)

Common Name Scientific Name	Listing Status[1] (Fed/State)	Habitat Requirements	Potential for Occurrence
Mammals (contd.)			
Western red bat (*Lasiurus blossevillii*)	–/SSC	Typically roost solitarily in dense tree foliage, particularly in willows, cottonwoods, and sycamores as well as conifer forests. Strongly associated with riparian habitats, often mature stands of cottonwood/sycamore. Forages in grassland, shrubland, open woodland, forest, and agricultural habitats.	**Moderate.** The study area is located within the range of the species; and potential (tree foliage roosting) habitat for the species exists in the study area. There is one historical CNDDB occurrence for this species (#94, observed 4/14/1937 and updated 3/21/2007) located approximately 2-miles north of the southern project limits near Furguson Rd. and Canada Road.
Dusky-footed woodrat (*Neotoma fuscipes annectens)*	–/SSC	Occurs in a variety of woodland and scrub habitats, often in riparian and oak woodland forests with dense understory cover, or thick chaparral habitat.	**Absent.** The study area is located outside the known range of this species.
Mountain lion (*Pumas concolor*)	-/CT	Mountain lions occur within a variety of habitats including pine forests, oak woodlands and savannahs, riparian woodlands, chaparral, and grasslands. They require large amounts of undisturbed habitat for dispersal and foraging, and individuals are territorial and live a solitary life (except for breeding). Mountain lion prey consists of mainly deer, with other large and small mammals making up a smaller portion of prey, including livestock, wild horses and hogs, and coyotes.	**Present**. Sign (i.e., scat) of the species has been documented during surveys within the study area, primarily north of the existing North Fork Dam. All terrestrial habitat adjacent to and upstream of the existing Pacheco Reservoir is suitable habitat for mountain lions. Downstream of the reservoir, habitat becomes fragmented due to SR 152 and developed areas, creating marginal foraging habitat. There are no CNDDB occurrence for this species within the study area or within 5-miles.
American badger *(Taxidea taxus*)	–/SSC	Herbaceous, shrub, and open stages of most habitats with dry, friable, often uncultivated soils; require sufficient food sources (feeds mostly on burrowing rodents).	**Moderate**. The study area is located within the range of the species; there are documented occurrences within 5 miles of the study area, and/or potential (open herbaceous and shrub) habitat for the species exists in the study area. There are six CNDDB occurrences within 5 miles of the study area.

Table 2-3. Special-Status Wildlife Species with Potential to Occur in the Study Area (contd.)

Common Name Scientific Name	Listing Status[1] (Fed/State)	Habitat Requirements	Potential for Occurrence
Mammals (contd.)			
San Joaquin kit fox (*Vulpes macrotis mutica*)	E/T	Found in annual grassland and various scrub and subshrub habitats. Requires dens for shelter and breeding.	**Low**. The study area is located within the range of the species. This species typically inhabits grassland areas on slopes less than 5%; therefore, reducing the amount of suitable habitat within the study area. There are no CNDDB occurrences within the last 20 years documented within 5 miles of the study area. The last known CNDDB occurrences are historical records from 1975, one located approximately 2-miles southeast of the study area and one located approximately 4.5 miles west of the study area.

Note:
[1]Status Codes: Federal and State Codes: D = Delisted, E = Endangered; T = Threatened; CT= Candidate Threatened; CE= Candidate Endangered; FP = Fully Protected; SSC= CDFW Species of Special Concern; NL-Not Listed.

Key:
CNDDB = California Natural Diversity Database
SR 152 = State Route 152

Chapter 3 Summary of Results

3.1 Botanical Special-Status Species

The focused botanical surveys were conducted over the course of three botanical survey periods in 2020, and a total of 13 special-status plant species comprised of 157 occurrences were identified in the study area. Non-native invasive plant mapping was also performed during the focused botanical survey efforts and resulted in the identification of 19 different species totaling 598 occurrences in the study area. Further details on the methods and findings of the botanical surveys can be found in the *Botanical Special-Status Species Assessment* included as Exhibit B.

3.2 California Red-legged Frog and California Tiger Salamander Habitat Assessments

Biologists conducted protocol habitat assessment surveys and visual observations within the study area and standard USFWS recommended buffer areas, where access was permitted, for CRLF and CTS. The results of the habitat assessments included the identification of 37 aquatic habitat features located within the study area. Of the 37 aquatic habitat features, 11 provide the essential components of CRLF and CTS breeding habitat (i.e., have a sufficient hydroperiod for egg laying and larval development and requisite vegetation for egg mass attachment). The remaining 26 aquatic features in the study area either provide low quality (i.e., features that contain limiting habitat characteristics such as predators/competitors) or do not provide suitable conditions (e.g., lack sufficient hydroperiod for egg laying and larval development) to be considered suitable breeding habitat for CRLF and CTS. Additional information on the CTS and CRLF site assessment methods and findings are provided in the *California Red-legged Frog Site Assessment* and *California Tiger Salamander Site Assessment* in Exhibit C and Exhibit D, respectively.

3.3 Other Special-Status Wildlife Species Habitat Assessments

In addition to the CRLF and CTS habitat assessments described above, below is a list of special-status species (excluding fish and eagles) that have a potential to occur within the study area as discussed in Table 2-3 above. Excluding these species there are a remaining 32 special-status wildlife species that have a potential to occur as listed below. Potential to occur for these species was based on pedestrian surveys, along with the results from the *Aquatic Resources Delineation* and *Terrestrial Vegetation Community Mapping* (Biological Resources – Botanical/Wildlife Appendix, Attachments B and C). Information associated with species listed below is found in Exhibit E O*ther Special-Status Wildlife Species Habitat Assessment*.

INSECTS

- Monarch butterfly (*Danaus plexippus plexippus*)
- Bay checkerspot butterfly (*Euphydryas editha bayensis*)
- Western bumble bee (*Bombus occidentallis*)
- Crotch bumble bee (*Bombus crotchii*)

HERPETOFAUNA

- Foothill yellow-legged frog (*Rana boylii*)
- Western pond turtle (*Emys marmorata*)
- Silvery legless lizard (*Aniella pulchra pulchra)*
- San Joaquin coachwhip (*Masticophis flagellum ruddocki*)

- Coast horned lizard (*Phrynosoma blainvillii*)

BIRDS

- Grasshopper sparrow (*Ammodramus savannarum*)
- Tricolored blackbird (*Agelaius tricolor*)
- Short eared owl (*Asio flammeus*)
- Long eared-owl (*Asio otus*)
- Western burrowing owl (*Athene cunicularia*)
- Swainson's hawk (*Buteo swainsoni*)
- Northern harrier (*Circus cyaneus*)
- Yellow warbler (*Setophaga petechia*)
- White-tailed kite (*Elanus leucurus*)
- California condor (*Gymnogyps californianus*)
- American peregrine falcon (*Falco peregrinus anatum*)
- Yellow-breasted chat (*IIcteria virens)*
- Loggerhead shrike (*Lanius ludovicianus*)
- Purple martin (*Progne subis*)
- Least Bell's vireo (*Vireo bellii pusillus*)

MAMMALS

- Pallid bat (*Antrozous pallidus*)
- Townsend's bat (*Corynorhinus towndendii*)
- Western mastiff bat (*Eumops perotis californicus*)
- Western red bat (*Lasiurus blossevillii*)
- Ringtail (*Bassariscus astutus*)
- Mountain lion (*Pumas concolor*)
- American badger (*Taxidea taxus*)
- San Joaquin kit fox (*Vulpes macrotis mutica*)

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Draft Environmental Impact Report

Appendix

Biological Resources – Botanical/Wildlife

Attachment A

Botanical and Wildlife Special-Status Species Habitat Assessment

Exhibit A

USFWS, CNDDB and CNPS Database Results

Pacheco Reservoir Expansion Project

November 2021

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Project information

NAME

Pacheco

LOCATION

San Benito and Santa Clara counties, California



DESCRIPTION

Proposed expansion of Pacheco reservoir

Local offices

Sacramento Fish And Wildlife Office

(916) 414-6600
(916) 414-6713

Federal Building
2800 Cottage Way, Room W-2605

NOT FOR CONSULTATION

Sacramento, CA 95825-1846

Ventura Fish And Wildlife Office

(805) 644-1766
(805) 644-3958

2493 Portola Road, Suite B
Ventura, CA 93003-7726

NOT FOR CONSULTATION

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Log in to IPaC.
2. Go to your My Projects list.
3. Click PROJECT HOME for this project.
4. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
San Joaquin Kit Fox *Vulpes macrotis mutica* No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2873	Endangered

Birds

NAME	STATUS

NOT FOR CONSULTATION

California Condor Gymnogyps californianus — Endangered
There is **final** critical habitat for this species. Your location is outside the critical habitat.
https://ecos.fws.gov/ecp/species/8193

Least Bell's Vireo Vireo bellii pusillus — Endangered
There is **final** critical habitat for this species. Your location is outside the critical habitat.
https://ecos.fws.gov/ecp/species/5945

Southwestern Willow Flycatcher Empidonax traillii extimus — Endangered
There is **final** critical habitat for this species. Your location is outside the critical habitat.
https://ecos.fws.gov/ecp/species/6749

Reptiles

NAME	STATUS
Blunt-nosed Leopard Lizard Gambelia silus No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/625	Endangered

Amphibians

NAME	STATUS
California Red-legged Frog Rana draytonii There is **final** critical habitat for this species. Your location overlaps the critical habitat. https://ecos.fws.gov/ecp/species/2891	Threatened
California Tiger Salamander Ambystoma californiense There is **final** critical habitat for this species. Your location overlaps the critical habitat. https://ecos.fws.gov/ecp/species/2076	Threatened

Fishes

NAME	STATUS
Delta Smelt Hypomesus transpacificus There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/321	Threatened

Insects

NAME	STATUS
Bay Checkerspot Butterfly Euphydryas editha bayensis There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/2320	Threatened

NOT FOR CONSULTATION

Crustaceans

NAME	STATUS
Vernal Pool Fairy Shrimp Branchinecta lynchi There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/498	Threatened

Flowering Plants

NAME	STATUS
Marsh Sandwort Arenaria paludicola No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2229	Endangered

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

This location overlaps the critical habitat for the following species:

NAME	TYPE
California Red-legged Frog Rana draytonii https://ecos.fws.gov/ecp/species/2891#crithab	Final
California Tiger Salamander Ambystoma californiense https://ecos.fws.gov/ecp/species/2076#crithab	Final

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

NOT FOR CONSULTATION

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Allen's Hummingbird *Selasphorus sasin* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9637	Breeds Feb 1 to Jul 15
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Jan 1 to Aug 31
Black Swift *Cypseloides niger* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8878	Breeds Jun 15 to Sep 10
Burrowing Owl *Athene cunicularia* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9737	Breeds Mar 15 to Aug 31
California Thrasher *Toxostoma redivivum* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jan 1 to Jul 31
Clark's Grebe *Aechmophorus clarkii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jan 1 to Dec 31
Common Yellowthroat *Geothlypis trichas sinuosa* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/2084	Breeds May 20 to Jul 31

NOT FOR CONSULTATION

Costa's Hummingbird Calypte costae — Breeds Jan 15 to Jun 10
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9470

Golden Eagle Aquila chrysaetos — Breeds Jan 1 to Aug 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680

Lawrence's Goldfinch Carduelis lawrencei — Breeds Mar 20 to Sep 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9464

Lewis's Woodpecker Melanerpes lewis — Breeds Apr 20 to Sep 30
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9408

Long-billed Curlew Numenius americanus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/5511

Marbled Godwit Limosa fedoa — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9481

Nuttall's Woodpecker Picoides nuttallii — Breeds Apr 1 to Jul 20
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9410

Oak Titmouse Baeolophus inornatus — Breeds Mar 15 to Jul 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9656

Rufous Hummingbird selasphorus rufus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/8002

Short-billed Dowitcher Limnodromus griseus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9480

Song Sparrow Melospiza melodia — Breeds Feb 20 to Sep 5
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

NOT FOR CONSULTATION

Spotted Towhee Pipilo maculatus clementae This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/4243	Breeds Apr 15 to Jul 20
Tricolored Blackbird Agelaius tricolor This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3910	Breeds Mar 15 to Aug 10
Whimbrel Numenius phaeopus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9483	Breeds elsewhere
Wrentit Chamaea fasciata This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 10
Yellow-billed Magpie Pica nuttalli This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9726	Breeds Apr 1 to Jul 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

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Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



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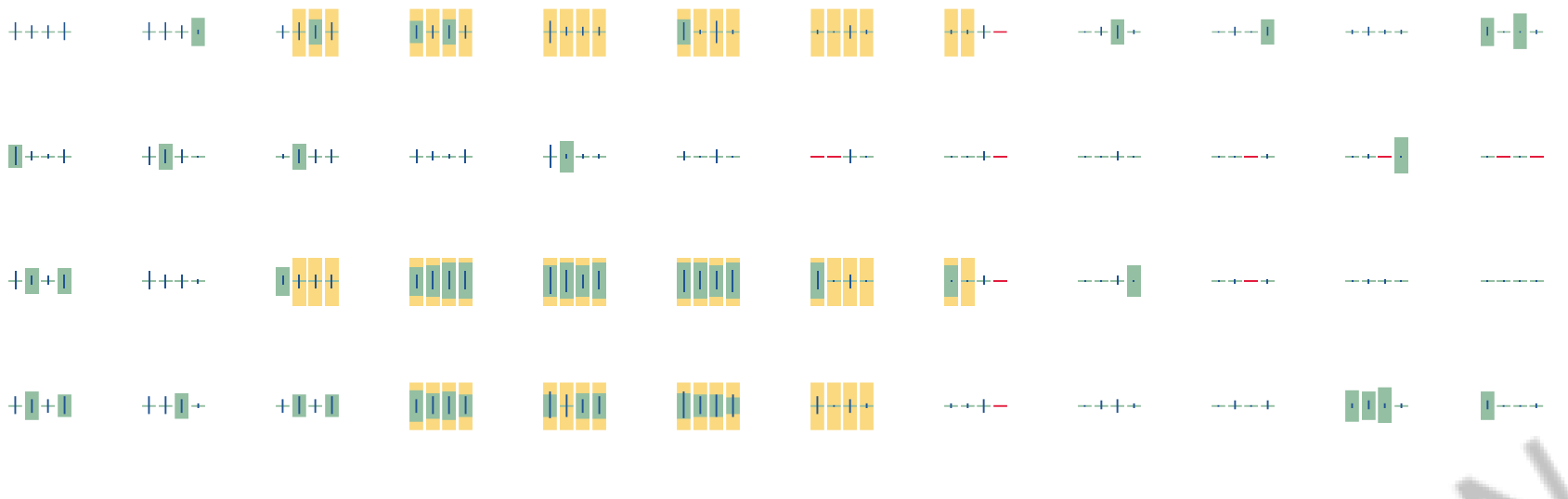
SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Golden Eagle Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)												
Lawrence's Goldfinch BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)												
Lewis's Woodpecker BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)												
Long-billed Curlew BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)												
Marbled Godwit BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)												
Nuttall's Woodpecker BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)												
Oak Titmouse BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)												
Rufous Hummingbird BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)												
Short-billed Dowitcher BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)												
Song Sparrow BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)												
Spotted Towhee BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)												

NOT FOR CONSULTATION



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

NOT FOR CONSULTATION

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ “What does IPaC use to generate the migratory birds potentially occurring in my specified location”. Please be aware this report provides the “probability of presence” of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the “no data” indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ “Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds” at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

NOT FOR CONSULTATION

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

WETLAND INFORMATION IS NOT AVAILABLE AT THIS TIME

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Pacheco Pass (3712112) OR Gilroy (3712115) OR Gilroy Hot Springs (3712114) OR Wilcox Ridge (3712133) OR Mustang Peak (3712123) OR Three Sisters (3612183) OR Tres Pinos (3612173) OR San Juan Bautista (3612175) OR Orestimba Peak (3712132) OR Crevison Peak (3712122) OR Mississippi Creek (3712124) OR Chittenden (3612185) OR Pacheco Peak (3712113) OR Mariposa Peak (3612182) OR Mt. Stakes (3712134) OR Quien Sabe Valley (3612172) OR San Felipe (3612184) OR Hollister (3612174))

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Adela oplerella Opler's longhorn moth	G2 S2	None None		500 500	14 S:1	0	0	0	0	0	1	1	0	1	0	0
Agelaius tricolor tricolored blackbird	G2G3 S1S2	None Threatened	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_EN-Endangered NABCI_RWL-Red Watch List USFWS_BCC-Birds of Conservation Concern	144 1,160	955 S:17	1	2	0	0	0	14	12	5	17	0	0
Ambystoma californiense California tiger salamander	G2G3 S2S3	Threatened Threatened	CDFW_WL-Watch List IUCN_VU-Vulnerable	150 2,173	1306 S:89	18	27	23	3	4	14	38	51	85	3	1
Antrozous pallidus pallid bat	G5 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFS_S-Sensitive WBWG_H-High Priority	200 360	420 S:3	0	0	0	0	0	3	3	0	3	0	0
Aquila chrysaetos golden eagle	G5 S3	None None	BLM_S-Sensitive CDF_S-Sensitive CDFW_FP-Fully Protected CDFW_WL-Watch List IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern	280 1,324	323 S:4	1	1	0	0	0	2	1	3	4	0	0
Arctostaphylos pajaroensis Pajaro manzanita	G1 S1	None None	Rare Plant Rank - 1B.1 BLM_S-Sensitive		28 S:1	0	0	0	0	0	1	1	0	1	0	0

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						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Astragalus tener var. tener alkali milk-vetch	G2T1 S1	None None	Rare Plant Rank - 1B.2	290 290	65 S:1	0	0	0	0	1	0	1	0	0	1	0
Athene cunicularia burrowing owl	G4 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern	145 760	2011 S:13	6	1	2	2	2	0	5	8	11	0	2
Balsamorhiza macrolepis big-scale balsamroot	G2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive USFS_S-Sensitive	900 1,400	51 S:5	2	3	0	0	0	0	0	5	5	0	0
Bombus caliginosus obscure bumble bee	G4? S1S2	None None	IUCN_VU-Vulnerable	150 150	181 S:1	0	0	0	0	0	1	1	0	1	0	0
Bombus crotchii Crotch bumble bee	G3G4 S1S2	None Candidate Endangered		300 300	369 S:1	0	0	0	0	0	1	1	0	1	0	0
Branchinecta lynchi vernal pool fairy shrimp	G3 S3	Threatened None	IUCN_VU-Vulnerable	440 440	791 S:1	0	0	0	1	0	0	0	1	1	0	0
Buteo swainsoni Swainson's hawk	G5 S3	None Threatened	BLM_S-Sensitive IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern	240 1,274	2535 S:8	1	2	0	0	0	5	1	7	8	0	0
Campanula exigua chaparral harebell	G2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	1,000 3,800	50 S:6	2	1	1	0	0	2	6	0	6	0	0
Castilleja rubicundula var. rubicundula pink creamsacs	G5T2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	340 340	42 S:1	0	1	0	0	0	0	1	0	1	0	0
Chorizanthe pungens var. pungens Monterey spineflower	G2T2 S2	Threatened None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_SBBG-Santa Barbara Botanic Garden SB_UCBG-UC Botanical Garden at Berkeley	400 400	51 S:1	0	0	0	1	0	0	0	1	1	0	0

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						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Circus hudsonius northern harrier	G5 S3	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern	1,400 1,400	53 S:1	1	0	0	0	0	0	0	1	1	0	0
Corynorhinus townsendii Townsend's big-eared bat	G3G4 S2	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFS_S-Sensitive WBWG_H-High Priority	160 2,900	635 S:4	0	2	0	0	0	2	3	1	4	0	0
Deinandra halliana Hall's tarplant	G3 S3	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden SB_SBBG-Santa Barbara Botanic Garden	550 1,100	69 S:5	0	1	0	0	0	4	0	5	5	0	0
Delphinium californicum ssp. interius Hospital Canyon larkspur	G3T3 S3	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	750 1,650	28 S:2	0	1	0	0	0	1	1	1	2	0	0
Dipodomys venustus venustus Santa Cruz kangaroo rat	G4T1 S1	None None		1,540 3,151	29 S:4	0	0	0	0	0	4	3	1	4	0	0
Dudleya abramsii ssp. setchellii Santa Clara Valley dudleya	G4T2 S2	Endangered None	Rare Plant Rank - 1B.1 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	500 2,000	59 S:7	2	3	0	0	0	2	1	6	7	0	0
Elanus leucurus white-tailed kite	G5 S3S4	None None	BLM_S-Sensitive CDFW_FP-Fully Protected IUCN_LC-Least Concern	250 502	180 S:2	1	1	0	0	0	0	1	1	2	0	0
Emys marmorata western pond turtle	G3G4 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_VU-Vulnerable USFS_S-Sensitive	141 2,123	1398 S:60	7	27	13	2	0	11	14	46	60	0	0

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						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Eremophila alpestris actia California horned lark	G5T4Q S4	None None	CDFW_WL-Watch List IUCN_LC-Least Concern	430 560	94 S:4	1	0	1	2	0	0	4	0	4	0	0
Eriastrum tracyi Tracy's eriastrum	G3Q S3	None Rare	Rare Plant Rank - 3.2 USFS_S-Sensitive	2,400 2,400	119 S:1	0	1	0	0	0	0	0	1	1	0	0
Ericameria fasciculata Eastwood's goldenbush	G2 S2	None None	Rare Plant Rank - 1B.1 BLM_S-Sensitive SB_UCSC-UC Santa Cruz	550 550	23 S:1	0	0	0	0	0	1	1	0	1	0	0
Eriogonum heermannii var. occidentale western Heermann's buckwheat	G5T2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive		12 S:1	0	0	0	0	0	1	1	0	1	0	0
Eriogonum nortonii Pinnacles buckwheat	G2 S2	None None	Rare Plant Rank - 1B.3 BLM_S-Sensitive	1,470 1,765	36 S:4	0	1	0	0	0	3	2	2	4	0	0
Eryngium aristulatum var. hooveri Hoover's button-celery	G5T1 S1	None None	Rare Plant Rank - 1B.1 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	160 160	16 S:3	0	1	0	0	0	2	1	2	3	0	0
Eryngium spinosepalum spiny-sepaled button-celery	G2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	545 545	108 S:1	0	0	0	0	0	1	0	1	1	0	0
Eumops perotis californicus western mastiff bat	G5T4 S3S4	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern WBWG_H-High Priority		296 S:1	0	0	0	0	0	1	1	0	1	0	0
Euphydryas editha bayensis Bay checkerspot butterfly	G5T1 S1	Threatened None		1,100 1,100	30 S:1	0	1	0	0	0	0	0	1	1	0	0
Extriplex joaquinana San Joaquin spearscale	G2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	148 650	127 S:7	1	2	0	0	0	4	1	6	7	0	0
Falco columbarius merlin	G5 S3S4	None None	CDFW_WL-Watch List IUCN_LC-Least Concern	820 820	37 S:1	1	0	0	0	0	0	0	1	1	0	0

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						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Falco mexicanus prairie falcon	G5 S4	None None	CDFW_WL-Watch List IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern	400 3,300	455 S:11	0	0	0	0	0	11	11	0	11	0	0
Fritillaria liliacea fragrant fritillary	G2 S2	None None	Rare Plant Rank - 1B.2 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden USFS_S-Sensitive	250 700	82 S:3	0	0	0	0	0	3	2	1	3	0	0
Gonidea angulata western ridged mussel	G3 S1S2	None None		264 264	157 S:1	0	0	0	0	0	1	1	0	1	0	0
Great Valley Cottonwood Riparian Forest Great Valley Cottonwood Riparian Forest	G2 S2.1	None None			56 S:1	0	0	0	0	0	1	1	0	1	0	0
Haliaeetus leucocephalus bald eagle	G5 S3	Delisted Endangered	BLM_S-Sensitive CDF_S-Sensitive CDFW_FP-Fully Protected IUCN_LC-Least Concern USFS_S-Sensitive USFWS_BCC-Birds of Conservation Concern	287 1,098	329 S:4	0	0	1	0	0	3	1	3	4	0	0
Helminthoglypta sequoicola consors redwood shoulderband	G2T1 S1	None None	IUCN_DD-Data Deficient	275 275	1 S:1	0	0	0	0	0	1	1	0	1	0	0
Hoita strobilina Loma Prieta hoita	G2? S2?	None None	Rare Plant Rank - 1B.1		34 S:1	0	0	0	0	1	0	1	0	0	1	0
Lasiurus blossevillii western red bat	G5 S3	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern WBWG_H-High Priority		128 S:1	0	0	0	0	0	1	1	0	1	0	0
Lasiurus cinereus hoary bat	G5 S4	None None	IUCN_LC-Least Concern WBWG_M-Medium Priority		238 S:3	0	0	0	0	0	3	3	0	3	0	0
Lavinia exilicauda harengus Monterey hitch	G4T2T4 S2S4	None None	CDFW_SSC-Species of Special Concern	250 250	2 S:1	0	0	0	0	0	1	0	1	1	0	0

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						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Lavinia symmetricus ssp. 1 San Joaquin roach	G4T3Q S3	None None	CDFW_SSC-Species of Special Concern	400 400	8 S:1	1	0	0	0	0	0	1	0	1	0	0
Legenere limosa legenere	G2 S2	None None	Rare Plant Rank - 1B.1 BLM_S-Sensitive SB_UCBG-UC Botanical Garden at Berkeley	2,000 2,000	83 S:1	0	0	1	0	0	0	0	1	1	0	0
Leptosyne hamiltonii Mt. Hamilton coreopsis	G2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_UCBG-UC Botanical Garden at Berkeley	1,800 2,600	21 S:8	7	0	0	0	0	1	8	0	8	0	0
Lessingia micradenia var. glabrata smooth lessingia	G2T2 S2	None None	Rare Plant Rank - 1B.2 SB_BerrySB-Berry Seed Bank SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	400 920	44 S:2	0	1	0	0	0	1	1	1	2	0	0
Linderiella occidentalis California linderiella	G2G3 S2S3	None None	IUCN_NT-Near Threatened	370 370	508 S:2	0	0	2	0	0	0	2	0	2	0	0
Malacothamnus aboriginum Indian Valley bush-mallow	G3 S3	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden SB_SBBG-Santa Barbara Botanic Garden	600 800	63 S:3	0	0	0	0	0	3	2	1	3	0	0
Malacothamnus hallii Hall's bush-mallow	G2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	280 2,480	43 S:13	1	1	1	0	0	10	5	8	13	0	0
Masticophis flagellum ruddocki San Joaquin coachwhip	G5T2T3 S2?	None None	CDFW_SSC-Species of Special Concern	250 250	96 S:1	0	0	0	1	0	0	1	0	1	0	0
Monolopia gracilens woodland woollythreads	G3 S3	None None	Rare Plant Rank - 1B.2		68 S:2	0	0	0	0	0	2	2	0	2	0	0

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						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Navarretia gowenii Lime Ridge navarretia	G1 S1	None None	Rare Plant Rank - 1B.1 SB_UCBG-UC Botanical Garden at Berkeley	950 950	3 S:1	0	0	0	0	0	1	1	0	1	0	0
Navarretia nigelliformis ssp. radians shining navarretia	G4T2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	760 850	102 S:2	0	0	0	0	0	2	2	0	2	0	0
Navarretia prostrata prostrate vernal pool navarretia	G2 S2	None None	Rare Plant Rank - 1B.2	140 140	61 S:1	0	1	0	0	0	0	0	1	1	0	0
North Central Coast Drainage Sacramento Sucker/Roach River North Central Coast Drainage Sacramento Sucker/Roach River	GNR SNR	None None		450 450	4 S:1	1	0	0	0	0	0	1	0	1	0	0
Oncorhynchus mykiss irideus pop. 9 steelhead - south-central California coast DPS	G5T2Q S2	Threatened None	AFS_TH-Threatened	144 808	41 S:11	0	0	5	5	0	1	1	10	11	0	0
Optioservus canus Pinnacles optioservus riffle beetle	G2 S1	None None		120 120	11 S:1	0	0	0	0	0	1	1	0	1	0	0
Pentachaeta exilis ssp. aeolica San Benito pentachaeta	G5T2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_SBBG-Santa Barbara Botanic Garden USFS_S-Sensitive	2,175 2,206	16 S:2	1	1	0	0	0	0	0	2	2	0	0
Perognathus inornatus San Joaquin pocket mouse	G2G3 S2S3	None None	BLM_S-Sensitive IUCN_LC-Least Concern	600 600	127 S:1	0	0	0	0	0	1	1	0	1	0	0
Phacelia phacelioides Mt. Diablo phacelia	G2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	2,000 2,400	16 S:2	0	1	0	0	0	1	2	0	2	0	0
Phrynosoma blainvillii coast horned lizard	G3G4 S3S4	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern	1,080 2,500	784 S:7	4	3	0	0	0	0	1	6	7	0	0
Plagiobothrys diffusus San Francisco popcornflower	G1Q S1	None Endangered	Rare Plant Rank - 1B.1 SB_UCSC-UC Santa Cruz	400 400	17 S:1	0	1	0	0	0	0	0	1	1	0	0
Plagiobothrys glaber hairless popcornflower	GX SX	None None	Rare Plant Rank - 1A	220 220	9 S:1	0	0	0	0	1	0	1	0	0	1	0

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						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Puccinellia simplex California alkali grass	G3 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	200 340	80 S:2	0	0	0	0	0	2	1	1	2	0	0
Rana boylii foothill yellow-legged frog	G3 S3	None Endangered	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_NT-Near Threatened USFS_S-Sensitive	306 2,041	2468 S:17	1	5	1	0	0	10	9	8	17	0	0
Rana draytonii California red-legged frog	G2G3 S2S3	Threatened None	CDFW_SSC-Species of Special Concern IUCN_VU-Vulnerable	115 2,500	1577 S:200	26	105	36	7	0	26	39	161	200	0	0
Riparia riparia bank swallow	G5 S2	None Threatened	BLM_S-Sensitive IUCN_LC-Least Concern	125 270	298 S:2	0	0	0	0	0	2	2	0	2	0	0
Spea hammondii western spadefoot	G3 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_NT-Near Threatened	320 848	1409 S:9	2	5	0	1	0	1	3	6	9	0	0
Streptanthus albidus ssp. peramoenus most beautiful jewelflower	G2T2 S2	None None	Rare Plant Rank - 1B.2 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden SB_UCBG-UC Botanical Garden at Berkeley USFS_S-Sensitive	500 950	103 S:3	1	1	0	1	0	0	2	1	3	0	0
Sycamore Alluvial Woodland Sycamore Alluvial Woodland	G1 S1.1	None None		200 836	17 S:3	0	1	0	0	0	2	3	0	3	0	0
Taricha torosa Coast Range newt	G4 S4	None None	CDFW_SSC-Species of Special Concern	400 517	88 S:2	0	2	0	0	0	0	1	1	2	0	0
Taxidea taxus American badger	G5 S3	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern	161 1,350	594 S:19	3	8	2	1	0	5	6	13	19	0	0
Trifolium hydrophilum saline clover	G2 S2	None None	Rare Plant Rank - 1B.2	150 200	56 S:6	0	0	0	0	0	6	4	2	6	0	0

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						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Vireo bellii pusillus least Bell's vireo	G5T2 S2	Endangered Endangered	IUCN_NT-Near Threatened NABCI_YWL-Yellow Watch List	120 630	503 S:3	2	0	0	0	0	1	1	2	3	0	0
Vulpes macrotis mutica San Joaquin kit fox	G4T2 S2	Endangered Threatened		250 1,720	1018 S:16	0	2	0	0	0	14	15	1	16	0	0

*The database used to provide updates to the Online Inventory is under construction. View updates and changes made since May 2019 here.

Plant List

56 matches found. *Click on scientific name for details*

Search Criteria

Found in Quads 3612174, 3612184, 3712114, 3612172, 3712134, 3612182, 3712113, 3612185, 3712124, 3712122, 3712132, 3612175, 3612173, 3612183, 3712123, 3712133 3712115 and 3712112;

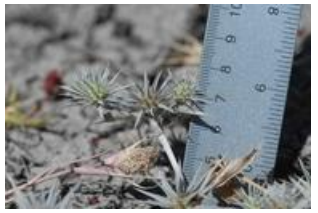
Modify Search Criteria | Export to Excel | Modify Columns | Modify Sort | Remove Photos

Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Listing Status	Federal Listing Status	Habitats	Lowest Elevation	Highest Elevation	Photo
Acanthomintha lanceolata	Santa Clara thorn-mint	Lamiaceae	annual herb	Mar-Jun	4.2			• Chaparral (often serpentinite) • Cismontane woodland • Coastal scrub	80 m	1200 m	 2012 Chris Winchell
Allium howellii var. howellii	Howell's onion	Alliaceae	perennial bulbiferous herb	Mar-Apr	4.3			• Valley and foothill grassland	50 m	2200 m	no photo available
Arctostaphylos pajaroensis	Pajaro manzanita	Ericaceae	perennial evergreen shrub	Dec-Mar	1B.1			• Chaparral (sandy)	30 m	760 m	 2006 Steve Matson
Astragalus tener var. tener	alkali milk-vetch	Fabaceae	annual herb	Mar-Jun	1B.2			• Playas • Valley and foothill grassland (adobe clay) • Vernal pools	1 m	60 m	

										 1991 Dean Wm. Taylor
Balsamorhiza macrolepis	big-scale balsamroot	Asteraceae	perennial herb	Mar-Jun	1B.2		• Chaparral • Cismontane woodland • Valley and foothill grassland	45 m	1555 m	 1998 Dean Wm. Taylor
Calyptridium parryi var. hesseae	Santa Cruz Mountains pussypaws	Montiaceae	annual herb	May-Aug	1B.1		• Chaparral • Cismontane woodland	305 m	1530 m	no photo available
Campanula exigua	chaparral harebell	Campanulaceae	annual herb	May-Jun	1B.2		• Chaparral (rocky, usually serpentinite)	275 m	1250 m	 2009 Vernon Smith
Castilleja rubicundula var. rubicundula	pink creamsacs	Orobanchaceae	annual herb (hemiparasitic)	Apr-Jun	1B.2		• Chaparral (openings) • Cismontane woodland • Meadows and seeps • Valley and foothill grassland	20 m	910 m	no photo available
Ceanothus rigidus	Monterey ceanothus	Rhamnaceae	perennial evergreen shrub	Feb-Apr(Jun)	4.2		• Closed-cone coniferous forest • Chaparral • Coastal scrub	3 m	550 m	 2008 Gary McDonald
Chorizanthe pungens var. pungens	Monterey spineflower	Polygonaceae	annual herb	Apr-Jun(Jul-Aug)	1B.2	FT	• Chaparral (maritime) • Cismontane woodland • Coastal dunes • Coastal scrub	3 m	450 m	

						• Valley and foothill grassland			2015 Zoya Akulova
Clarkia breweri	Brewer's clarkia	Onagraceae	annual herb	Apr-Jun	4.2	• Chaparral • Cismontane woodland • Coastal scrub	215 m	1115 m	 2011 Aaron Schusteff
Clarkia concinna ssp. automixa	Santa Clara red ribbons	Onagraceae	annual herb	(Apr)May-Jun(Jul)	4.3	• Chaparral • Cismontane woodland	90 m	1500 m	 2004 Janell Hillman
Clarkia lewisii	Lewis' clarkia	Onagraceae	annual herb	May-Jul	4.3	• Broadleafed upland forest • Closed-cone coniferous forest • Chaparral • Cismontane woodland • Coastal scrub	30 m	1195 m	 2003 Michael Charters
Convolvulus simulans	small-flowered morning-glory	Convolvulaceae	annual herb	Mar-Jul	4.2	• Chaparral (openings) • Coastal scrub • Valley and foothill grassland	30 m	740 m	 2012 Neal Kramer
Cryptantha rattanii	Rattan's cryptantha	Boraginaceae	annual herb	Apr-Jul	4.3	• Cismontane woodland • Riparian woodland • Valley and foothill grassland	245 m	915 m	 2005 Steve Matson
Delphinium californicum ssp. interius	Hospital Canyon larkspur	Ranunculaceae	perennial herb	Apr-Jun	1B.2	• Chaparral (openings) •	195 m	1095 m	

								• Cismontane woodland (mesic) • Coastal scrub			 2004 Keir Morse
Dudleya abramsii ssp. setchellii	Santa Clara Valley dudleya	Crassulaceae	perennial herb	Apr-Oct	1B.1		FE	• Cismontane woodland • Valley and foothill grassland	60 m	455 m	 2012 Lech Naumovich
Eriastrum tracyi	Tracy's eriastrum	Polemoniaceae	annual herb	May-Jul	3.2	CR		• Chaparral • Cismontane woodland • Valley and foothill grassland	315 m	1780 m	 2012 Neal Kramer
Eriogonum elegans	elegant wild buckwheat	Polygonaceae	annual herb	May-Nov	4.3			• Cismontane woodland • Valley and foothill grassland	200 m	1525 m	 2009 Keir Morse
Eriogonum heermannii var. occidentale	western Heermann's buckwheat	Polygonaceae	perennial deciduous shrub	Jul-Oct	1B.2			• Cismontane woodland (openings)	105 m	795 m	 1998 Dean Wm. Taylor
Eriogonum nortonii	Pinnacles buckwheat	Polygonaceae	annual herb	(Apr)May-Aug(Sep)	1B.3			• Chaparral • Valley and foothill grassland	300 m	975 m	

									 2005 Keir Morse
Eryngium aristulatum var. hooveri	Hoover's button-celery	Apiaceae	annual / perennial herb	(Jun)Jul(Aug)	1B.1	• Vernal pools	3 m	45 m	 2010 Chris Winchell
Eryngium spinosepalum	spiny-sepaled button-celery	Apiaceae	annual / perennial herb	Apr-Jun	1B.2	• Valley and foothill grassland • Vernal pools	80 m	975 m	 2009 Cristian Singer
Extriplex joaquinana	San Joaquin spearscale	Chenopodiaceae	annual herb	Apr-Oct	1B.2	• Chenopod scrub • Meadows and seeps • Playas • Valley and foothill grassland	1 m	835 m	no photo available
Fritillaria agrestis	stinkbells	Liliaceae	perennial bulbiferous herb	Mar-Jun	4.2	• Chaparral • Cismontane woodland • Pinyon and juniper woodland • Valley and foothill grassland	10 m	1555 m	 1998 John Game
Fritillaria liliacea	fragrant fritillary	Liliaceae	perennial bulbiferous herb	Feb-Apr	1B.2	• Cismontane woodland • Coastal prairie • Coastal scrub • Valley and foothill grassland	3 m	410 m	 2009 Shawn DeCew
Galium andrewsii ssp. gatense	phlox-leaf serpentine bedstraw	Rubiaceae	perennial herb	Apr-Jul	4.2	• Chaparral • Cismontane woodland • Lower montane	150 m	1450 m	 2006 Tom Cochrane

						coniferous forest			
Hoita strobilina	Loma Prieta hoita	Fabaceae	perennial herb	May-Jul(Aug-Oct)	1B.1	• Chaparral • Cismontane woodland • Riparian woodland	30 m	860 m	 2005 David A. Tharp
Hordeum intercedens	vernal barley	Poaceae	annual herb	Mar-Jun	3.2	• Coastal dunes • Coastal scrub • Valley and foothill grassland (saline flats and depressions) • Vernal pools	5 m	1000 m	 2010 Gary A. Monroe
Iris longipetala	coast iris	Iridaceae	perennial rhizomatous herb	Mar-May	4.2	• Coastal prairie • Lower montane coniferous forest • Meadows and seeps	0 m	600 m	 2014 Aaron Schusteff
Legenere limosa	legenere	Campanulaceae	annual herb	Apr-Jun	1B.1	• Vernal pools	1 m	880 m	 1993 Dean Wm. Taylor
Leptosiphon ambiguus	serpentine leptosiphon	Polemoniaceae	annual herb	Mar-Jun	4.2	• Cismontane woodland • Coastal scrub • Valley and foothill grassland	120 m	1130 m	 2010 Neal Kramer
Leptosyne hamiltonii	Mt. Hamilton coreopsis	Asteraceae	annual herb	Mar-May	1B.2	• Cismontane woodland (rocky)	550 m	1300 m	

									 2006 Dean Wm. Taylor
Lessingia hololeuca	woolly-headed lessingia	Asteraceae	annual herb	Jun-Oct	3	• Broadleafed upland forest • Coastal scrub • Lower montane coniferous forest • Valley and foothill grassland	15 m	305 m	 2006 Doreen L. Smith
Lessingia micradenia var. glabrata	smooth lessingia	Asteraceae	annual herb	(Apr-Jun)Jul-Nov	1B.2	• Chaparral • Cismontane woodland • Valley and foothill grassland	120 m	420 m	 2007 Neal Kramer
Lessingia tenuis	spring lessingia	Asteraceae	annual herb	May-Jul	4.3	• Chaparral • Cismontane woodland • Lower montane coniferous forest	300 m	2150 m	 2009 Barry Breckling
Malacothamnus aboriginum	Indian Valley bush-mallow	Malvaceae	perennial deciduous shrub	Apr-Oct	1B.2	• Chaparral • Cismontane woodland	150 m	1700 m	 2011 Chris Winchell
Malacothamnus arcuatus	arcuate bush-mallow	Malvaceae	perennial evergreen shrub	Apr-Sep	1B.2	• Chaparral • Cismontane woodland	15 m	355 m	no photo available
	Hall's bush-	Malvaceae	perennial	(Apr)May-	1B.2	• Chaparral	10 m	760 m	

Malacothamnus hallii	mallow		evergreen shrub	Sep(Oct)		• Coastal scrub			 2012 Aaron Arthur
Microseris paludosa	marsh microseris	Asteraceae	perennial herb	Apr-Jun(Jul)	1B.2	• Closed-cone coniferous forest • Cismontane woodland • Coastal scrub • Valley and foothill grassland	5 m	355 m	 2013 Vernon Smith
Monardella antonina ssp. antonina	San Antonio Hills monardella	Lamiaceae	perennial rhizomatous herb	Jun-Aug	3	• Chaparral • Cismontane woodland	320 m	1000 m	 2007 Neal Kramer
Monolopia gracilens	woodland woolythreads	Asteraceae	annual herb	(Feb)Mar-Jul	1B.2	• Broadleafed upland forest (openings) • Chaparral (openings) • Cismontane woodland • North Coast coniferous forest (openings) • Valley and foothill grassland	100 m	1200 m	 2009 Vernon Smith
Navarretia gowenii	Lime Ridge navarretia	Polemoniaceae	annual herb	May-Jun	1B.1	• Chaparral	180 m	305 m	 2008 John Game
Navarretia nigelliformis ssp. radians	shining navarretia	Polemoniaceae	annual herb	(Mar)Apr-Jul	1B.2	• Cismontane woodland • Valley and foothill	65 m	1000 m	

							grassland • Vernal pools			 2008 Steve Matson
Navarretia prostrata	prostrate vernal pool navarretia	Polemoniaceae	annual herb	Apr-Jul	1B.1		• Coastal scrub • Meadows and seeps • Valley and foothill grassland (alkaline) • Vernal pools	3 m	1210 m	 2007 Janell Hillman
Pentachaeta exilis ssp. aeolica	San Benito pentachaeta	Asteraceae	annual herb	Mar-May	1B.2		• Cismontane woodland • Valley and foothill grassland	480 m	855 m	 2007 Laura Ann Eliassen
Phacelia phacelioides	Mt. Diablo phacelia	Hydrophyllaceae	annual herb	Apr-May	1B.2		• Chaparral • Cismontane woodland	500 m	1370 m	 2011 Vernon Smith
Piperia michaelii	Michael's rein orchid	Orchidaceae	perennial herb	Apr-Aug	4.2		• Coastal bluff scrub • Closed-cone coniferous forest • Chaparral • Cismontane woodland • Coastal scrub • Lower montane coniferous forest	3 m	915 m	 2000 Joseph Dougherty/ecology.org
Plagiobothrys diffusus	San Francisco popcornflower	Boraginaceae	annual herb	Mar-Jun	1B.1	CE	• Coastal prairie • Valley and foothill grassland	60 m	360 m	

										 2011 Steve Matson
Plagiobothrys glaber	hairless popcornflower	Boraginaceae	annual herb	Mar-May	1A		• Meadows and seeps (alkaline) • Marshes and swamps (coastal salt)	15 m	180 m	 2011 Steve Matson
Puccinellia simplex	California alkali grass	Poaceae	annual herb	Mar-May	1B.2		• Chenopod scrub • Meadows and seeps • Valley and foothill grassland • Vernal pools	2 m	930 m	no photo available
Streptanthus albidus ssp. albidus	Metcalf Canyon jewelflower	Brassicaceae	annual herb	Apr-Jul	1B.1	FE	• Valley and foothill grassland (serpentinite)	45 m	800 m	 1995 Dean Wm. Taylor
Streptanthus albidus ssp. peramoenus	most beautiful jewelflower	Brassicaceae	annual herb	(Mar)Apr-Sep(Oct)	1B.2		• Chaparral • Cismontane woodland • Valley and foothill grassland	95 m	1000 m	 1994 Robert E. Preston, Ph.D.
Streptanthus callistus	Mt. Hamilton jewelflower	Brassicaceae	annual herb	Apr-May	1B.3		• Chaparral • Cismontane woodland	600 m	790 m	 2011 Aaron Schusteff
Trifolium amoenum	two-fork clover	Fabaceae	annual herb	Apr-Jun	1B.1	FE	• Coastal bluff scrub • Valley and	5 m	415 m	

							foothill grassland (sometimes serpentinite)			 2009 Doreen L. Smith
Trifolium hydrophilum	saline clover	Fabaceae	annual herb	Apr-Jun	1B.2		• Marshes and swamps • Valley and foothill grassland (mesic, alkaline) • Vernal pools	0 m	300 m	 2005 Aaron Schusteff

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Draft Environmental Impact Report

Appendix

Biological Resources – Botanical/Wildlife

Attachment A

Botanical and Wildlife Special-Status Species Habitat Assessment

Exhibit B

Botanical Special-Status Species Assessment

Pacheco Reservoir Expansion Project

November 2021

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Acronyms and Abbreviations

CAL-IPC	California Invasive Plant Council
CDFW	California Department of Fish and Wildlife
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CRPR	California Rare Plant Rank
IPMP	Invasive Plant Management Program
msl	mean sea level
NNIP	Non-Native Invasive Plant
Project	Pacheco Reservoir Expansion Project
USFWS	United States Fish and Wildlife Service
Valley Water	Santa Clara Valley Water District

Chapter 1. Introduction

This Botanical Resources Report was prepared for Santa Clara Valley Water District (Valley Water) in support of the Pacheco Reservoir Expansion Project (Project) and documents the findings of the focused botanical surveys for special-status plant species, and nonnative invasive plant (NNIP) species mapping within the Project study area.

Chapter 2. Methods

2.1 Reference Review

2.1.1 Botanical Surveys

A list of potentially occurring special-status plant species in the study area was created using a combination of database searches, a review of existing information, and the vegetation community information from the *Terrestrial Vegetation Community Mapping* report prepared for the Project. For the purposes of this Botanical Resources Report, special-status plant species include the following, as listed in the most current California Department of Fish and Wildlife (CDFW) *Special Vascular Plants, Bryophytes, and Lichens List* (CDFW 2021a): plants listed, proposed for listing, or are a candidate for listing under the California Endangered Species Act or the federal Endangered Species Act; designated as rare by CDFW; or listed as a California Rare Plant Rank (CRPR) 1, 2, 3, or 4 species.

The following databases were used to create the list of special-status plant species with potential to occur: the California Natural Diversity Database (CNDDB); the California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants; and the Official Species List generated by the United States Fish and Wildlife Service (USFWS) Information, Planning, and Conservation project planning tool (CDFW 2021; CNPS 2021; USFWS 2021a).

The CNDDB was queried for reported populations of special-status plants and sensitive natural communities within the *Three Sisters, San Felipe, Mustang Peak, and Pacheco Peak California* U.S. Geological Survey 7.5-minute topographic quadrangles and the quadrangles immediately adjacent (i.e., reviewed 18 quadrangles total) (CDFW 2020). The CNDDB is a database consisting of historical observations of special-status plant species, special-status wildlife species, and sensitive natural plant communities. Because the CNDDB is limited to reported sightings, it is not a comprehensive list of species that may occur in an area.

The CNPS online Inventory of Rare and Endangered Plants of California was also queried, which allows users to search the inventory using a set of criteria (e.g., location, habitat, elevation) (CNPS 2021). The CNPS inventory was queried for all CRPR 1, 2, 3, and 4 plants occurring in the same topographic quadrangles included in the CNDDB query. All CRPR 1, 2, 3, and 4 plant species were included in the queries to evaluate whether any of these plant species have the potential to occur in the study area.

The Official Species List generated from the USFWS Information, Planning, and Conservation online project planning tool—which identifies federally listed, proposed, and candidate species, as well as critical habitat that may occur in the study area—was also reviewed during the development of the special-status plant species list. The Official Species List generated by the USFWS Information, Planning, and Conservation online tool is a comprehensive list of regionally occurring federally protected species and their critical habitat provided by the USFWS for purposes of consultation, which uses project-specific boundaries to generate the list of species and their critical habitat.

Soil types mapped in the study area were also reviewed to determine if any soils are known to occur that may provide suitable habitat for special-status plant species, such as serpentine or limestone (Natural Resources Conservation Service 2021). We consulted the Consortium of California Herbaria and Calflora to review specimen records, photographs, and habitat

descriptions to better identify potential special-status species and their habitat (Consortium of California Herbaria 2021; Calflora 2021).

In addition to the database queries, species were also included based on information provided by Valley Water botanists (pers. comm. 2020). Information from Valley Water led to the inclusion of San Joaquin saltbush (*Extriplex joaquinana*), which was not documented by Stantec Consulting Services Inc. (Stantec) during the focused botanical surveys (likely due to climatic and phenological conditions), but has been documented by Valley Water around San Felipe Lake in the study area in 2013, 2018, 2019, and 2020.

2.2 Field Surveys

2.2.1 Botanical Surveys

2.2.1.1 Special-Status Species Reference Population Visits

Stantec botanists visited nearby reference populations for 18 special-status plant species in 2020 and 11 special-status plant species in 2021. These species all have the potential to occur within the study area and the reference population visits verify if the plants were in bloom or are otherwise identifiable at the time of the survey. These visits also provided the field team an opportunity to refine their search images for specific taxa. Stantec queried the CNDDB to identify nearby reference populations, and reference population field surveys took place in 2020 and 2021 between mid-March and mid-July. Special-status plant species with nearby reference populations, including information as to whether they were found, are provided in Table 2-1.

Table 2-1. Visited Special-Status Plant Species Reference Populations

Special-Status Species Scientific Name (Common Name)	Status[1] Federal/State/CRPR	Number of Visits to Reference Sites (Found Y/N)	
		2020	2021
Acanthomintha lanceolata (Santa Clara thorn-mint)	–/–/4.2	1 (Y)	1 (Y)
Astragalus tener var. tener (Alkali milk-vetch)	–/–/1B.2	1 (N)	--
Balsamorhiza macrolepis (Big-scale balsamroot)	–/–/1B.2	2 (Y)	2 (Y)
Ceanothus ferrisiae (Coyote ceanothus)	E/–/1B.2	1 (Y)	1 (Y)
Clarkia breweri (Lewis' clarkia)	–/–/4.2	1 (Y)	--
Clarkia concinna ssp. automixa (Santa Clara red ribbons)	–/–/4.2	1 (Y)	--
Delphinum californicum ssp. interius (Hospital Canyon larkspur)	–/–/1B.2	1 (Y)	--
Eryngium spinosepalum (Spiny-sepaled button-celery)	–/–/1B.2	1 (Y)	1 (Y)
Extriplex joaqiniana (San Joaquin spearscale)	–/–/1B.2	1 (Y)	1 (Y)
Fritillaria agrestis (Stinkbells)	–/–/4.2	1 (N)	1 (N)
Fritillaria liliacea (Fragrant fritillary)	–/–/1B.2	2 (Y)	1 (Y)
Hoita strobilina (Loma prieta hoita)	–/–/1B.1	1 (Y)	--
Iris longipetala (Coastal iris)	–/–/4.2	1 (Y)	--
Lessingia hololecua (Woolly-headed lessingia)	–/–/3	1 (Y)	1 (N)

Table 2-1. Visited Special-Status Plant Species Reference Populations (contd.)

Special-Status Species Scientific Name (Common Name)	Status[1] Federal/State/CRPR	Number of Visits to Reference Sites (Found Y/N)	
		2020	2021
Lessingia tenuis (Spring lessingia)	–/–/4.3	1 (Y)	--
Monolopia gracilens (Woodland woolythreads)	--/--/2B.3	2 (Y)	1 (Y)
Piperia michaeli (Michael's rein orchid)	–/–/4.2	1 (Y)	1 (Y)
Puccinella simplex (California alkali grass)	–/–/1B.2	1 (Y)	--
Streptanthus albidus ssp. *peramoenus* (most beautiful jewelflower)	–/–/1B.2	--	1 (Y)

Notes:
[1] Federal: E = Endangered
California Rare Plant Rank (CRPR) Codes and Extensions:
1B = Plants rare, threatened, or endangered in California and elsewhere.
2B = Plants rare, threatened, or endangered in California but more common elsewhere.
3 = Review list: Plants about which more information is needed.
4 = Limited distribution or infrequent throughout a broader area in California.
XX.1 Seriously threatened in California.
XX.2 Moderately threatened in California.
XX.3 Not very threatened in California.

2.2.1.2 Botanical Field Surveys

Stantec botanists conducted botanical surveys in accordance with the CDFW Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities and the CNPS Botanical Survey Guidelines (CDFW 2018; CNPS 2001). The surveys were floristic in nature (i.e., each species observed was identified to the taxonomic level necessary to determine whether the plant was listed as a special-status or a NNIP species) and plant taxonomy followed the treatments and keys provided in the Jepson Flora Project (2021). The timing of the botanical field surveys coincided with the blooming period(s) for the special-status plant species with potential to occur in the study area and provided a comprehensive survey effort for special-status plant species within the study area. The terrestrial vegetation community types identified in the *Terrestrial Vegetation Community Mapping* report prepared for the Project were also used to prioritize survey efforts in areas of potentially suitable habitat for the for the target special-status plant species in bloom during each of the survey periods. Stantec botanists used ESRI's Collector for ArcGIS application on tablets and phones to collect plant population data in the field. Voucher specimens of special-status species located in the study area were also collected during the field efforts. Voucher collections were only made when plant populations were of a sufficient size to allow collecting and not jeopardize the population survivorship.

Stantec botanists conducted three survey passes of the study area, each of which consisted of walking meandering transects that covered the accessible portions of the study area. The portion of the study area within Henry W. Coe State Park was inaccessible and was not included in the 2020 survey efforts and totaled approximately 105 acres (i.e., less than 2 percent of the study area was inaccessible during the surveys). However, access to the Henry W. Coe State Park was obtained for botanical surveys in 2021, and survey efforts followed the same methodology as conducted in the 2020 surveys. In 2020, three rounds of survey passes were completed to observe early-, mid-, and late-season blooming plants between March 16 to April 6, 2020, May 4 to May 22, 2020, and July 20 to August 14, 2020. In addition, three rounds of

survey passes were done in 2021 specifically in the Henry W. Coe State Park portion of the Project Area that was inaccessible in 2020. The dates for the 2021 surveys were March 29 to March 31, May 3 to May 5, and August 3 to August 5. The total survey time for all three rounds of surveys amounted to approximately 3,500 person-hours in 2020 and approximately 300 person-hours in 2021.

2.2.2 Non-Native Invasive Plants

Species considered NNIP species (i.e., noxious weeds), were identified as those included in the California Invasive Plant Council (Cal-IPC) inventory with ratings of High or are included in Valley Waters' Invasive Plant Management Program (IPMP) (Cal-IPC 2020). Stantec botanists mapped all observed NNIP populations within the study area. This included taking point or polygon data of invasive plant populations and collecting site-specific information, including phenology, photo documentation, and distribution pattern.

Chapter 3. Results and Discussion

3.1 Botanical Surveys

The reference review identified 65 special-status plant species with potential to occur in the study area. A total of 508 different plant taxa were identified in the study area with 13 of those species considered special status. A complete list of plant species observed is provided in Subexhibit A.

The twelve special-status plant species were documented in the study area during the survey efforts are as follows: Santa Clara thorn-mint (*Acanthomintha lanceolata*), Parry's rough tarplant (*Centromadia parryi* ssp*. rudis*), Brewer's clarkia (*Clarkia breweri*), Hospital Canyon larkspur (*Delphinium californicum* ssp. *interius*), Hoover's button-celery (*Eryngium aristulatum var. hooveri*), spiny-sepaled button-celery (*Eryngium spinosepalum),* large-flowered leptosiphon (*Leptosiphon grandiflorus*), Hall's bush-mallow (*Malacothamnus hallii*), woodland woolythreads (*Monolopia gracilens*), prostrate vernal pool navarretia (*Navarretia prostrata*), most beautiful jewel-flower (*Streptanthus albidus* ssp. *peramoenus*),and saline clover (*Trifolium hydrophilum)*. In addition, San Joaquin spearscale (*Extriplex joaquiniana*) was observed by Valley Water Senior Biologist Janell Hillman in the study area as recently as 2020 (pers. comm. 2020) but was not detected during the 2020 surveys conducted by Stantec. These 13 special-status plant species are described below. Figures 3-1a-c illustrates the locations where the species were identified in the study area upstream from North Fork Dam, while Figure 3-2 illustrates species locations in the study area downstream from North Fork Dam. Subexhibit B includes representative photographs of these species documented in the study area. In total, 56 populations of special-status plant species were observed in the study area during the 2020 and 2021 botanical surveys. Populations of special-status plant species were delineated where groupings of individuals were spatially disjunct from one another by more than approximately 0.25 mile in accord with the CNDDB methodology. CNDDB forms documenting the locations of the special-status plants and other information collected in the field (e.g., associated species, soils, etc.) are included in Subexhibit C. The number of individuals of each special-status plant species were estimated using square meter plot sampling method, which included using multiple quadrats, and were extrapolated for the overall area where the species were found. Multiple quadrats were established in order to reflect the variations in the density and distribution of each of the special-status plant populations.

3.1.1 Species Accounts

3.1.1.1 Santa Clara Thorn-Mint

Santa Clara thorn-mint is a CRPR 4.2 species. The species is an annual herb in the mint family (*Lamiaceae*) that grows in talus, rocky slopes, and outcrops in chaparral, cismontane woodlands, and coastal scrub habitats. In California it occurs in the San Francisco Bay Area and south inner Coast Ranges in Alameda, Fresno, Merced, Monterey, San Benito, Santa Clara, San Joaquin, Stanislaus Counties. Santa Clara thorn-mint generally flowers from March through June and occurs at elevations between 260 and 3,935 feet above mean sea level (msl). This species was observed on rocky scree and talus slopes in the upstream portion of the Project area, in the watersheds of the East Fork and North Fork Pacheco Creek as well tributary drainages to these watersheds. During the 2020 surveys, 10 populations and approximately 9,789 individuals of Santa Clara thorn-mint were observed, with an additional population comprised of approximately 200 individuals observed during the 2021 surveys in Henry W. Coe State Park. In total 11 populations and 9,989 individuals of Santa Clara thorn-mint were observed in the Project area.

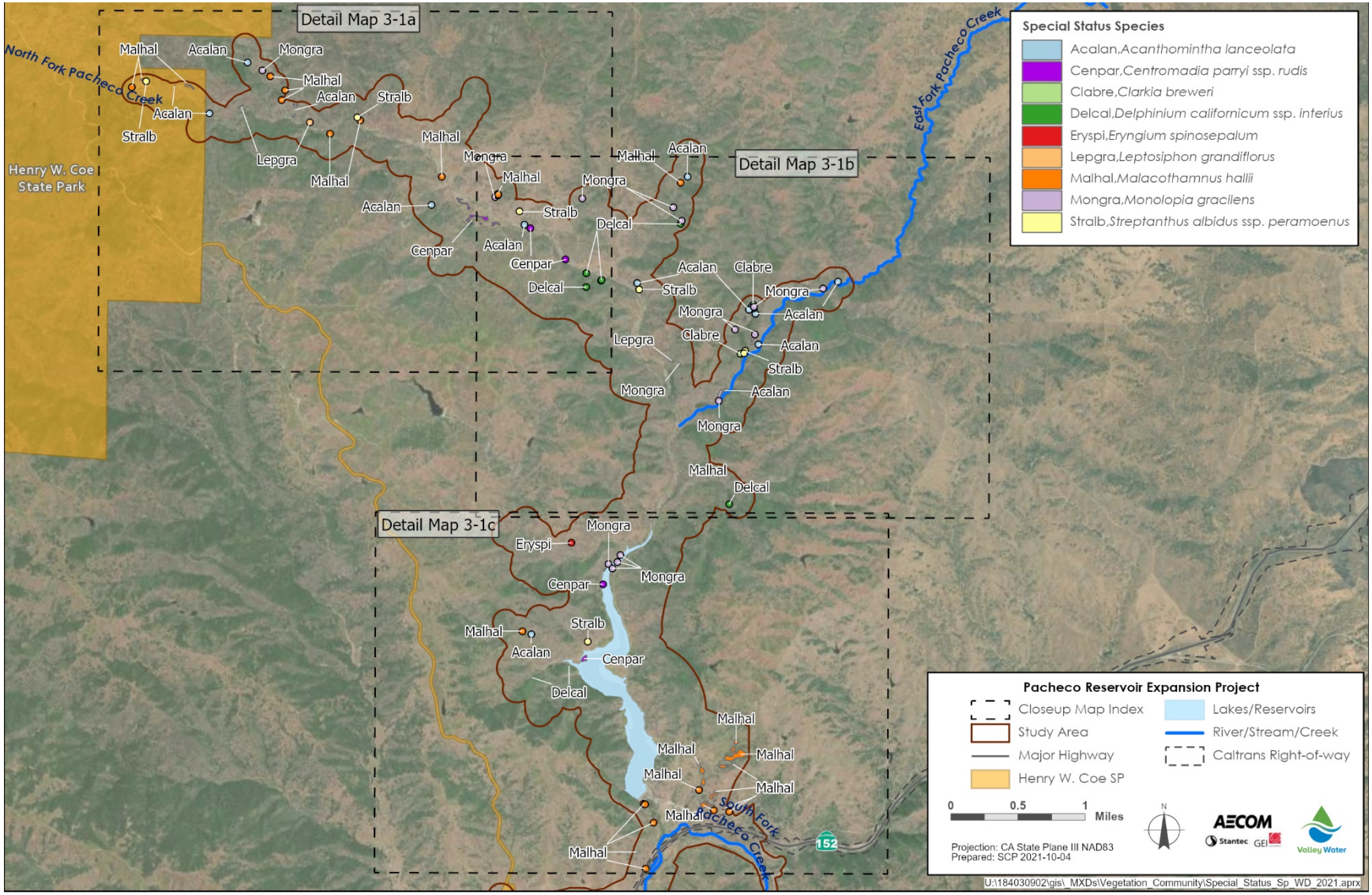

Figure 3-1. Special-Status Plant Species Upstream from North Fork Dam, Overview

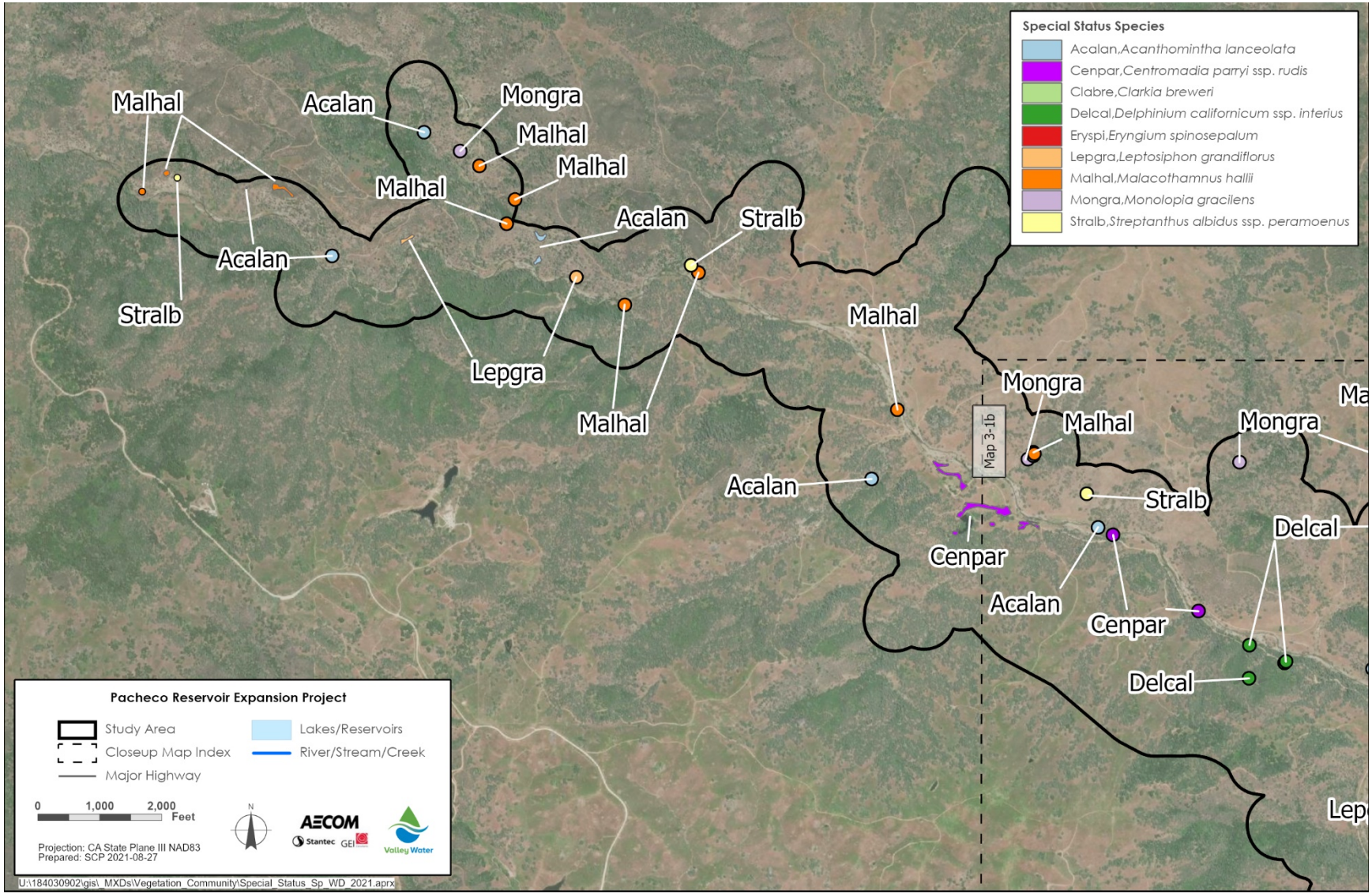

Figure 3-1a. Special-Status Plant Species Upstream from North Fork Dam, Northern Detail Map

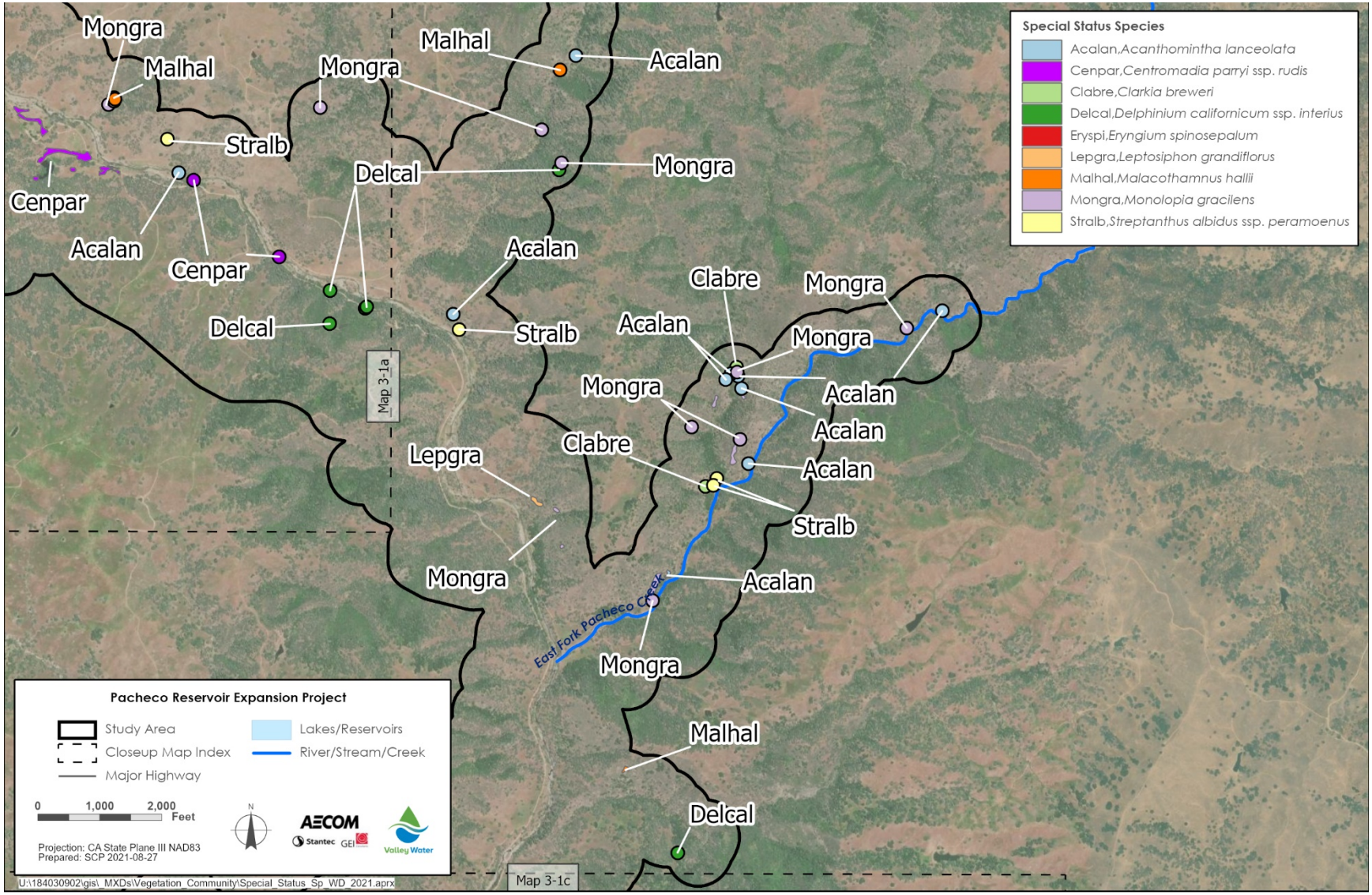

Figure 3-1b. Special-Status Plant Species Upstream from North Fork Dam, Central Detail Map

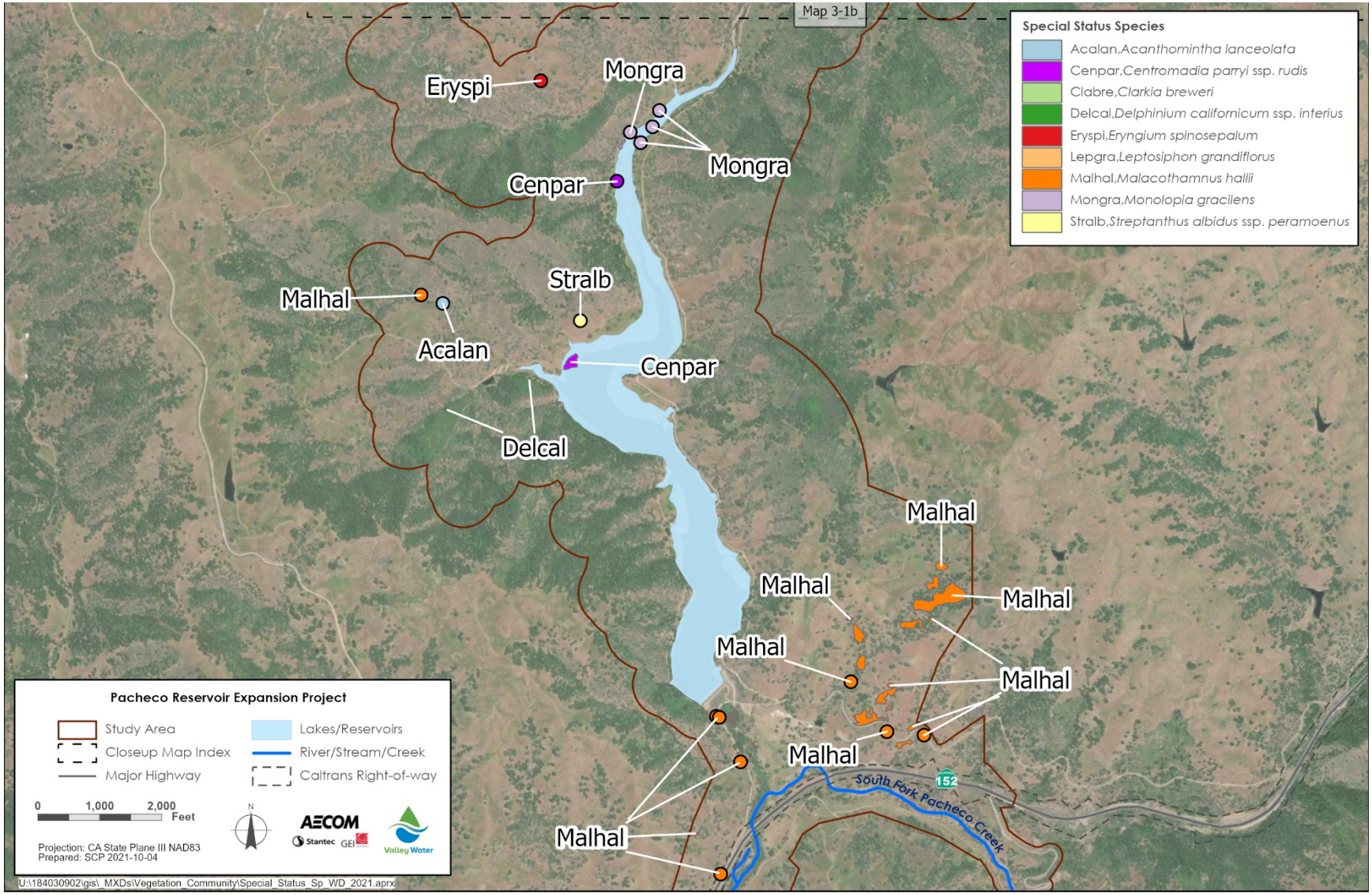

Figure 3-1c. Special-Status Plant Species Upstream from North Fork Dam, Southern Detail Map

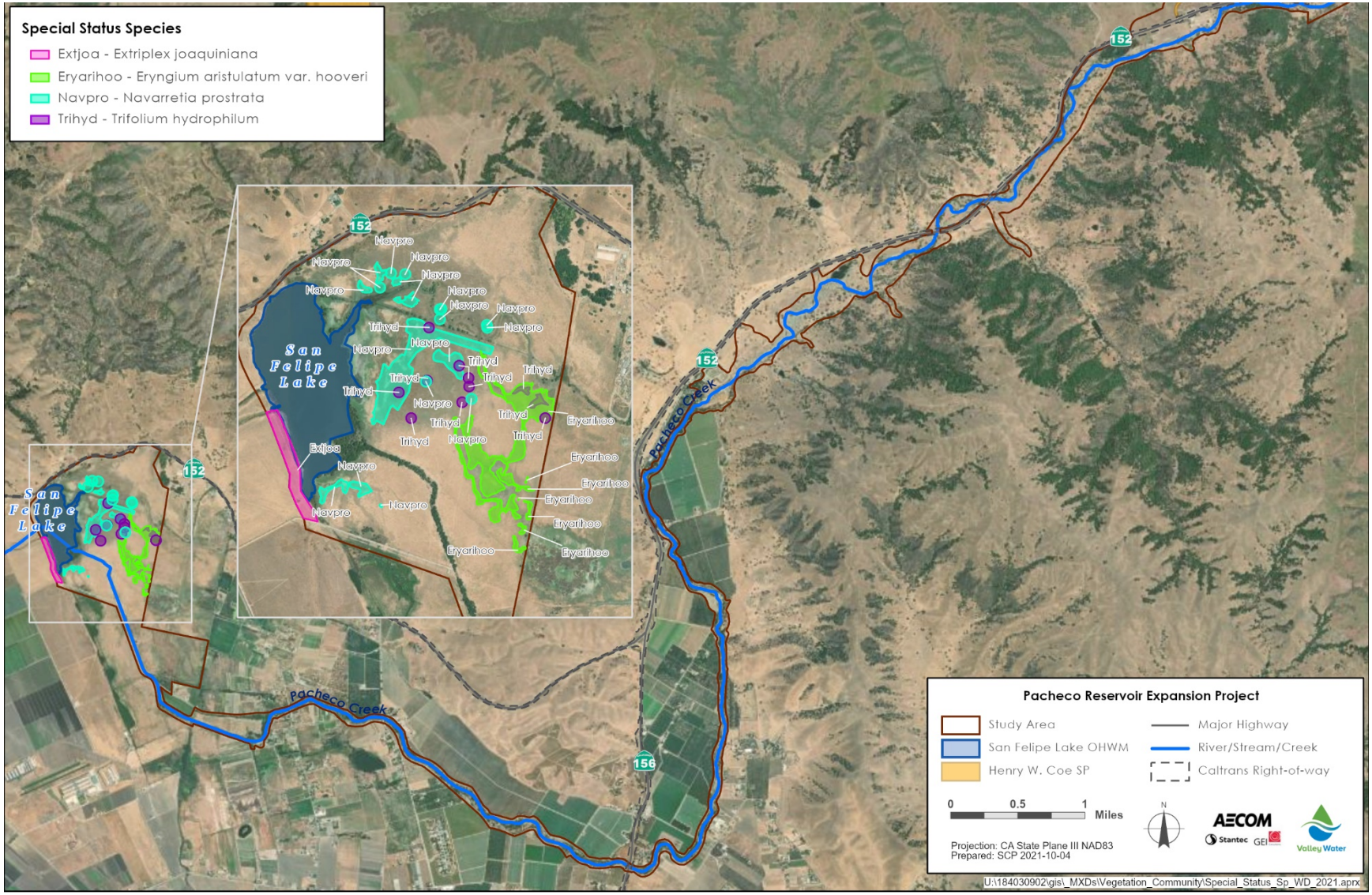

Figure 3-2. Special-Status Plant Species Downstream from North Fork Dam

3.1.1.2 Parry's Rough Tarplant

Parry's rough tarplant is a CRPR 4.2 species. Parry's rough tarplant is an annual herb within the daisy family (Asteraceae) that grows in valley and foothill grassland (vernally mesic and alkaline soils), vernal pool habitats,[1] and as well as disturbed sites and roadsides. It occurs in California in Butte, Colusa, Glenn, Lake, Merced, Sacramento, San Joaquin, Solano, Sutter, and Yolo Counties. Parry's rough tarplant usually flowers from May to October and occurs at elevations between 0 and 1,650 feet above msl. This species was observed in disturbed areas along the East Fork Pacheco Creek, in a horse pasture near the homestead on the Lawler property, as well as the on the west side of Pacheco Reservoir below the high water line. In total four populations and approximately 1,915 individuals were observed of Parry's rough tarplant were observed during the surveys in 2020. No individuals of Parry's rough tarplant were observed during the 2021 surveys within Henry W. Coe State Park.

3.1.1.3 Brewer's Clarkia

Brewer's clarkia is a CRPR 4.2 species. The species is an annual herb in the evening primrose family (Onagraceae) that grows in chaparral, cismontane woodland, and coastal scrub vegetation communities and often grows in serpentine soils. It occurs in California in the inner South Coast Range, southeast San Francisco Bay Area, and Diablo Range, in Alameda, Fresno, Merced, Monterey, San Benito, Santa Clara, and Stanislaus Counties. Brewer's clarkia generally flowers between April through June and occurs at elevations between 705 and 3,660 feet above msl. This species was observed on scree and talus slopes not associated with serpentine,[2] in conjunction with two other special-status species: Santa Clara thorn-mint and most beautiful jewel-flower. All populations were within the East Fork Pacheco Creek watershed; in total, two populations and approximately 86 individuals of Brewer's clarkia were observed during the surveys in 2020. No individuals or populations of Brewer's clarkia were observed during the 2021 surveys within Henry W. Coe State Park.

3.1.1.4 Hospital Canyon Larkspur

Hospital Canyon larkspur is a CRPR 1B.2 species. Hospital Canyon larkspur is a perennial herb in the buttercup family (Ranunculaceae) that grows in openings in chaparral, mesic areas of cismontane woodlands, and coastal scrub habitats. It is found in California in the inner South Coast Ranges, and in eastern San Francisco Bay in Alameda, Contra Costa, Merced, San Benito, Santa Clara, San Joaquin, San Luis Obispo, and Stanislaus Counties. Hospital Canyon larkspur generally flowers between April and June and occurs at elevations between 635 and 3,595 feet above msl. This species was observed in the study area upstream from North Fork Dam on north facing slopes, generally in heavily wooded areas. In total, four populations and approximately 246 individuals of Hospital Canyon larkspur were observed during the surveys in 2020. No individuals or populations of Hospital Canyon larkspur were observed during the 2021 surveys within Henry W. Coe State Park.

3.1.1.5 San Joaquin Spearscale

San Joaquin spearscale is a CRPR 1B.2 species. San Joaquin spearscale is a perennial herb in the goosefoot family (Chenopodiaceae) that grows in openings in chenopod scrub, meadows and seeps, playas, and valley and foothill grassland habitats. It is found in California in the inner South Coast Ranges as well as in the central valley. It is found in Alameda, Contra Costa, Colusa, Fresno, Glenn, Merced, Monterey, Napa, San Benito, Santa Clara, San Joaquin, San Luis Obispo, Solano, Tulare, and Yolo Counties. San Joaquin spearscale generally flowers between April and October and occurs at elevations between 0 and 2,740 feet above msl. This species was not observed in the study area during the 2020 surveys conducted by Stantec, but

[1] No vernal pools have been identified within the study area.
[2] There are no serpentine rock units or outcrops within the study area.

it is known from surveys in 2019 and 2020 to occur in the floodplain of San Felipe Lake based on information provided by Valley Water (pers. comm. 2020) and from CNDDB records. Surveys were conducted by Stantec in 2020 during the appropriate blooming period; however, the species was not detected; likely due climatic factors which could have disrupted phenology. As a result, the location where Valley Water identified the species in 2019 is presented in Figure 3-2. This population documented just under 1,000 individuals in 2019 on the west side of San Felipe Lake, in a population that extends 1,200 feet to the west of the study area. No individuals or populations of San Joaquin spearscale were observed during the 2021 surveys within Henry W. Coe State Park.

3.1.1.6 Hoover's Button-Celery

Hoover's button-celery is a CRPR 1B.1 species. The species is an annual/perennial herb in the carrot family (*Apiaceae*) that grows in vernal pools. It occurs in the South San Francisco Bay Area and South Coast Ranges in Alameda, San Benito, Santa Clara, and San Luis Obispo Counties. Hoover's button-celery generally flowers from June to July and occurs at elevations between 0 and 150 feet above msl. This species was observed within the floodplain on the east side San Felipe lake in the downstream portion of the study area. In total, two populations and approximately 4,700 individuals of Hoover's button-celery were observed. No individuals or populations of Hoover's button-celery were observed during the 2021 surveys within Henry W. Coe State Park.

3.1.1.7 Spiny-Sepaled Button-Celery

Spiny-sepaled button-celery is a CRPR 1B.2 species. The species is an annual/perennial herb in the umbellifer family (*Apiaceae*) that grows in vernal pool as well as valley and foothill grassland habitats. It occurs in Contra Costa, Fresno, Kern, Madera, Merced, San Luis Obispo, Stanislaus, Tulare, and Tuolumne Counties. Spin-sepaled button-celery generally flowers from April through June and occurs at elevations between 260 and 3,200 feet above msl. This species was observed on a south facing slope in the upstream stream portion of the study area in an area considered highly unusual for this species. Stantec botanists collected the fruit and flowers of the specimen for review and verified it with several Project botanists and the species was confirmed. In total, one population and two individuals of spiny-sepaled button-celery were observed during the survey efforts in 2020. No individuals or populations of spiny-sepaled button-celery were observed during the 2021 survey efforts within Henry W. Coe State Park.

3.1.1.8 Large-Flowered Leptosiphon

Large-flowered leptosiphon is a CRPR 4.2 species. The species is an annual herb in the phlox family (*Polemoniaceae*) that grows in sandy soils within coastal strand, foothill woodland, northern coastal scrub, coastal sage scrub, closed-cone pine forest, valley grassland, or coastal prairie habitats. It occurs in California in Alameda, Kern, Madera, Merced, Monterey, Marin, Santa Barbara, Santa Clara, Santa Cruz, San Francisco, San Luis Obispo, San Mateo, and Sonoma Counties. Large-flowered leptosiphon usually flowers from April to August and occurs at elevations between 0 and 4,000 feet above msl. This species was observed in oak woodland and grassland habitats in the watersheds of the North and East Fork Pacheco Creek. In total, four populations and approximately 22,050 individuals of large-flowered leptosiphon were observed during the surveys in 2020. No individuals or populations of large-flowered leptosiphon were observed during the 2021 surveys within Henry W. Coe State Park.

3.1.1.9 Hall's Bush-Mallow

Hall's bush-mallow is a CRPR 1B.2 species. Hall's bush-mallow is an evergreen shrub within the mallow family (*Malvaceae*) that grows in chaparral and coastal scrub habitats. It occurs in California in Alameda, Contra Costa, Mendocino, Merced, Santa Clara, San Mateo, and Stanislaus Counties. Halls bush-mallow usually flowers from April to September and occurs at

elevations between 30 and 2,495 feet above msl. This species was observed in California sagebrush associated habitats, in the upstream portion of the study area, with the highest concentration in the areas just southeast of the North Fork Dam and north of SR-152. During the 2020 surveys nine populations and approximately 953 individuals of Hall's bush-mallow were observed, with an additional population comprised of approximately 1610 individuals observed during the 2021 surveys in Henry W. Coe State Park. In total, 10 populations and 2,553 individuals of Hall's bush-mallow were observed in the Project area.

3.1.1.10 Woodland Woolythreads

Woodland woolythreads is a CRPR 1B.2 species. Woodland woolythreads is an annual herb within the daisy family (*Asteraceae*) that grows in openings in broadleafed upland forest, chaparral, cismontane woodland, North Coast coniferous forest, and valley and foothill grassland habitats. Occasionally, it is found on serpentine soils. It occurs in California in Alameda, Contra Costa, Monterey, San Luis Obispo, Santa Clara, Santa Cruz, and San Mateo Counties. Woodland woolythreads usually flowers from March to July and occurs at elevations between 325 and 3,935 feet above msl. This species was observed primarily on south facing slopes on steep hillsides, in the watersheds of the East Fork and North Fork Pacheco Creek on non-serpentine soils. In total, nine populations and approximately 5,233 individuals of woodland woolythreads were observed during the surveys in 2020. No individuals or populations of woodland woolythreads were observed during the 2021 surveys within Henry W. Coe State Park.

3.1.1.11 Prostrate Vernal Pool Navarretia

Prostrate vernal pool navarretia is a CRPR 1B.1 species. Prostrate vernal pool navarretia is an annual herb within the phlox family (*Polemoniaceae*) that grows in meadows, seeps, vernal pools, and mesic areas in Coastal scrub, and alkaline valley and foothill grassland habitats. It occurs in California in the Western San Joaquin Valley, interior South Coast Ranges, central South Coast, and Peninsular Ranges in Alameda, Los Angeles, Merced, Monterey, Orange, Riverside, San Bernardino, San Diego, and San Luis Obispo Counties. Prostrate vernal pool navarretia usually flowers from April to July and occurs at elevations between 0 and 3,970 feet above msl. This species was observed on the east side of San Felipe Lake in the floodplain, in association with seasonal wetland habitat as well as saline clover (*Trifolium hydrophilum)*. In total one population and approximately 8,244 individuals of prostrate vernal pool navarretia were observed during the surveys in 2020. No individuals or populations of prostrate vernal pool navarretia were observed during the 2021 surveys within Henry W. Coe State Park.

3.1.1.12 Most Beautiful Jewel-Flower

Most beautiful jewel-flower is a CRPR 1B.2 species. Most beautiful jewel-flower is an annual herb within the mustard family (*Brassicaceae*) that generally grows on serpentine substrates in chaparral, cismontane woodland, and valley and foothill grassland habitats. It occurs in California in the Eastern San Francisco Bay Area and central South Coast Ranges in Alameda, Contra Costa, Monterey, Santa Barbara, Santa Clara, San Luis Obispo, and Stanislaus Counties. Most beautiful jewel-flower usually flowers from March to September and occurs at elevations between 310 and 3,280 feet above msl. This species was observed on scree and talus slopes not associated with serpentine in conjunction with two other special-status species; Santa Clara thorn-mint and Brewer's clarkia. During the 2020 surveys five populations and approximately 44 individuals of most beautiful jewel-flower were observed, with an additional population comprised of approximately 10 individuals observed during the 2021 surveys in Henry W. Coe State Park. In total six populations and 54 individuals of most beautiful jewel-flower were observed in the Project area.

3.1.1.13 Saline Clover

Saline clover is a CRPR 1B.2 species. Saline clover is an annual herb within the legume family (*Fabaceae*) that grows in marshes, swamps, valley, and foothill grassland (mesic, alkaline), and vernal pool habitats. It occurs in California in the Sacramento Valley, central California, and western California. Saline clover usually flowers from April to June and occurs at elevations between 0 and 985 feet above msl. This species was observed on the east side of San Felipe Lake in the floodplain, in association with seasonal wetland habitat as well as prostrate vernal pool navarretia. In total, one population and approximately 562 individuals of saline clover were observed during the surveys in 2020. No individuals or populations of woodland woolythreads were observed during the 2021 surveys within Henry W. Coe State Park.

3.2 Non-Native Invasive Plants

The NNIP mapping during the botanical survey efforts documented 17 different NNIP species in in the study area; a total of 42 populations. Table 3-1 lists the 17 NNIP species observed and Figure 3-3 illustrates the locations where they were observed during the surveys upstream from North Fork Dam and Figure 3-4 illustrates the locations of these downstream from North Fork Dam. In general, major concentrations of NNIP were found along the North Fork Pacheco Creek, the grassland area used for livestock southeast of the reservoir, and in the flat areas surrounding San Felipe Lake. Nine of the species were included on the list based on their CAL-IPC “high” listing; the remaining species were included as they are considered to be a NNIP species by Valley Water (Valley Water 2019).

Table 3-1. Non-Native Invasive Plant Species List

Family	Scientific Name	Common Name	CAL-IPC Status*	IPMP*	Number of Populations Observed	Number of Individuals Observed[4]
Anacardiaceae	*Schinus molle*	Peruvian pepper tree	L	x	1	1
Apiaceae	*Conium maculatum*	Poison hemlock	M	x	3	23,000
Apiaceae	*Foeniculum vulgare*	Fennel	H	x	5	1,000
Apocynaceae	*Vinca major*	Vinca	M	x	+	NA
Asteraceae	*Centaurea solstitialis*	Yellow starthistle	H	x	11	27,250
Asteraceae	*Dittrichia graveolens*	Stinkwort	M	x	3	1,600
Brassicaceae	*Lepidium latifolium*	Perennial pepperweed	H		2	48,000
Fabaceae	*Acacia dealbata*	Silver wattle	M	x	+	NA
Fabaceae	*Robinia pseudoacacia*	Black locust	L	x	+	NA
Fabaceae	*Spartium junceum*	Spanish broom	H		2	50
Myrtaceae	*Eucalyptus sp.*	-	W/L	x	1	10
Oleaceae	*Olea europaea*	Olive	L	x	+	NA
Poaceae	*Arundo donax*	Giant reed	H	x	1	10
Poaceae	*Bromus madritensis ssp. rubens*	Foxtail brome	H		10	39,000
Rosaceae	*Rubus armeniacus*	Himalayan blackberry	H		1	NA
Simaroubaceae	*Ailanthus altissima*	Tree of heaven	M	x	+	NA
Tamaricaceae	*Tamarix ramosissima*	Tamarisk	H		2	10
				Total	**42**	

Notes:
[1] CAL-IPC Status
H=High
M=Moderate
L = Limited
W = Watch
[2] "X"= plants identified in the Santa Clara Valley Water District Invasive Plant Management Plan.
[3] "+"=species observed in ornamental vegetation within the Casa de Fruta commercial area.
[4] NA=detailed estimates of individuals not available.

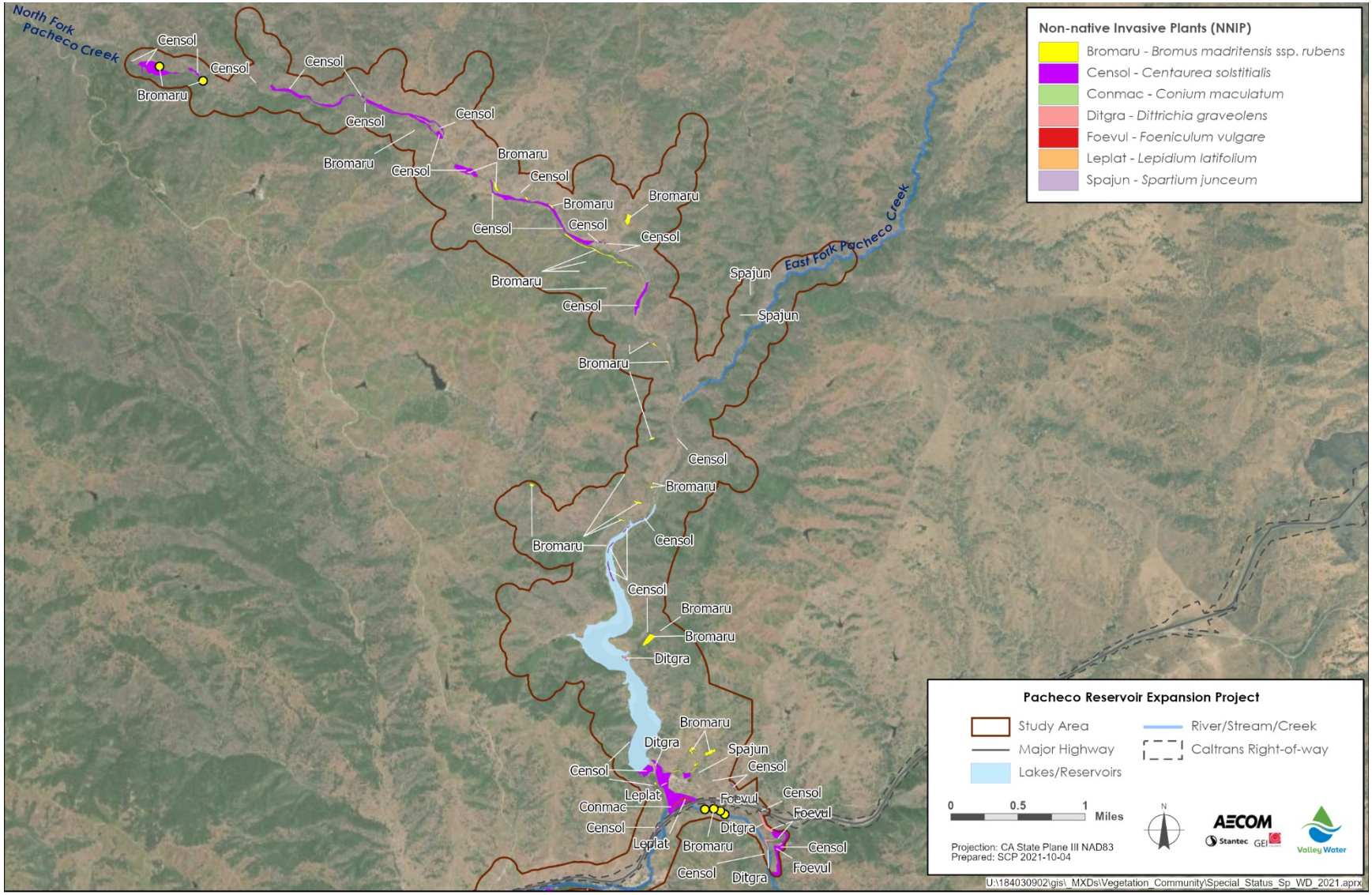

Figure 3-3. NNIP Populations Upstream from North Fork Dam

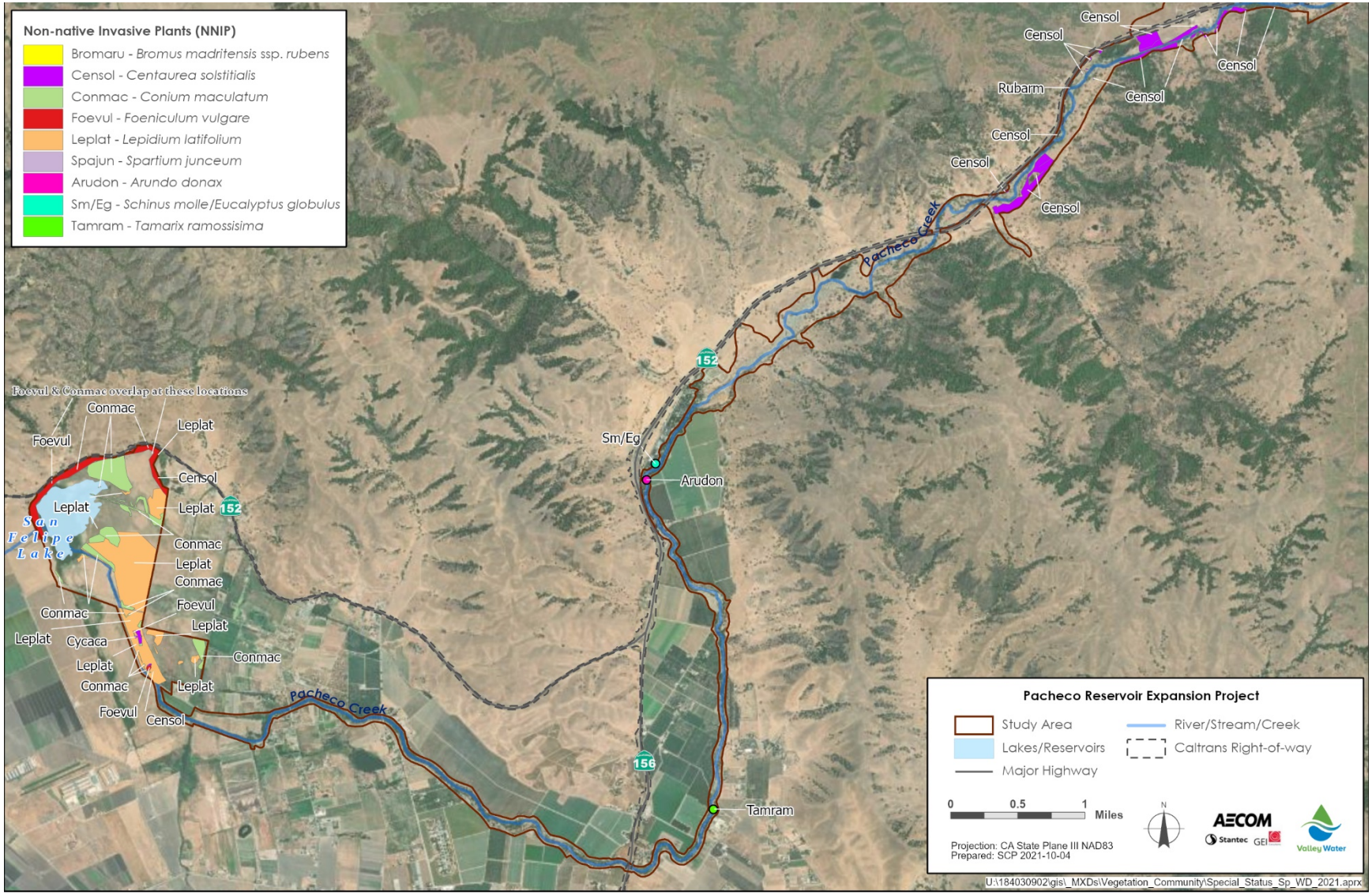

Figure 3-4. NNIP Populations Downstream from North Fork Dam

Chapter 4. References

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_____2020. Pacheco Reservoir Expansion Project Alternative Terrestrial Habitat Mapping Technical Memorandum.

Subexhibit A – Plant Species Observed

Appendix A – Plant Species Observed

Scientific Name	**Common Name**
Acacia dealbata	silver wattle
Acanthomintha lanceolata	Santa Clara thorn mint*
Acer negundo	boxelder
Achillea millefolium	yarrow
Achyrachaena mollis	blow wives
Acmispon americanus var. americanus	Spanish lotus
Acmispon brachycarpus	short podded lotus
Acmispon glaber var. glaber	deerweed
Acmispon wrangelianus	Chilean trefoil
Acroptilon repens	Russian knapweed
Adenostoma fasciculatum var. fasciculatum	chamise
Adiantum jordanii	California maidenhair fern
Aesculus californica	buckeye
Agrostis hallii	Hall's bent grass
Ailanthus altissima	tree of heaven
Aira caryophyllea	silvery hairgrass
Alisma triviale	northern water plantain
Allium peninsulare var. peninsulare	Mexicali onion
Amaranthus albus	tumbleweed
Amaranthus retroflexus	rough pigweed
Ambrosia psilostachya	ragweed
Amsinckia intermedia	common fiddleneck
Amsinckia menziesii	fiddleneck
Anaphalis margaritacea	pearly everlasting
Anthemis cotula	dog fennel
Antirrhinum vexillocalyculatum ssp. vexillocalyculatum	wiry snapdragon
Apocynum cannabinum	hemp dogbane
Arceuthobium campylopodum	pine dwarf mistletoe
Arctostaphylos sp.	-
Artemisia californica	Coastal sage brush
Artemisia douglasiana	California mugwort
Arundo donax	giant reed
Asclepias fascicularis	milkweed
Atriplex prostrata	fat-hen
Atriplex rosea	redscale
Avena barbata	slim oat
Avena fatua	wildoats
Baccharis pilularis ssp. consanguinea	coyote brush
Baccharis salicifolia ssp. salicifolia	mule fat
Barbarea vulgaris	yellow rocket
Beta vulgaris ssp. maritima	sea beet

Appendix A – Plant Species Observed

Bowlesia incana	bowlesia
Brassica nigra	black mustard
Brassica rapa	common mustard
Brickellia californica	California brickellia
Briza minor	little rattlesnake grass
Brodiaea elegans ssp. elegans	harvest brodiaea
Brodiaea sp.	-
Bromus carinatus	California bromegrass
Bromus diandrus	ripgut brome
Bromus hordeaceus	soft chess
Bromus madritensis ssp. rubens	foxtail brome
Calandrinia menziesii	red maids
Calendula arvensis	field marigold
Callitriche sp.	-
Calochortus albus	white fairy lantern
Calochortus argillosus	clay mariposa
Calochortus venustus	butterfly mariposa lily
Calystegia purpurata ssp. purpurata	smooth western morning glory
Calystegia subacaulis ssp. subacaulis	cambria morning glory
Cannabis sativa	herb
Capsella bursa-pastoris	shepherd's purse
Cardamine californica	bitter cress
Cardamine hirsuta	hairy bitter cress
Cardamine oligosperma	Idaho bittercress
Carduus pycnocephalus ssp. pycnocephalus	Italian thistle
Carex nudata	torrent sedge
Carya illinoinensis	pecan
Castilleja attenuata	narrow leaved owl's clover
Castilleja densiflora ssp. densiflora	dense flower owl's clover
Castilleja exserta	owl's clover
Castilleja foliolosa	Texas paintbrush
Castilleja sp.	-
Ceanothus cuneatus	buck brush
Celtis australis	European hackberry
Centaurea calcitrapa	purple star thistle
Centaurea cyanus	bachelor's button
Centaurea melitensis	tocalote
Centaurea solstitialis	yellow starthistle
Centromadia fitchii	spikeweed
Centromadia parryi ssp. rudis	pappose tarweed*
Centromadia pungens ssp. pungens	common tarweed
Cerastium glomeratum	large mouse ears

Appendix A – Plant Species Observed

Cercocarpus betuloides var. betuloides	birch leaf mountain mahogany
Chaenactis glabriuscula	common yellow chaenactis
Chenopodium album	lambs quarters
Chenopodium californicum	soaproot
Chlorogalum pomeridianum var. pomeridianum	common soaproot
Chorizanthe membranacea	pink spineflower
Cichorium intybus	chicory
Cirsium cymosum var. canovirens	gray-green thistle
Cirsium occidentale	western thistle
Cirsium vulgare	bullthistle
Cistus incanus	hairy rockrose
Clarkia breweri	Brewer's clarkia*
Clarkia purpurea ssp. purpurea	purple clarkia
Clarkia purpurea ssp. quadrivulnera	purple clarkia
Clarkia sp.	-
Clarkia unguiculata	woodland clarkia
Claytonia parviflora ssp. parviflora	miner'slettuce
Claytonia perfoliata	miner's lettuce
Clematis lasiantha	pipestem
Collinsia heterophylla var. heterophylla	purple Chinese houses
Collinsia parviflora	few flowered blue eyed mary
Collinsia sparsiflora	few flowered collinsia
Collinsia sparsiflora var. collina	hillside collinsia
Collomia heterophylla	varied leaved collomia
Conium maculatum	poison hemlock
Convolvulus arvensis	field bindweed
Cordylanthus pilosus ssp. pilosus	hairy bird's beak
Corethrogyne filaginifolia	common sandaster
Cotula australis	brass buttons
Cotula coronopifolia	brass buttons
Crassula connata	sand pygmy weed
Crepis vesicaria ssp. taraxacifolia	weedy hawksbeard
Cressa truxillensis	alkali weed
Croton setiger	turkey-mullein
Crypsis alopecuroides	foxtail prickle grass
Crypsis schoenoides	swamp grass
Cryptantha microstachys	Tejon cryptantha
Cuscuta sp.	-
Cynara cardunculus ssp. cardunculus	artichoke
Cynodon dactylon	Bermuda grass
Cynoglossum grande	houndstongue
Cynosurus echinatus	dogtail grass

Appendix A – Plant Species Observed

Cyperus eragrostis	tall cyperus
Cyperus niger	brown cyperus
Datisca glomerata	Durango root
Datura wrightii	Jimsonweed
Daucus pusillus	wild carrot
Deinandra kelloggii	Kellogg's tarweed
Delphinium californicum ssp. interius	Coastal larkspur*
Delphinium hesperium ssp. hesperium	Western larkspur
Delphinium patens ssp. patens	spreading larkspur
Deschampsia cespitosa	tufted hair grass
Dichelostemma capitatum ssp. capitatum	wild hyacinth
Digitaria sanguinalis	crabgrass
Diplacus aurantiacus	sticky monkeyflower
Dipsacus sativus	indian teasel
Distichlis spicata	salt grass
Dittrichia graveolens	stinkwort
Downingia pulchella	flatface downingia
Dryopteris arguta	wood fern
Dudleya cymosa ssp. paniculata	Diablo Range dudleya
Dysphania ambrosioides	Mexican tea
Dysphania pumilio	Tasmanian goosefoot
Echinochloa crus-galli	barnyard grass
Echinodorus berteroi	burhead
Eleocharis macrostachya	spike rush
Elymus glaucus	blue wildrye
Elymus trachycaulus ssp. trachycaulus	slender wheatgrass
Elymus triticoides	beardless wild rye
Epilobium brachycarpum	willow herb
Epilobium canum	California fuchsia
Epilobium ciliatum ssp. ciliatum	willow herb
Epilobium densiflorum	willow herb
Equisetum laevigatum	smooth scouring rush
Ericameria linearifolia	interior goldenbush
Erigeron bonariensis	flax-leaved horseweed
Erigeron canadensis	Canada horseweed
Erigeron petrophilus var. petrophilus	cliff fleabane
Eriodictyon californicum	yerba santa
Eriogonum fasciculatum	California buckwheat
Eriogonum nudum	naked buckwheat
Eriogonum roseum	wand buckwheat
Eriogonum wrightii var. trachygonum	Wright‘s buckwheat
Eriophyllum confertiflorum	yellow yarrow
Erodium botrys	big heron bill

Appendix A – Plant Species Observed

Erodium cicutarium	Coastal heron's bill
Erodium moschatum	whitestem filaree
Eryngium aristulatum var. hooveri	Hoover's button celery*
Eryngium spinosepalum	spiny button celery*
Erythranthe cardinalis	cardinal monkey flower
Erythranthe guttata	yellow monkey flower
Eschscholzia caespitosa	tufted eschscholzia
Eschscholzia californica	California poppy
Eucalyptus sp.	-
Euphorbia ocellata	Contura Creek spurge
Euphorbia peplus	petty spurge
Euphorbia spathulata	reticulate seeded spurge
Euthamia occidentalis	Western goldenrod
Festuca bromoides	brome fescue
Festuca microstachys	small fescue
Festuca myuros	rattail sixweeks grass
Festuca perennis	Italian rye grass
Festuca pratensis	meadow fescue
Foeniculum vulgare	fennel
Forestiera pubescens	desert olive
Frangula californica	California coffeeberry
Frankenia salina	alkali heath
Fraxinus dipetala	two petaled ash
Galium andrewsii ssp. andrewsii	phlox leaved bedstraw
Galium aparine	cleavers
Galium murale	tiny bedstraw
Galium parisiense	wall bedstraw
Galium porrigens	climbing bedstraw
Gastridium phleoides	nit grass
Geranium dissectum	wild geranium
Geranium molle	crane's bill geranium
Gilia achilleifolia ssp. multicaulis	many stemmed gilia
Gilia tricolor ssp. tricolor	bird's eyes
Glycyrrhiza lepidota	wild licorice
Gnaphalium palustre	lowland cudweed
Grindelia camporum	gumweed
Helenium puberulum	sneezeweed
Helianthus annuus	hairy leaved sunflower
Helianthus californicus	California sunflower
Heliotropium curassavicum var. oculatum	seaside heliotrope
Helminthotheca echioides	bristly ox-tongue
Hemizonia congesta ssp. luzulifolia	woodrush tarweed
Heteromeles arbutifolia	toyon

Appendix A – Plant Species Observed

Heterotheca oregona var. rudis	red Oregon goldenaster
Heterotheca sessiliflora ssp. echioides	bristly goldenaster
Hirschfeldia incana	mustard
Hoita macrostachya	California hemp
Holocarpha virgata ssp. virgata	narrow tarplant
Holozonia filipes	holozonia
Hordeum brachyantherum	meadow barley
Hordeum marinum ssp. gussoneanum	barley
Hordeum murinum ssp. leporinum	farmer's foxtail
Hypochaeris glabra	smooth cats ear
Iris macrosiphon	ground iris
Juglans hindsii	Northern California black walnut*
Juglans regia	English walnut
Juncus balticus ssp. ater	Baltic rush
Juncus bufonius var. bufonius	toad rush
Juncus mexicanus	Mexican rush
Juncus patens	rush
Juncus xiphioides	iris leaved rush
Juniperus californica	California juniper
Keckiella breviflora	gaping keckiella
Kickxia spuria	fluellin
Koeleria macrantha	June grass
Lactuca serriola	prickly lettuce
Lagophylla ramosissima	common hareleaf
Lamarckia aurea	goldentop
Lamium amplexicaule	henbit
Lasthenia californica ssp. californica	California goldfields
Lasthenia glaberrima	smooth goldfields
Lathyrus vestitus var. vestitus	hillside pea
Layia pentachaeta ssp. pentachaeta	Sierra tidy tips
Lemna minuta	least duckweed
Lemna sp.	-
Lepidium draba	whitetop
Lepidium latifolium	perennial pepperweed
Lepidium nitidum	shining pepper grass
Lepidium strictum	peppergrass
Leptosiphon androsaceus	false babystars
Leptosiphon bicolor	true babystars
Leptosiphon ciliatus	whiskerbrush
Leptosiphon grandiflorus	large flowered leptosiphon*
Lessingia sp.	-
Lithophragma heterophyllum	woodland star

Appendix A – Plant Species Observed

Lithophragma parviflorum var. parviflorum	pink woodland star
Logfia gallica	narrowleaf cottonrose
Lomatium californicum	celery weed
Lomatium caruifolium var. caruifolium	caraway leaved lomatium
Lomatium dasycarpum	lace parsnip
Lomatium utriculatum	hog fennel
Lonicera hispidula	pink honeysuckle
Lonicera interrupta	chaparral honeysuckle
Lonicera subspicata var. denudata	southern honeysuckle
Lotus corniculatus	bird's foot trefoil
Lupinus albifrons	silver bush lupine
Lupinus bicolor	lupine
Lupinus microcarpus var. densiflorus	chick lupine
Lupinus microcarpus var. microcarpus	chick lupine
Lupinus nanus	valley sky lupine
Lupinus succulentus	arroyo lupine
Luzula comosa	hairy wood rush
Lycopersicon esculentum	tomato
Lysimachia arvensis	scarlet pimpernel
Lythrum californicum	common loosestrife
Lythrum hyssopifolia	hyssop loosestrife
Madia elegans	common madia
Madia gracilis	gumweed
Malacothamnus hallii	hall's bush mallow*
Malosma laurina	laurel sumac
Malus sp.	-
Malva neglecta	dwarf mallow
Malva parviflora	cheeseweed
Malva sp.	-
Malvella leprosa	alkali mallow
Marah fabacea	california man-root
Marrubium vulgare	white horehound
Marsilea vestita ssp. vestita	hairy pepperwort
Matricaria discoidea	pineapple weed
Medicago polymorpha	California burclover
Medicago sativa	alfalfa
Melica californica	California melic
Melica imperfecta	Coast Range melic
Melica torreyana	Torrey's melica
Melilotus albus	white sweetclover
Melilotus indicus	annual yellow sweetclover
Melissa officinalis	lemon balm
Mentha pulegium	pennyroyal

Appendix A – Plant Species Observed

Mentha suaveolens	apple mint
Mentzelia lindleyi	Lindley's blazing star
Micranthes californica	Greene's saxifrage
Micropus californicus var. californicus	slender cottonweed
Microsteris gracilis	slender phlox
Mimetanthe pilosa	snouted monkey flower
Monardella villosa ssp. villosa	coyote mint
Monolopia gracilens	woodland monolopia*
Nasturtium officinale	watercress
Navarretia mellita	skunk navarretia
Navarretia prostrata	prostrate navarretia*
Navarretia pubescens	purple navarretia
Navarretia sp.	-
Nemophila heterophylla	canyon nemophila
Nemophila menziesii var. atomaria	baby blue eyes
Nemophila menziesii var. menziesii	baby blue eyes
Nerium oleander	oleander
Nicotiana acuminata var. multiflora	many flowered tobacco
Olea europaea	olive
Opuntia ficus-indica	tuna
Packera breweri	brewer's ragwort
Parentucellia viscosa	yellow parentucellia
Paspalum dilatatum	dallis grass
Paspalum distichum	knot grass
Pectocarya pusilla	little pectocarya
Pedicularis densiflora	indian warrior
Pellaea andromedifolia	coffee fern
Pentagramma triangularis ssp. triangularis	gold back fern
Perideridia californica	California yampah
Perideridia kelloggii	yampah
Persicaria amphibia	water smartweed
Persicaria punctata	dotted smartweed
Phacelia distans	common phacelia
Phacelia fremontii	Fremont's phacelia
Phacelia imbricata var. imbricata	-
Phalaris minor	Mediterranean canarygrass
Pholistoma auritum var. auritum	blue fiesta flower
Pholistoma membranaceum	white fiesta flower
Phoradendron leucarpum ssp. macrophyllum	big leaf mistletoe
Phyla lanceolata	lance leaf lippia
Phyla nodiflora	common lippia
Pinus sabiniana	bull pine
Pittosporum tenuifolium	short leaf box

Appendix A – Plant Species Observed

Plagiobothrys bracteatus	bracted allocarya
Plagiobothrys canescens var. canescens	Valley popcornflower
Plagiobothrys greenei	Greene's allocarya
Plagiobothrys nothofulvus	rusty haired popcorn flower
Plagiobothrys stipitatus var. micranthus	common vernal pool allocarya
Plantago coronopus	cut leaf plantain
Plantago elongata	Coastal plantain
Plantago erecta	California plantain
Plantago lanceolata	ribwort
Plantago major	common plantain
Platanus racemosa	California sycamore
Platystemon californicus	cream cups
Plectritis ciliosa	long spurred plectritis
Plectritis macrocera	plectritis
Poa annua	annual blue grass
Poa secunda ssp. secunda	Sandberg's bluegrass
Poa trivialis	rough blue grass
Pogogyne serpylloides	thyme leaf mesa mint
Polygonum aviculare	prostrate knotweed
Polypodium californicum	California polypody
Polypogon monspeliensis	annual beard grass
Populus fremontii ssp. fremontii	cottonwood
Populus trichocarpa	black cottonwood
Portulaca oleracea	common purslane
Potentilla sp.	-
Primula clevelandii var. patula	padre's shooting star
Prunus dulcis	almond
Prunus ilicifolia ssp. ilicifolia	holly leaf cherry
Prunus sp.	-
Pseudognaphalium luteoalbum	Jersey cudweed
Psilocarphus brevissimus	woolly marbles
Psilocarphus tenellus	slender woolly heads
Ptelea crenulata	hop tree
Pterostegia drymarioides	fairy mist
Pyrus sp.	-
Quercus agrifolia var. agrifolia	coast live oak
Quercus berberidifolia	inland scrub oak
Quercus douglasii	blue oak
Quercus lobata	valley oak
Quercus wislizeni var. wislizeni	interior live oak
Rafinesquia californica	California chicory
Ranunculus aquatilis	whitewater crowfoot
Ranunculus californicus	common buttercup

Appendix A – Plant Species Observed

Ranunculus hebecarpus	pubescent fruited buttercup
Ranunculus muricatus	buttercup
Raphanus sativus	jointed charlock
Rhamnus crocea	redberry
Rhamnus ilicifolia	evergreen buckthorn
Rhus ovata	sugar bush
Ribes californicum var. californicum	California gooseberry
Ribes sp.	-
Robinia pseudoacacia	black locust
Rorippa curvisiliqua	curvepod yellow cress
Rosa californica	California wild rose
Rubus armeniacus	Himalayan blackberry
Rubus ursinus	California blackberry
Rumex acetosella	sheep sorrel
Rumex conglomeratus	green dock
Rumex crispus	curly dock
Rumex pulcher	fiddleleaf dock
Rumex salicifolius	willow leaved dock
Salicornia pacifica	pickleweed
Salix exigua	narrowleaf willow
Salix gooddingii	Gooding's willow
Salix laevigata	polished willow
Salix lasiolepis	arroyo willow
Salsola tragus	Russian thistle
Salvia columbariae	chia sage
Salvia mellifera	black sage
Sambucus nigra ssp. caerulea	blue elderberry
Sanicula bipinnata	poison sanicle
Sanicula bipinnatifida	purple sanicle
Sanicula crassicaulis	Pacific sanicle
Scandix pecten-veneris	shepherd's needle
Schinus molle	Peruvian pepper tree
Schoenoplectus acutus var. occidentalis	tule
Schoenoplectus americanus	chairmaker's bulrush
Scrophularia californica	California bee plant
Scutellaria siphocampyloides	gray leaved skullcap
Sedum spathulifolium	Pacific stonecrop
Selaginella bigelovii	Bigelow's moss fern
Senecio californicus	California butterweed
Senecio vulgaris	common groundsel
Sequoia sempervirens	Coast redwood
Sidalcea malviflora ssp. laciniata	laciniate checker mallow
Silene gallica	common catchfly

Appendix A – Plant Species Observed

Silybum marianum	milk thistle
Sinapis arvensis	charlock
Sisyrinchium bellum	blue eyed grass
Solanum americanum	white nightshade
Solanum umbelliferum	blue witch
Soliva sessilis	South American soliva
Sonchus asper ssp. asper	sow thistle
Sonchus oleraceus	sow thistle
Sparganium eurycarpum	broadfruit bur reed
Spergularia bocconi	Boccone's sand spurry
Spergularia rubra	purple sand spurry
Spiranthes porrifolia	Western ladies tresses
Stachys ajugoides	hedge nettle
Stachys albens	cobwebby hedge nettle
Stachys bullata	southern hedge nettle
Stellaria media	chickweed
Stephanomeria virgata ssp. pleurocarpa	tall stephanomeria
Stipa miliacea var. miliacea	smilo grass
Stipa pulchra	purple needle grass
	most beautiful jewelflower*
Streptanthus glandulosus ssp. glandulosus	jewelflower
Symphoricarpos albus var. laevigatus	snowberry
Symphyotrichum lanceolatum var. hesperium	western lance leaf aster
Symphyotrichum sp.	-
Tamarix parviflora	tamarisk
Tamarix ramosissima	tamarisk
Taraxacum erythrospermum	red-seeded dandelion
Taraxacum officinale	red seeded dandelion
Thalictrum fendleri var. polycarpum	Torrey's meadow rue
Thysanocarpus curvipes ssp. curvipes	-
Thysanocarpus laciniatus	narrow leaved lacepod
Torilis arvensis	field hedge parsley
Toxicodendron diversilobum	poison oak
Toxicoscordion fremontii	Fremont's star lily
Tragopogon sp.	-
Tribulus terrestris	puncture vine
Trichostema lanceolatum	vinegarweed
Trifolium angustifolium	narrow leaved clover
Trifolium campestre	hop clover
Trifolium ciliolatum	tree clover
Trifolium depauperatum	dwarf sack clover
Trifolium dubium	shamrock
Trifolium fragiferum	strawberry clover

Appendix A – Plant Species Observed

Trifolium glomeratum	clustered clover
Trifolium gracilentum	pin point clover
Trifolium hirtum	rose clover
*Trifolium hydrophilum**	saline clover
Trifolium subterraneum	subterranean clover
Trifolium variegatum var. variegatum	variegated clover
Trifolium willdenovii	tomcat clover
Triphysaria eriantha ssp. eriantha	butter 'n' eggs
Triphysaria pusilla	little owl's clover
Triteleia hyacinthina	wild hyacinth
Triteleia laxa	Ithuriel's spear
Tropidocarpum gracile	slender tropidocarpum
Typha angustifolia	narrow leaf cattail
Typha latifolia	broadleaf cattail
Typha sp.	-
Ulmus americana	American elm
Umbellularia californica	california bay
Uropappus lindleyi	silver puffs
Urospermum picroides	bristly tail seed
Urtica dioica	stinging nettle
Urtica urens	annual stinging nettle
Verbascum blattaria	moth mullein
Verbena bracteata	bracted verbena
Verbena lasiostachys var. scabrida	robust vervain
Veronica americana	American brooklime
Veronica anagallis-aquatica	water speedwell
Veronica catenata	chain speedwell
Veronica peregrina ssp. xalapensis	speedwell
Veronica persica	bird's eye speedwell
Vicia americana ssp. americana	American vetch
Vicia sativa	spring vetch
Vicia villosa ssp. villosa	hairy vetch
Vinca major	vinca
Viola pedunculata	California golden violet
Vitis vinifera	cultivated grape
Wyethia helenioides	whitehead wyethia
Xanthium spinosum	spiny cocklebur
Xanthium strumarium	cocklebur
Zannichellia palustris	horned pondweed
Zeltnera muehlenbergii	Muehlenberg's centaury

Subexhibit B – Special-Status Plant Species Observed Representative Photographs

Special-Status Plant Species Observed Representative Photographs



Photo 1. Close-up of Santa Clara thorn-mint (*Acanthomintha lanceolata*) California Rare Plant Rank (CRPR) 4.2.



Photo 2. Looking north towards Shiloh Road.



Photo 3. Close-up of Parry's rough tarplant (*Centromadia parryi* ssp. *rudis*), CRPR 4.2.



Photo 4. A Parry's rough tarplant population in a grazed, non-native grassland.



Photo 5. Close-up of Brewer's clarkia (*Clarkia breweri*), CRPR 4.2.



Photo 6. Brewer's clarkia on a steep, rocky slope.



Photo 7. Close-up of Hospital Canyon larkspur (*Delphinium californicum* ssp. *interiusi*), CRPR 1B.2.



Photo 8. Hospital Canyon larkspur growing with holly-leafed cherry (*Prunus ilicifolia*).



Photo 9. Close-up of Hoover's button-celery (*Eryngium aristulatum* var. *hooveri*) CRPR 1B.1.



Photo 10. Hoover's button-celery at San Felipe Lake.



Photo 11. Close-up of spiny-sepaled button-celery (*Eryngium spinosepalum*) CRPR 1B.2.



Photo 12. Spiny-sepaled button-celery in non-native grassland.



Photo 13. Close-up of large-flowered leptosiphon (*Leptosiphon grandiflorus*) CRPR 4.2.



Photo 14. Large-flowered leptosiphon population.



Photo 15. Close-up of Hall's bush mallow (*Malacothamnus hallii*) CRPR 1B.2.



Photo 16. Population of Hall's bush mallow dispersed throughout California sagebrush.



Photo 17. Close-up of woodland woollythreads (*Monolopia gracilens*) CRPR 1B.2.

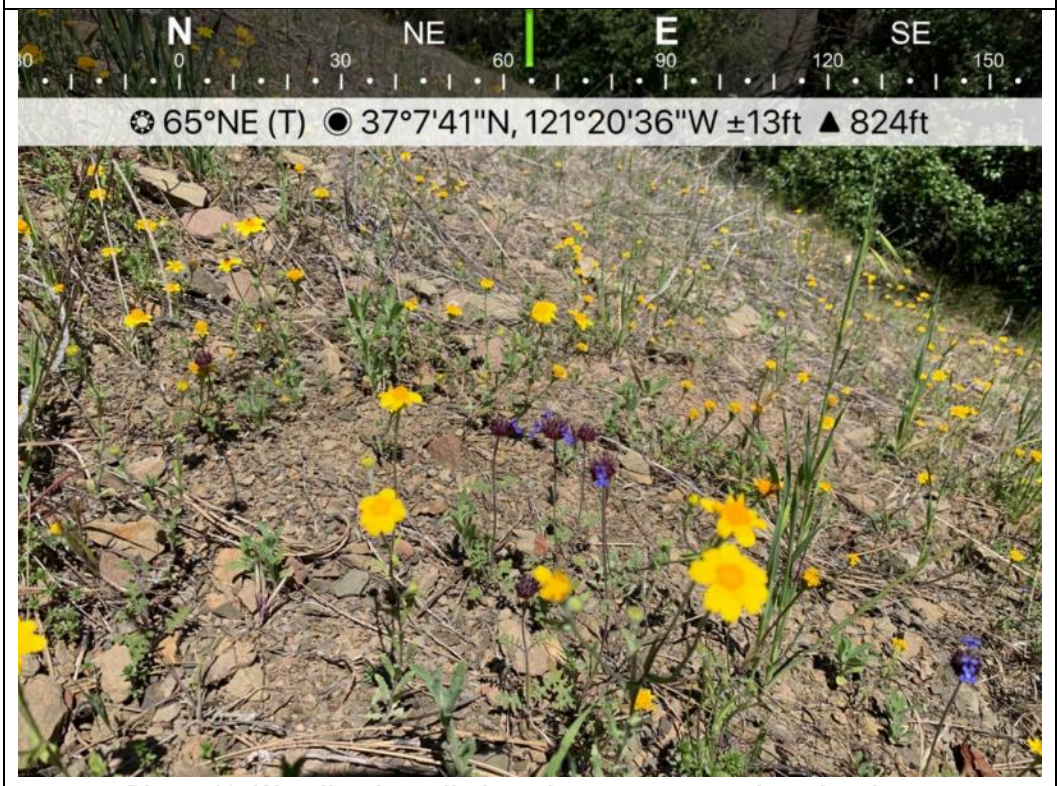

Photo 18. Woodland woollythreads on an exposed, rocky slope.



Photo 19. Close-up of Prostrate vernal pool navarretia (*Navarretia prostrata*) CRPR 1B.1.



Photo 20. Prostrate vernal pool navarretia habitat and population at San Felipe Lake.



Photo 21. Close-up of most beautiful jewel-flower (*Streptanthus albidus* ssp. *peramoenus*) CRPR 1B.2.



Photo 22. An occurrence of most beautiful jewel-flower on a steep, rocky slope.



Photo 23. Close-up of saline clover (*Trifolium hydrophilum*) CRPR 1B.2.



Photo 24. An occurrence of saline clover growing with alkaline mallow.

Subexhibit C – Special-Status Plant California Natural Diversity Database Forms

Mail To:
California Natural Diversity Database
California Dept. of Fish & Wildlife
P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): *03/17/2020*

For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Malacothamnus hallii

Common Name: Hall's bush mallow

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 808 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO ___ Unk. X

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer L. Hoffman, P. Brillante, S. Hickey

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

100	0	0
% vegetative	% flowering	% fruiting

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Jin, Edmund)

Quad Name: _____ Elevation: _____

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ GPS make and model: Bad Elf GNSS

DATUM: **NAD27** ◯ **NAD83** ◯ **WGS84** ● Horizontal Accuracy: 9 ft

Coordinate System: UTM Zone 10 ◯ UTM Zone 11 ◯ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.0535,-121.2808

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Several populations mapped as 15 polygons and 1 point (see map/spatial data) on 3 dates in 2020: 3/17, 5/5, and 5/6. Associated with Salvia mellifera and Artemisia californica. Several stands appear to have burned within the last 10 years. <MALHAL_3>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ◯ Excellent ◯ Good ◯ Fair ◯ Poor

Immediate AND surrounding land use: Cattle ranch.

Visible disturbances: Grazing/trampling (cattle).

Threats: _____

Comments:

Determination: *(check one or more, and fill in the blanks)*

☒ Keyed (cite reference): _____

☐ Compared with specimen housed at: _____

☐ Compared with photo/drawing in: _____

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ◯ no

Mail To:
California Natural Diversity Database
California Dept. of Fish & Wildlife
P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): *03/18/2020*

For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Monolopia gracilens

Common Name: woodland woollythreads

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 90 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO ___ Unk. X

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer, L. Morris

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

75	25	0
% vegetative	% flowering	% fruiting

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Jin, Edmund)

Quad Name: _____ Elevation: _____

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ GPS make and model: Bad Elf GNSS

DATUM: **NAD27** ◯ **NAD83** ◯ **WGS84** ● Horizontal Accuracy: 9 ft

Coordinate System: UTM Zone 10 ◯ UTM Zone 11 ◯ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.0969,-121.2868

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Populations mapped as two polygons (see map/spatial data). One population on a southwest aspect; one on a south aspect. <MONGRA_6>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ◯ Excellent ◯ Good ● Fair ◯ Poor

Immediate AND surrounding land use: Cattle ranch.

Visible disturbances: Grazing/trampling (cattle).

Threats: _____

Comments:

Determination: *(check one or more, and fill in the blanks)*

☒ Keyed (cite reference): Jepson eFlora

☐ Compared with specimen housed at: _____

☐ Compared with photo/drawing in: _____

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ◯ no

Mail To:
California Natural Diversity Database
California Dept. of Fish & Wildlife
P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): *03/26/2020*

For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Monolopia gracilens

Common Name: woodland woollythreads

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 2960 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO ___ Unk. X

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer M. Oats, L. Hoffman

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

75	25	0
% vegetative	% flowering	% fruiting

Animal Information

_____	_____	_____	_____	_____
# adults	# juveniles	# larvae	# egg masses	# unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Jin, Edmund); Private (Moitozo, Manuel G.)

Quad Name: _____ Elevation: _____

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ GPS make and model: Bad Elf GNSS

DATUM: **NAD27** ◯ **NAD83** ◯ **WGS84** ● Horizontal Accuracy: 9 ft

Coordinate System: UTM Zone 10 ◯ UTM Zone 11 ◯ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.0981,-121.2785

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Several populations mapped as four points and six polygons (see map/spatial data) on four dates in 2020: 3/26, 4/15, 5/12 and 5/21. All growing along very steep canyon slopes slope with scree and apparent good drainage. Associated with Amsinckia sp., Collinsia sp., and Toxicodendron diversilobum. <MONGRA_8>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ◯ Excellent ◯ Good ● Fair ◯ Poor

Immediate AND surrounding land use: Cattle ranch.

Visible disturbances: Grazing/trampling (cattle).

Threats: _____

Comments:

Determination: *(check one or more, and fill in the blanks)*

☒ Keyed (cite reference): Jepson eFlora

☐ Compared with specimen housed at: _____

☒ Compared with photo/drawing in: previously ID'd on-site

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ◯ yes ◯ no

Mail To:
California Natural Diversity Database
California Dept. of Fish & Wildlife
P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): *03/26/2020*

For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Malacothamnus hallii

Common Name: Hall's bush mallow

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 100 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO ___ Unk. X

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer, T. Beyerl

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

100	0	0
% vegetative	% flowering	% fruiting

Animal Information

_____	_____	_____	_____	_____
# adults	# juveniles	# larvae	# egg masses	# unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Jin, Edmund)

Quad Name: _____ Elevation: _____

T ____ R ____ Sec ____, ____1/4 of ____1/4, Meridian: H ◯ M ◯ S ◯ Source of Coordinates (GPS, topo. map & type): GPS

T ____ R ____ Sec ____, ____1/4 of ____1/4, Meridian: H ◯ M ◯ S ◯ GPS make and model: Bad Elf GNSS

DATUM: **NAD27** ◯ **NAD83** ◯ **WGS84** ● Horizontal Accuracy: 9 ft

Coordinate System: UTM Zone 10 ◯ UTM Zone 11 ◯ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.0855,-121.2829

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Growing in Artemisia californica scrub, steep (35 percent) scree slope, southern aspect. Associates are Artemisia californica and Centaurea melitensis. Mapped as one polygon (see map/spatial data). <(MALHAL_4>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ◯ Excellent ● Good ◯ Fair ◯ Poor

Immediate AND surrounding land use: Cattle ranch.

Visible disturbances: Invasive plants; grazing/trampling (cattle).

Threats: _____

Comments:

Determination: *(check one or more, and fill in the blanks)*

☐ Keyed (cite reference): _____

☐ Compared with specimen housed at: _____

☒ Compared with photo/drawing in: Jepson

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☒
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ◯ no

Mail To:
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P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): *03/31/2020*

For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Monolopia gracilens

Common Name: woodland woollythreads

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 1000 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO X Unk. ___

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer L. Hoffman

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

97	3	0
% vegetative	% flowering	% fruiting

Animal Information

_____	_____	_____	_____	_____
# adults	# juveniles	# larvae	# egg masses	# unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Lawler, William H.)

Quad Name: _____ Elevation: _____

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ GPS make and model: Bad Elf GNSS

DATUM: **NAD27** ◯ **NAD83** ◯ **WGS84** ● Horizontal Accuracy: 9 ft

Coordinate System: UTM Zone 10 ◯ UTM Zone 11 ◯ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.1147,-121.3002

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Growing on a steep, southwest-facing slope with rocky soil. Mapped as one point (see map/spatial data). <MONGRA_7>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ◯ Excellent ◯ Good ◯ Fair ◯ Poor

Immediate AND surrounding land use: Cattle ranch.

Visible disturbances: Grazing/trampling (cattle).

Threats: _____

Comments:

Determination: *(check one or more, and fill in the blanks)*

☒ Keyed (cite reference): Jepson eFlora

☐ Compared with specimen housed at: _____

☐ Compared with photo/drawing in: _____

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ◯ yes ◯ no

Mail To:
California Natural Diversity Database
California Dept. of Fish & Wildlife
P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): *04/01/2020*

For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Monolopia gracilens

Common Name: woodland woollythreads

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 10 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO X Unk. ___

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer L. Hoffman

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

60	40	0
% vegetative	% flowering	% fruiting

Animal Information

_____	_____	_____	_____	_____
# adults	# juveniles	# larvae	# egg masses	# unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Moitozo, Manuel G.)

Quad Name: _____ Elevation: _____

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ GPS make and model: Bad Elf GNSS

DATUM: **NAD27** ◯ **NAD83** ◯ **WGS84** ● Horizontal Accuracy: 9 ft

Coordinate System: UTM Zone 10 ◯ UTM Zone 11 ◯ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.1139,-121.2879

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Growing on a sunny, unconsolidated, rocky slope with Madia sp. and Lupinus bicolor. Mapped as twp points (see map/spatial data). <MONGRA_5>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ◯ Excellent ● Good ◯ Fair ◯ Poor

Immediate AND surrounding land use: Cattle ranch.

Visible disturbances: Grazing/trampling (cattle).

Threats: _____

Comments:

Determination: *(check one or more, and fill in the blanks)*

☒ Keyed (cite reference): Jepson eFlora

☐ Compared with specimen housed at: _____

☒ Compared with photo/drawing in: previously ID'd on-site

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ◯ yes ◯ no

Mail To:
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California Dept. of Fish & Wildlife
P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): *04/01/2020*

For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Malacothamnus hallii

Common Name: Hall's bush mallow

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 2 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO X Unk. ___

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer, M. Oats, S. Tona

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

100 % vegetative _____ % flowering _____ % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Jin, Edmund); Private (Lawler, William H.)

Quad Name: _____ Elevation: _____

T ____ R ____ Sec ____, ____1/4 of ____1/4, Meridian: H ◯ M ◯ S ◯ Source of Coordinates (GPS, topo. map & type): GPS

T ____ R ____ Sec ____, ____1/4 of ____1/4, Meridian: H ◯ M ◯ S ◯ GPS make and model: Bad Elf GNSS

DATUM: **NAD27** ◯ **NAD83** ◯ **WGS84** ● Horizontal Accuracy: _____

Coordinate System: UTM Zone 10 ◯ UTM Zone 11 ◯ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.1229,-121.3302

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Two populations found and mapped as two points (see map/spatial data) on two dates in 2020: 4/1 and 6/3. Growing under/within Ceanothus cuneatus. <MALHAL_6>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ◯ Excellent ◯ Good ● Fair ◯ Poor

Immediate AND surrounding land use: Cattle ranch.

Visible disturbances: Grazing/trampling (cattle).

Threats: None

Comments:

Determination: *(check one or more, and fill in the blanks)*

☐ Keyed (cite reference): _____

☐ Compared with specimen housed at: _____

☒ Compared with photo/drawing in: Cal photos

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ◯ no

Mail To:
California Natural Diversity Database
California Dept. of Fish & Wildlife
P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): *04/02/2020*

For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Monolopia gracilens

Common Name: woodland woollythreads

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 200 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO X Unk. ___

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer L. Hoffman

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

97	3	0
% vegetative	% flowering	% fruiting

Animal Information

_____	_____	_____	_____	_____
# adults	# juveniles	# larvae	# egg masses	# unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Moitozo, Manuel G.)

Quad Name: _____ Elevation: _____

T ____ R ____ Sec ____, ____1/4 of ____1/4, Meridian: H ◯ M ◯ S ◯ Source of Coordinates (GPS, topo. map & type): GPS

T ____ R ____ Sec ____, ____1/4 of ____1/4, Meridian: H ◯ M ◯ S ◯ GPS make and model: Bad Elf GNSS

DATUM: **NAD27** ◯ **NAD83** ◯ **WGS84** ● Horizontal Accuracy: 9 ft

Coordinate System: UTM Zone 10 ◯ UTM Zone 11 ◯ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.1052,-121.2676

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Growing on a steep southeast-facing slope; associated with Artemisia californica, Toxicodendron diversilobum, Heteromeles arbutifolia. Mapped as one point (see map/spatial data). <MONGRA_4>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ◯ Excellent ● Good ◯ Fair ◯ Poor

Immediate AND surrounding land use: Cattle ranch.

Visible disturbances: Wild pig trail/erosion; grazing/trampling (cattle).

Threats: _____

Comments:

Determination: *(check one or more, and fill in the blanks)*

☒ Keyed (cite reference): Jepson eFlora

☐ Compared with specimen housed at: _____

☒ Compared with photo/drawing in: previously ID'd on-site

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ◯ yes ◯ no

Mail To:
California Natural Diversity Database
California Dept. of Fish & Wildlife
P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): *04/02/2020*

For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Monolopia gracilens

Common Name: woodland woollythreads

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 73 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO X Unk. ___

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer, M. Oats, P. Brillante, S. Hickey, T. Kay

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

90	10	0
% vegetative	% flowering	% fruiting

Animal Information

_____	_____	_____	_____	_____
# adults	# juveniles	# larvae	# egg masses	# unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: PASS, PACHECO DIST

Quad Name: _____ Elevation: _____

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ GPS make and model: Bad Elf GNSS

DATUM: **NAD27** ◯ **NAD83** ◯ **WGS84** ● Horizontal Accuracy: 9 ft

Coordinate System: UTM Zone 10 ◯ UTM Zone 11 ◯ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.0755,-121.295

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Several populations found and mapped as four points and one polygon (see map/spatial data) on two dates in 2020: 4/2 and 5/11. Growing along shelf/bank of the North Fork of Pacheco Creek. With Avena sp. and Centaurea melitensis. <MONGRA_3>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ◯ Excellent ● Good ◯ Fair ◯ Poor

Immediate AND surrounding land use: Cattle ranch; reservoir.

Visible disturbances: Grazing/trampling (cattle).

Threats: Inundation (reservoir)

Comments:

Determination: *(check one or more, and fill in the blanks)*

☒ Keyed (cite reference): Jepson eFlora

☐ Compared with specimen housed at: _____

☐ Compared with photo/drawing in: _____

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ◯ no

Mail To:
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California Dept. of Fish & Wildlife
P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): *04/14/2020*

For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Leptosiphon grandiflorus

Common Name: large-flowered Leptosiphon

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 1000 Subsequent visit? Yes ___ No ___

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO ___ Unk. X

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer L. Hoffman

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

20	80	0
% vegetative	% flowering	% fruiting

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Jin, Edmund)

Quad Name: _____ Elevation: _____

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ GPS make and model: Bad Elf GNSS

DATUM: **NAD27** ◯ **NAD83** ◯ **WGS84** ● Horizontal Accuracy: 9 ft

Coordinate System: UTM Zone 10 ◯ UTM Zone 11 ◯ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.1243,-121.3462

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Very steep south-east facing slope, exposed and sunny. Co-occurs with Chaenactis glabriuscula, Selaginella sp., Rhamnus illicifolia, and Toxicodendron diversilobum. Mapped as one polygon (see map/spatial data). <LEPGRA_2>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ◯ Excellent ◯ Good ● Fair ◯ Poor

Immediate AND surrounding land use: Cattle ranch.

Visible disturbances: Grazing/trampling (cattle).

Threats: _____

Comments:

Determination: *(check one or more, and fill in the blanks)*

☐ Keyed (cite reference): _____

☐ Compared with specimen housed at: _____

☐ Compared with photo/drawing in: _____

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ◯ no

Mail To:
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California Dept. of Fish & Wildlife
P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): *04/14/2020*

For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Leptosiphon grandiflorus

Common Name: large-flowered Leptosiphon

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 150 Subsequent visit? Yes ___ No ___

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO ___ Unk. X

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer L. Hoffman

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

20	80	0
% vegetative	% flowering	% fruiting

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Jin, Edmund)

Quad Name: _____ Elevation: _____

T ___ R ___ Sec ___, ___ 1/4 of ___ 1/4, Meridian: H ◯ M ◯ S ◯ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___ 1/4 of ___ 1/4, Meridian: H ◯ M ◯ S ◯ GPS make and model: Bad Elf GNSS

DATUM: **NAD27** ◯ **NAD83** ◯ **WGS84** ● Horizontal Accuracy: 9 ft

Coordinate System: UTM Zone 10 ◯ UTM Zone 11 ◯ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.1227,-121.337

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Growing on a steep south-facing slope; exposed and sunny. Co-occurs with Chaenactis glabriuscula, Selaginella sp., Rhamnus illicifolia, and Toxicodendron diversilobum. Mapped as one point (see map/spatial data). <LEPGRA_1>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ◯ Excellent ◯ Good ● Fair ◯ Poor

Immediate AND surrounding land use: Cattle ranch.

Visible disturbances: Grazing/trampling (cattle).

Threats: _____

Comments:

Determination: *(check one or more, and fill in the blanks)*

☒ Keyed (cite reference): Jepson eFlora

☐ Compared with specimen housed at: _____

☐ Compared with photo/drawing in: _____

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ◯ yes ◯ no

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California Natural Diversity Database
California Dept. of Fish & Wildlife
P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): *04/14/2020*

For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Malacothamnus hallii

Common Name: Hall's bush mallow

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 9 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO X Unk. ___

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer M. Oats

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

100 _____ _____
% vegetative % flowering % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Jin, Edmund); Private (Lawler, William H.)

Quad Name: _____ Elevation: _____

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ GPS make and model: Bad Elf GNSS

DATUM: **NAD27** ◯ **NAD83** ◯ **WGS84** ● Horizontal Accuracy: 9 ft

Coordinate System: UTM Zone 10 ◯ UTM Zone 11 ◯ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.1261,-121.3404

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Populations mapped as three points (see map/spatial data) on two field dates in 2020, 4/14 and 6/3. Growing in Artemisia californica scrub,on two northeast-facing slopes, and one ridgeline. Associates are Artemisia californica and Centaurea melitensis. <MALHAL_5>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ◯ Excellent ◯ Good ● Fair ◯ Poor

Immediate AND surrounding land use: Cattle ranch.

Visible disturbances: Grazing/trampling (cattle).

Threats: None

Comments:

Determination: *(check one or more, and fill in the blanks)*

☐ Keyed (cite reference): _____

☐ Compared with specimen housed at: _____

☒ Compared with photo/drawing in: Cal photos

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ◯ no

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Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Monolopia gracilens

Common Name: woodland woollythreads

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 300 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO X Unk. ___

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer M. Oats

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

90	10	0
% vegetative	% flowering	% fruiting

Animal Information

_____	_____	_____	_____	_____
# adults	# juveniles	# larvae	# egg masses	# unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Jin, Edmund)

Quad Name: _____ Elevation: _____

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ Source of Coordinates (GPS, topo. map & type): _____

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ GPS make and model: Bad Elf GNSS

DATUM: **NAD27** ◯ **NAD83** ◯ **WGS84** ● Horizontal Accuracy: 9 ft

Coordinate System: UTM Zone 10 ◯ UTM Zone 11 ◯ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.1282,-121.3435

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Growing in Artemisia californica scrub, on a south-facing slopes. Associates are Artemisia californica and Centaurea melitensis. Mapped as one point (see map/spatial data). <MONGRA_2>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ◯ Excellent ● Good ◯ Fair ◯ Poor

Immediate AND surrounding land use: Cattle ranch.

Visible disturbances: Grazing/trampling (cattle).

Threats: _____

Comments:

Determination: *(check one or more, and fill in the blanks)*

☒ Keyed (cite reference): Jepson eFlora

☐ Compared with specimen housed at: _____

☒ Compared with photo/drawing in: previously ID'd on-site

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ◯ yes ◯ no

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Date of Field Work (mm/dd/yyyy): *05/05/2020*

For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Streptanthus albidus ssp. peramoenus (Streptanthus glandulosus ssp. glandulosus)

Common Name: most beautiful jewelflower

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 2 Subsequent visit? Yes ___ No ___

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO X Unk. ___

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

_____ % vegetative | 100 % flowering | _____ % fruiting

Animal Information

_____ # adults | _____ # juveniles | _____ # larvae | _____ # egg masses | _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Jin, Edmund)

Quad Name: _____ Elevation: _____

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ GPS make and model: Bad Elf GNSS

DATUM: **NAD27** ◯ **NAD83** ◯ **WGS84** ◯ Horizontal Accuracy: 9 ft

Coordinate System: UTM Zone 10 ◯ UTM Zone 11 ◯ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.06688676,-121.29893705

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Associated with Artemisia californica, Chorizanthe membranacea, Eriogonum nudum, Acmispon glaber. Loose, rocky slope (40 degree slope). Southeast-facing. Mapped as one point (see map/spatial data). <STRALBPER_4>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ◯ Excellent ◯ Good ● Fair ◯ Poor

Immediate AND surrounding land use: Cattle ranch.

Visible disturbances: Grazing/trampling (cattle).

Threats: _____

Comments:

Determination: *(check one or more, and fill in the blanks)*

☒ Keyed (cite reference): Keyed to S. glandulosus ssp. glandulosus in Jepson eFlora

☐ Compared with specimen housed at: _____

☐ Compared with photo/drawing in: _____

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ◯ yes ◯ no

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Date of Field Work (mm/dd/yyyy): *05/06/2020*

For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Delphinium californicum ssp. interius

Common Name: Hospital Canyon larkspur

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 12 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO X Unk. ___

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer, T. Kayatsky

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

80 % vegetative | 20 % flowering | ___ % fruiting

Animal Information

___ # adults | ___ # juveniles | ___ # larvae | ___ # egg masses | ___ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Jin, Edmund)

Quad Name: _____ Elevation: _____

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ○ M ○ S ○ GPS make and model: Bad Elf GNSS

DATUM: **NAD27** ○ **NAD83** ○ **WGS84** ● Horizontal Accuracy: 9 ft

Coordinate System: UTM Zone 10 ○ UTM Zone 11 ○ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.0595,-121.3102

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Growing in an opening in woodland on a 40% slope facing northwest. Associated species: Marah fabacea, Rhamnus sp., Montia sp., Prunus illicifolia. Openings surrounded by Toxicodendron diversilobum. Mapped as three polygons (see map/spatial data). <DELCALINT_4>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ○ Good ● Fair ○ Poor

Immediate AND surrounding land use: Cattle ranch

Visible disturbances: Grazing/trampling (cattle).

Threats: _____

Comments:

Determination: *(check one or more, and fill in the blanks)*

☒ Keyed (cite reference): _____

☐ Compared with specimen housed at: _____

☐ Compared with photo/drawing in: _____

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ○ no

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For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Malacothamnus hallii

Common Name: Hall's bush mallow

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 15 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO ___ Unk. X

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer, P. Brillante, S. Hickey

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

100	0	0
% vegetative	% flowering	% fruiting

Animal Information

_____	_____	_____	_____	_____
# adults	# juveniles	# larvae	# egg masses	# unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: PASS, PACHECO DIST; Private (Jin, Edmund)

Quad Name: _____ Elevation: 870 ft

T ____ R ____ Sec ____, ____1/4 of ____1/4, Meridian: H ◯ M ◯ S ◯ Source of Coordinates (GPS, topo. map & type): GPS

T ____ R ____ Sec ____, ____1/4 of ____1/4, Meridian: H ◯ M ◯ S ◯ GPS make and model: Bad Elf GNSS

DATUM: **NAD27** ◯ **NAD83** ◯ **WGS84** ● Horizontal Accuracy: 9 ft

Coordinate System: UTM Zone 10 ◯ UTM Zone 11 ◯ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.0473,-121.2898

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Several large populations found and mapped as four points and one polygon (see map/spatial data) on three dates in 2020: 5/6, 5/11, and 5/14. Scattered in Artemisia californica scrub; east-facing slopes. <MALHAL_1>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ◯ Excellent ● Good ◯ Fair ◯ Poor

Immediate AND surrounding land use: Cattle ranch.

Visible disturbances: Invasive plants; grazing/trampling (cattle).

Threats: _____

Comments:

Determination: *(check one or more, and fill in the blanks)*

☒ Keyed (cite reference): Jepson eFlora

☐ Compared with specimen housed at: _____

☐ Compared with photo/drawing in: Jepson

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ◯ no

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Date of Field Work (mm/dd/yyyy): *05/07/2020*

For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Delphinium californicum ssp. interius

Common Name: Hospital Canyon larkspur

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 1 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO X Unk. ___

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer M. Oats

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

100 _____ _____
% vegetative % flowering % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Jin, Edmund)

Quad Name: _____ Elevation: _____

T ___ R ___ Sec ___, ___ 1/4 of ___ 1/4, Meridian: H ◯ M ◯ S ◯ Source of Coordinates (GPS, topo. map & type): _____

T ___ R ___ Sec ___, ___ 1/4 of ___ 1/4, Meridian: H ◯ M ◯ S ◯ GPS make and model: Bad Elf GNSS

DATUM: **NAD27** ◯ **NAD83** ◯ **WGS84** ● Horizontal Accuracy: 9 ft

Coordinate System: UTM Zone 10 ◯ UTM Zone 11 ◯ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.0818,-121.2801

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Found with Rhamnus sp., Marah fabacea, Avena sp., on north-facing slope with marginal shade cover. Mapped as a point (see map/spatial data). <DELCALINT_3>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ◯ Excellent ◯ Good ● Fair ◯ Poor

Immediate AND surrounding land use: Cattle ranch.

Visible disturbances: Grazing/trampling (cattle).

Threats: _____

Comments:

Determination: *(check one or more, and fill in the blanks)*

☒ Keyed (cite reference): _____

☐ Compared with specimen housed at: _____

☐ Compared with photo/drawing in: _____

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ◯ no

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For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Clarkia breweri

Common Name: Brewer's clarkia

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 55 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO X Unk. ___

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer, P. Brillante

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

0	50	50
% vegetative	% flowering	% fruiting

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Jin, Edmund)

Quad Name: _____ Elevation: 654

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ GPS make and model: iPad 6 Gen

DATUM: **NAD27** ◯ **NAD83** ◯ **WGS84** ◯ Horizontal Accuracy: _____

Coordinate System: UTM Zone 10 ◯ UTM Zone 11 ◯ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.097912,-121.27878394

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

In opening in Umbellaria californica stand. Dominant species: Chaenactis glabriuscula, Mentzelia lindleyi. Associated species: Avena sp., Acanthomintha lanceolata. Scree slope (45 degrees) above East Fork Pacheco Creek, southeast-facing. Mapped as one point (see map/spatial data). <CLABRE_1>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ◯ Excellent ● Good ◯ Fair ◯ Poor

Immediate AND surrounding land use: Cattle ranch.

Visible disturbances: Game trail; grazing/trampling (cattle).

Threats: _____

Comments:

Determination: *(check one or more, and fill in the blanks)*

☒ Keyed (cite reference): _____

☐ Compared with specimen housed at: _____

☐ Compared with photo/drawing in: _____

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☒
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ◯ no

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Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Leptosiphon grandiflorus

Common Name: Large-flowered leptosiphon

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 20000 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO ___ Unk. X

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer, R. Kozloski

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

_____ % vegetative 25 % flowering 75 % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Jin, Edmund)

Quad Name: _____ Elevation: 743

T ___ R ___ Sec ___, ___ 1/4 of ___ 1/4, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___ 1/4 of ___ 1/4, Meridian: H ○ M ○ S ○ GPS make and model: _____

DATUM: **NAD27** ○ **NAD83** ○ **WGS84** ● Horizontal Accuracy: _____

Coordinate System: UTM Zone 10 ○ UTM Zone 11 ○ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.0977,-121.2791

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Growing in Umbellularia californica stand. Loamy, 45 degree slope, north aspect. Dominants: Leptosiphon grandiflorus, Clarkia sp., Madia gracilis. Associates: Avena barbata, Torilis sp., Collinsia heterophylla. Mapped as one polygon (see map/spatial data). <LEPGRA_3>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ● Good ○ Fair ○ Poor

Immediate AND surrounding land use: Cattle ranch.

Visible disturbances: Game trails; grazing/trampling (cattle).

Threats: _____

Comments:

Determination: *(check one or more, and fill in the blanks)*

☒ Keyed (cite reference): _____

☐ Compared with specimen housed at: _____

☐ Compared with photo/drawing in: _____

☐ By another person (name): _____

☐ Other: Jepson description

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☒
Habitat	☐	☐	☒
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ○ no

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Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Acanthomintha lanceolata

Common Name: Santa Clara thorn-mint

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 50 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO ___ Unk. ___

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer L. Hoffman

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

5 % vegetative | 90 % flowering | 5 % fruiting

Animal Information

_____ # adults | _____ # juveniles | _____ # larvae | _____ # egg masses | _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Lawler, William H.)

Quad Name: _____ Elevation: _____

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ GPS make and model: Bad Elf GNSS

DATUM: **NAD27** ◯ **NAD83** ◯ **WGS84** ● Horizontal Accuracy: 9 ft

Coordinate System: UTM Zone 10 ◯ UTM Zone 11 ◯ **OR** Geographic (Latitude & Longitude) ◯

Coordinates:

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Growing on an exposed, southwest-facing rocky slope. Found with Avena sp., Rhamnus sp. Mapped as one point (see map/spatial data). <ACALAN_3>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ◯ Excellent ◯ Good ◯ Fair ◯ Poor

Immediate AND surrounding land use: Cattle ranch.

Visible disturbances: Grazing/trampling (cattle).

Threats: _____

Comments:

Determination: *(check one or more, and fill in the blanks)*

- [X] Keyed (cite reference): TJM2
- [ ] Compared with specimen housed at: _____
- [ ] Compared with photo/drawing in: _____
- [ ] By another person (name): _____
- [ ] Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ◯ yes ◯ no

Mail To:
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P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): *05/12/2020*

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Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Clarkia breweri

Common Name: Brewer's clarkia

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 55 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO X Unk. ___

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

_____ % vegetative | 70 % flowering | 30 % fruiting

Animal Information

_____ # adults | _____ # juveniles | _____ # larvae | _____ # egg masses | _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Moitozo, Manuel G.)

Quad Name: _____ Elevation: _____

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ GPS make and model: Bad Elf GNSS

DATUM: **NAD27** ◯ **NAD83** ◯ **WGS84** ● Horizontal Accuracy: 9 ft

Coordinate System: UTM Zone 10 ◯ UTM Zone 11 ◯ **OR** Geographic (Latitude & Longitude) ●

Coordinates: ,

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Two populations mapped (see map/spatial data) from two field dates in 2020, 5/12 and 5/13.Growing on a southwest-facing, 40 degree, talus slope. Associated species: Acanthomintha lanceolata, Toxicodendron diversilobum, Mentzelia sp., Avena sp., Eriogonum nudum, Monolopia gracilens. <CLABRE_2>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ◯ Excellent ◯ Good ● Fair ◯ Poor

Immediate AND surrounding land use: Cattle ranch.

Visible disturbances: Grazing/trampling (cattle).

Threats: Noxious weeds

Comments:

Determination: *(check one or more, and fill in the blanks)*

☒ Keyed (cite reference): _____

☐ Compared with specimen housed at: _____

☐ Compared with photo/drawing in: _____

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ◯ yes ◯ no

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P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): *05/12/2020*

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Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Acanthomintha lanceolata

Common Name: Santa Clara thorn-mint

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 504 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO X Unk. ___

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer, P. Brillante, R. Kozloski

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

_____ % vegetative | 70 % flowering | 30 % fruiting

Animal Information

_____ # adults | _____ # juveniles | _____ # larvae | _____ # egg masses | _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Jin, Edmund; Moitozo, Manuel G.)

Quad Name: _____ Elevation: _____

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ GPS make and model: Bad Elf GNSS

DATUM: **NAD27** ◯ **NAD83** ◯ **WGS84** ● Horizontal Accuracy: 9 ft

Coordinate System: UTM Zone 10 ◯ UTM Zone 11 ◯ **OR** Geographic (Latitude & Longitude) ●

Coordinates: ,

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Several populations mapped as five points and four polygons (see map/spatial data) from three field dates in one canyon in 2020: 5/12, 5/14, 5/15. All on steep slopes (40 degree angle), some north- east-, or west-facing. Loose, rocky soils (scree). Associated species: Clarkia unguiculata, Toxicodendron diversilobum, Avena fatua, Madia gracilens, Carduus pycnocephalus, Centaurea melitensis. <AC...

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ◯ Excellent ◯ Good ● Fair ◯ Poor

Immediate AND surrounding land use: Cattle ranch, reservoir.

Visible disturbances: Wild pig trail/erosion; grazing/trampling (cattle).

Threats: Noxious weeds (Centaurea melitensis)

Comments:

Determination: *(check one or more, and fill in the blanks)*

☒ Keyed (cite reference): _____

☐ Compared with specimen housed at: _____

☐ Compared with photo/drawing in: _____

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ◯ no

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Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): *05/12/2020*

For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Acanthomintha lanceolata

Common Name: Santa Clara thorn-mint

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 6000 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO X Unk. ___

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer, P. Brillante, R. Kozloski

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

_____ % vegetative 70 % flowering 30 % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Jin, Edmund)

Quad Name: _____ Elevation: _____

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ GPS make and model: Bad Elf GNSS

DATUM: **NAD27** ◯ **NAD83** ◯ **WGS84** ● Horizontal Accuracy: 9 ft

Coordinate System: UTM Zone 10 ◯ UTM Zone 11 ◯ **OR** Geographic (Latitude & Longitude) ●

Coordinates: ,

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Growing on a steep slope (40 degree), south-east facing aspect. Loose, rocky soil (scree). Associated species: Clarkia unguiculata, Toxicodendron diversilobum, Avena fatua, Madia gracilis, Carduus pycnocephalus, Centaurea melitensis. Mapped as one polygon (see map/spatial data). <ACALAN_2>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ◯ Excellent ◯ Good ● Fair ◯ Poor

Immediate AND surrounding land use: Cattle ranch, reservoir.

Visible disturbances: Cattle grazing and disturbance, feral hogs.

Threats: Noxious weeds (Centaurea melitensis)

Comments:

Determination: *(check one or more, and fill in the blanks)*

☒ Keyed (cite reference): _____

☐ Compared with specimen housed at: _____

☐ Compared with photo/drawing in: _____

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ◯ yes ◯ no

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Date of Field Work (mm/dd/yyyy): *05/12/2020*

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Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Leptosiphon grandiflorus

Common Name: Large-flowered leptosiphon

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 400 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO ___ Unk. X

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer M. Oats

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

_____ % vegetative | 25 % flowering | 75 % fruiting

Animal Information

_____ # adults | _____ # juveniles | _____ # larvae | _____ # egg masses | _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Jin, Edmund)

Quad Name: _____ Elevation: 743

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ GPS make and model: Bad Elf GNSS

DATUM: **NAD27** ◯ **NAD83** ◯ **WGS84** ● Horizontal Accuracy: 9 ft

Coordinate System: UTM Zone 10 ◯ UTM Zone 11 ◯ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.0974,-121.2881

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Growing in an Umbellularia californica stand, loamy slope, 45 degrees, north-facing aspect. Dominants: Leptosiphon grandiflorus, Clarkia sp., Madia gracilis. Associates: Avena barbata, Torilis sp., Collinsia heterophylla. Mapped as one polygon (see map/spatial data). <LEPGRA_4>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ◯ Excellent ● Good ◯ Fair ◯ Poor

Immediate AND surrounding land use: Cattle ranch.

Visible disturbances: Game trails; grazing/trampling (cattle).

Threats: _____

Comments:

Determination: *(check one or more, and fill in the blanks)*

☒ Keyed (cite reference): _____

☐ Compared with specimen housed at: _____

☐ Compared with photo/drawing in: _____

☐ By another person (name): _____

☐ Other: Jepson description

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ◯ no

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P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): *05/12/2020*

For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Streptanthus albidus ssp. peramoenus (Streptanthus glandulosus ssp. glandulosus)

Common Name: most beautiful jewelflower

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 22 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO X Unk. ___

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer, P. Brillante, R. Kozloski

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

0 % vegetative | 100 % flowering | _____ % fruiting

Animal Information

_____ # adults | _____ # juveniles | _____ # larvae | _____ # egg masses | _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Jin, Edmund)

Quad Name: _____ Elevation: 720 ft

T ____ R ____ Sec ____, ____1/4 of ____1/4, Meridian: H ◯ M ◯ S ◯ Source of Coordinates (GPS, topo. map & type): GPS

T ____ R ____ Sec ____, ____1/4 of ____1/4, Meridian: H ◯ M ◯ S ◯ GPS make and model: Bad Elf GNSS

DATUM: **NAD27** ◯ **NAD83** ◯ **WGS84** ● Horizontal Accuracy: 9 ft

Coordinate System: UTM Zone 10 ◯ UTM Zone 11 ◯ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.0984,-121.2781

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Two populations mapped as two points (see map/spatial data) on two dates in 2020: 5/12 and 5/21. Associated with Clarkia breweri, Acanthomintha lanceolata. In openings in an Unbelullaria californica stand with Toxicodendron diversilobum. Steep slope with deep, loose soil and foliated rocks. <STRALBPER_3>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ◯ Excellent ◯ Good ● Fair ◯ Poor

Immediate AND surrounding land use: Cattle ranch.

Visible disturbances: Grazing/trampling (cattle).

Threats: _____

Comments:

Determination: *(check one or more, and fill in the blanks)*

☐ Keyed (cite reference): _____

☐ Compared with specimen housed at: _____

☒ Compared with photo/drawing in: previously ID'd on-site

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ◯ yes ◯ no

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Date of Field Work (mm/dd/yyyy): *05/13/2020*

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Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Acanthomintha lanceolata

Common Name: Santa Clara thorn-mint

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 65 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO X Unk. ___

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer, P. Brillante, R. Kozloski

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

_____ % vegetative 70 % flowering 30 % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: _____

Quad Name: _____ Elevation: _____

T ____ R ____ Sec ____, ____1/4 of ____1/4, Meridian: H ◯ M ◯ S ◯ Source of Coordinates (GPS, topo. map & type): GPS

T ____ R ____ Sec ____, ____1/4 of ____1/4, Meridian: H ◯ M ◯ S ◯ GPS make and model: _____

DATUM: **NAD27** ◯ **NAD83** ◯ **WGS84** ● Horizontal Accuracy: _____

Coordinate System: UTM Zone 10 ◯ UTM Zone 11 ◯ **OR** Geographic (Latitude & Longitude) ●

Coordinates: ,

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

On toe of talus slope above Pacheco Creek; south-west-facing aspect. Mapped as 1 point (see map/spatial data). <ACALAN_7>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ◯ Excellent ◯ Good ● Fair ◯ Poor

Immediate AND surrounding land use: Cattle ranch, reservoir.

Visible disturbances: Cattle grazing and disturbance, feral hogs.

Threats: Noxious weeds (Centaurea melitensis)

Comments:

Determination: *(check one or more, and fill in the blanks)*

☒ Keyed (cite reference): _____

☐ Compared with specimen housed at: _____

☐ Compared with photo/drawing in: _____

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ◯ yes ◯ no

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Date of Field Work (mm/dd/yyyy): *05/13/2020*

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Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Delphinium californicum ssp. interius

Common Name: Hospital Canyon larkspur

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 30 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO X Unk. ___

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer L. Hoffman

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

80 % vegetative | 20 % flowering | _____ % fruiting

Animal Information

_____ # adults | _____ # juveniles | _____ # larvae | _____ # egg masses | _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Moitozo, Manuel G.)

Quad Name: _____ Elevation: _____

T ____ R ____ Sec ____, ____1/4 of ____1/4, Meridian: H ◯ M ◯ S ◯ Source of Coordinates (GPS, topo. map & type): GPS

T ____ R ____ Sec ____, ____1/4 of ____1/4, Meridian: H ◯ M ◯ S ◯ GPS make and model: iPhone

DATUM: **NAD27** ◯ **NAD83** ◯ **WGS84** ● Horizontal Accuracy: _____

Coordinate System: UTM Zone 10 ◯ UTM Zone 11 ◯ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.1121,-121.2869

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Found with Rhamnus sp., Marah fabacea, Avena sp., on north-facing slope with marginal shade cover. Mapped as one point (see map/spatial data). <DELCALINT_1>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ◯ Excellent ◯ Good ● Fair ◯ Poor

Immediate AND surrounding land use: Cattle ranch.

Visible disturbances: Grazing/trampling (cattle).

Threats: _____

Comments:

Determination: *(check one or more, and fill in the blanks)*

☒ Keyed (cite reference): _____

☐ Compared with specimen housed at: _____

☐ Compared with photo/drawing in: _____

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ◯ no

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CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): *05/13/2020*

For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Streptanthus albidus ssp. peramoenus (Streptanthus glandulosus ssp. glandulosus)

Common Name: most beautiful jewelflower

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 15 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO X Unk. ___

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer L. Hoffman

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

0 % vegetative | 100 % flowering | _____ % fruiting

Animal Information

_____ # adults | _____ # juveniles | _____ # larvae | _____ # egg masses | _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Lawler, William H.)

Quad Name: _____ Elevation: 720 ft

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ○ M ○ S ○ GPS make and model: Bad Elf GNSS

DATUM: **NAD27** ○ **NAD83** ○ **WGS84** ● Horizontal Accuracy: 9 ft

Coordinate System: UTM Zone 10 ○ UTM Zone 11 ○ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.1049,-121.2924

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Growing on a steep, exposed scree slope with a southwest aspect. Mapped as one point (see map.spatial data). <STRALPPER_5>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ○ Good ● Fair ○ Poor

Immediate AND surrounding land use: Cattle ranch.

Visible disturbances: Grazing/trampling (cattle).

Threats: _____

Comments:

Determination: *(check one or more, and fill in the blanks)*

☐ Keyed (cite reference): _____

☐ Compared with specimen housed at: _____

☒ Compared with photo/drawing in: previously ID'd on-site

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ○ yes ○ no

Mail To:
California Natural Diversity Database
California Dept. of Fish & Wildlife
P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): *05/14/2020*

For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Delphinium californicum ssp. interius

Common Name: Hospital Canyon larkspur

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 359 Subsequent visit? Yes ___ No ___

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO ___ Unk. ___

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer M. Oats

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

30 % vegetative | 70 % flowering | _____ % fruiting

Animal Information

_____ # adults | _____ # juveniles | _____ # larvae | _____ # egg masses | _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Lawler, William H.)

Quad Name: _____ Elevation: _____

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ○ M ○ S ○ GPS make and model: Bad Elf GNSS

DATUM: **NAD27** ○ **NAD83** ○ **WGS84** ● Horizontal Accuracy: 9 ft

Coordinate System: UTM Zone 10 ○ UTM Zone 11 ○ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.1066,-121.2995

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Several large populations mapped as four points and two polygons (see map/spatial data) on 5/14/20 and 8/4/20.Growing on a northwest-facing slope (45 degrees). Dominated by Prunus illicifolia. Associates include: Madia gracilis, Hordeum sp., Adiantum jordanii, Marah fabacea, Stachys ajugoides, Collinsia heterophylla. <DELCALINT_2>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ○ Good ● Fair ○ Poor

Immediate AND surrounding land use: Cattle ranch.

Visible disturbances: Grazing/trampling (cattle).

Threats: _____

Comments:

Determination: *(check one or more, and fill in the blanks)*

☒ Keyed (cite reference): Jepson eFlora

☐ Compared with specimen housed at: _____

☐ Compared with photo/drawing in: _____

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ○ no

Mail To:
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California Dept. of Fish & Wildlife
P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): *05/14/2020*

For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Acanthomintha lanceolata

Common Name: Santa Clara thorn-mint

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 40 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO X Unk. ___

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer M. Oats

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

0	75	25
% vegetative	% flowering	% fruiting

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Lawler, William H.)

Quad Name: _____ Elevation: _____

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ GPS make and model: Bad Elf GNSS

DATUM: **NAD27** ◯ **NAD83** ◯ **WGS84** ● Horizontal Accuracy: 9 ft

Coordinate System: UTM Zone 10 ◯ UTM Zone 11 ◯ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.1138,-121.3204

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Growing on the toe of a slope in scree. Mapped as one point (see map/spatial data). <ACALAN_6>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ◯ Excellent ● Good ◯ Fair ◯ Poor

Immediate AND surrounding land use: Cattle ranch.

Visible disturbances: None

Threats: Potential for submersion (reservoir).

Comments:

Determination: *(check one or more, and fill in the blanks)*

☒ Keyed (cite reference): Jepson eFlora

☐ Compared with specimen housed at: _____

☐ Compared with photo/drawing in: _____

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☒
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ◯ no

Mail To:
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California Dept. of Fish & Wildlife
P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): *05/14/2020*

For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Malacothamnus hallii

Common Name: Hall's bush mallow

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 1 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO ___ Unk. X

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer, P. Brillante, R. Kozloski

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

100	0	0
% vegetative	% flowering	% fruiting

Animal Information

_____	_____	_____	_____	_____
# adults	# juveniles	# larvae	# egg masses	# unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Lawler, William H.)

Quad Name: _____ Elevation: _____

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ GPS make and model: Bad Elf GNSS

DATUM: **NAD27** ◯ **NAD83** ◯ **WGS84** ● Horizontal Accuracy: 9 ft

Coordinate System: UTM Zone 10 ◯ UTM Zone 11 ◯ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.115,-121.3116

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Growing on a steep, southeast-facing river canyon wall. Associated with Artemisia californica. Mapped as one point (see map/spatial data). <MALHAL_2>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ◯ Excellent ● Good ◯ Fair ◯ Poor

Immediate AND surrounding land use: Cattle ranch.

Visible disturbances: Invasive plants; grazing/trampling (cattle).

Threats: _____

Comments:

Determination: *(check one or more, and fill in the blanks)*

☐ Keyed (cite reference): _____

☐ Compared with specimen housed at: _____

☒ Compared with photo/drawing in: Jepson

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ◯ no

Mail To:
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P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): *05/14/2020*

For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Monolopia gracilens

Common Name: woodland woollythreads

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 4 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO X Unk. ___

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer, P. Brillante, R. Kozloski

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

90	10	0
% vegetative	% flowering	% fruiting

Animal Information

_____	_____	_____	_____	_____
# adults	# juveniles	# larvae	# egg masses	# unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Lawler, William H.)

Quad Name: _____ Elevation: _____

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ GPS make and model: Bad Elf GNSS

DATUM: **NAD27** ◯ **NAD83** ◯ **WGS84** ● Horizontal Accuracy: 9 ft

Coordinate System: UTM Zone 10 ◯ UTM Zone 11 ◯ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.1147,-121.3119

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Two populations found and mapped as two points (see map/spatial data). At edge of stream bed in gravel. MALHAL_5

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ◯ Excellent ◯ Good ● Fair ◯ Poor

Immediate AND surrounding land use: Cattle ranch.

Visible disturbances: Grazing/trampling (cattle).

Threats: _____

Comments:

Determination: *(check one or more, and fill in the blanks)*

☒ Keyed (cite reference): Jepson eFlora

☐ Compared with specimen housed at: _____

☐ Compared with photo/drawing in: _____

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ◯ no

Mail To:
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California Dept. of Fish & Wildlife
P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): *05/14/2020*

For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Streptanthus albidus ssp. peramoenus (Streptanthus glandulosus ssp. glandulosus)

Common Name: most beautiful jewelflower

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 1 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO X Unk. ___

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer, P. Brillante, R. Kozloski

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

0 % vegetative | 100 % flowering | _____ % fruiting

Animal Information

_____ # adults | _____ # juveniles | _____ # larvae | _____ # egg masses | _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Lawler, William H.)

Quad Name: _____ Elevation: 720 ft

T ___ R ___ Sec ___, ___ 1/4 of ___ 1/4, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___ 1/4 of ___ 1/4, Meridian: H ○ M ○ S ○ GPS make and model: Bad Elf GNSS

DATUM: **NAD27** ○ **NAD83** ○ **WGS84** ● Horizontal Accuracy: 9 ft

Coordinate System: UTM Zone 10 ○ UTM Zone 11 ○ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.1131,-121.3084

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

On talus slope above Pacheco Creek. Mapped as one point (see map/spatial data). <STRALBPER_2>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ○ Good ● Fair ○ Poor

Immediate AND surrounding land use: Cattle ranch.

Visible disturbances: Grazing/trampling (cattle).

Threats: _____

Comments:

Determination: *(check one or more, and fill in the blanks)*

☐ Keyed (cite reference): _____

☐ Compared with specimen housed at: _____

☒ Compared with photo/drawing in: previously ID'd on-site

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ○ yes ○ no

Mail To:
California Natural Diversity Database
California Dept. of Fish & Wildlife
P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): *05/20/2020*

For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Streptanthus albidus ssp. peramoenus (Streptanthus glandulosus ssp. glandulosus)

Common Name: most beautiful jewelflower

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 4 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO X Unk. ___

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer, S. Hickey, T. Beyerl

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

0	100	100
% vegetative	% flowering	% fruiting

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Lawler, William H.)

Quad Name: _____ Elevation: 720 ft

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ GPS make and model: Bad Elf GNSS

DATUM: **NAD27** ◯ **NAD83** ◯ **WGS84** ● Horizontal Accuracy: 9 ft

Coordinate System: UTM Zone 10 ◯ UTM Zone 11 ◯ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.1232,-121.3306

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Growing in an opening in Pinus sabinana-Quercus douglasii woodland (see map/spatial data). Steep slope, rocky, metamorphic. South-facing slope. Associated with: Eriogonum wrightii, Acmispon glaber, Salvia columbariae, and Chorizanthe membranacea. Mapped as one point (see map/spatial data). <STRALPPER_1>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ◯ Excellent ◯ Good ● Fair ◯ Poor

Immediate AND surrounding land use: Cattle ranch.

Visible disturbances: Grazing/trampling (cattle).

Threats: _____

Comments:

Determination: *(check one or more, and fill in the blanks)*

☐ Keyed (cite reference): _____

☐ Compared with specimen housed at: _____

☒ Compared with photo/drawing in: previously ID'd on-site

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ◯ yes ◯ no

Mail To:
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California Dept. of Fish & Wildlife
P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): *06/03/2020*

For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Acanthomintha lanceolata

Common Name: Santa Clara thorn-mint

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 1100 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO X Unk. ___

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

_____ % vegetative | 70 % flowering | 30 % fruiting

Animal Information

_____ # adults | _____ # juveniles | _____ # larvae | _____ # egg masses | _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Lawler, William H.)

Quad Name: _____ Elevation: _____

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ GPS make and model: Bad Elf GNSS

DATUM: **NAD27** ◯ **NAD83** ◯ **WGS84** ● Horizontal Accuracy: 9 ft

Coordinate System: UTM Zone 10 ◯ UTM Zone 11 ◯ **OR** Geographic (Latitude & Longitude) ●

Coordinates: ,

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

On steep slope just below ridge line (40 degree), east facing. Mapped as two polygons (see map/spatial data) on two dates in 2020: 6/3 and 7/28. Loose, rocky soils (scree). Associated spp.: Clarkia unguiculata, Toxicodendron diversilobum; Avena fatua; Madia gracilis; Carduus pycnocephalus; Centaurea melitensis. Mapped as 1 polygon (see map/spatial data). <ACALAN_4>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ◯ Excellent ◯ Good ● Fair ◯ Poor

Immediate AND surrounding land use: Cattle ranch, reservoir.

Visible disturbances: Cattle grazing and disturbance, feral hogs.

Threats: Noxious weeds (Centaurea melitensis)

Comments:

Determination: *(check one or more, and fill in the blanks)*

☒ Keyed (cite reference): _____

☐ Compared with specimen housed at: _____

☐ Compared with photo/drawing in: _____

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ◯ yes ◯ no

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P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): *07/23/2020*

For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Centromadia parryi ssp. rudis

Common Name: Parry's rough tarplant

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 1 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO X Unk. ___

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer M. Oats

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

_____ % vegetative | 100 % flowering | _____ % fruiting

Animal Information

_____ # adults | _____ # juveniles | _____ # larvae | _____ # egg masses | _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: PASS, PACHECO DIST

Quad Name: _____ Elevation: _____

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ○ M ○ S ● GPS make and model: iPad6

DATUM: **NAD27** ○ **NAD83** ○ **WGS84** ● Horizontal Accuracy: 10 ft

Coordinate System: UTM Zone 10 ○ UTM Zone 11 ○ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.073,-121.2969

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Growing on dry edge of reservoir, below high water line. Mapped as one point. <CENPARRUD_3>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ○ Good ● Fair ○ Poor

Immediate AND surrounding land use: Cattle ranch, reservoir.

Visible disturbances: Grazing/trampling (cattle), inundation.

Threats: Inundation.

Comments:

Determination: *(check one or more, and fill in the blanks)*

☒ Keyed (cite reference): Jepson eFlora

☐ Compared with specimen housed at: _____

☐ Compared with photo/drawing in: _____

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ○ no

Mail To:
California Natural Diversity Database
California Dept. of Fish & Wildlife
P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): *07/28/2020*

For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Eryngium spinosepalum

Common Name: spiny-sepaled button-celery

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 2 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO X Unk. ___

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer L. Hoffman

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

_____ % vegetative _____ % flowering 100 % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Jin, Edmund)

Quad Name: _____ Elevation: _____

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ GPS make and model: Bad Elf GNSS

DATUM: **NAD27** ◯ **NAD83** ◯ **WGS84** ● Horizontal Accuracy: 9 ft

Coordinate System: UTM Zone 10 ◯ UTM Zone 11 ◯ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.0775,-121.3012

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Growing in non-native grassland on a slight shelf on a steep, exposed south-facing slope. Dominant species are Avena sp., Bromus hordeaceus. No indicators of hydrology (i.e. no pooling water or other vernal pool habitat). <ERYSPI_1>.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ◯ Excellent ◯ Good ● Fair ◯ Poor

Immediate AND surrounding land use: Cattle ranch, reservoir.

Visible disturbances: Cattle grazing and disturbance, feral hogs.

Threats: _____

Comments:

Determination: *(check one or more, and fill in the blanks)*

☒ Keyed (cite reference): Jepson eFlora

☒ Compared with specimen housed at: Compared with reference located at San Luis Rese

☐ Compared with photo/drawing in: _____

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ◯ yes ◯ no

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P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): *07/28/2020*

For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Acanthomintha lanceolata

Common Name: Santa Clara thorn-mint

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 500 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO X Unk. ___

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer M. Oats

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

_____ % vegetative _____ % flowering 100 % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Jin, Edmund)

Quad Name: _____ Elevation: _____

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ GPS make and model: Bad Elf GNSS

DATUM: **NAD27** ◯ **NAD83** ◯ **WGS84** ● Horizontal Accuracy: 9 ft

Coordinate System: UTM Zone 10 ◯ UTM Zone 11 ◯ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.0676,-121.3066

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

On steep slope, midway up, south-west-facing. Loose, rocky soils (scree). Mapped as 1 point (see map/spatial data). <ACALAN_8>.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ◯ Excellent ◯ Good ● Fair ◯ Poor

Immediate AND surrounding land use: Cattle ranch, reservoir.

Visible disturbances: Cattle grazing and disturbance, feral hogs.

Threats: _____

Comments:

Determination: *(check one or more, and fill in the blanks)*

☒ Keyed (cite reference): Jepson eFlora

☐ Compared with specimen housed at: _____

☒ Compared with photo/drawing in: previously ID'd on-site

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ◯ yes ◯ no

Mail To:
California Natural Diversity Database
California Dept. of Fish & Wildlife
P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): *07/28/2020*

For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Malacothamnus hallii

Common Name: Hall's bush mallow

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 1 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO X Unk. ___

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

_____ % vegetative _____ % flowering 100 % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Jin, Edmund)

Quad Name: _____ Elevation: _____

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ○ M ○ S ○ GPS make and model: iPad6

DATUM: **NAD27** ○ **NAD83** ○ **WGS84** ● Horizontal Accuracy: 5 m

Coordinate System: UTM Zone 10 ○ UTM Zone 11 ○ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.06794863,-121.30777451

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

One individual mapped as one point (see map/spatial data). Growing on a steep southeast-facing canyon slope; associated with Artemisia californica, Toxicodendron diversilobum, Heteromeles arbutifolia. Mapped as one point (see map/spatial data). <MALHAL_7>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ○ Good ● Fair ○ Poor

Immediate AND surrounding land use: Cattle ranch.

Visible disturbances: Grazing/trampling (cattle).

Threats: None

Comments:

Determination: *(check one or more, and fill in the blanks)*

☒ Keyed (cite reference): Jepson eFlora

☐ Compared with specimen housed at: _____

☒ Compared with photo/drawing in: Cal photos

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ○ no

Mail To:
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P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): *07/29/2020*

For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Acanthomintha lanceolata

Common Name: Santa Clara thorn-mint

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 20 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO X Unk. ___

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

_____ % vegetative _____ % flowering 100 % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Moitozo, Manuel G.)

Quad Name: _____ Elevation: _____

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ GPS make and model: iPad6

DATUM: **NAD27** ◯ **NAD83** ◯ **WGS84** ● Horizontal Accuracy: 10 m

Coordinate System: UTM Zone 10 ◯ UTM Zone 11 ◯ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.11713703,-121.28606128

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

On toe of steep slope along river canyon, west-facing. Mapped as one point (see map/spatial data). Loose, rocky soils (scree). Associated spp.: Clarkia unguiculata, Toxicodendron diversilobum; Avena fatua; Madia gracilis; Carduus pycnocephalus; Centaurea melitensis. <ACALAN_11>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ◯ Excellent ◯ Good ● Fair ◯ Poor

Immediate AND surrounding land use: Cattle ranch, reservoir.

Visible disturbances: Cattle grazing and disturbance, feral hogs.

Threats: Noxious weeds (Centaurea melitensis)

Comments:

Determination: *(check one or more, and fill in the blanks)*

- [X] Keyed (cite reference): Jepson eFlora
- [ ] Compared with specimen housed at: _____
- [X] Compared with photo/drawing in: previously ID'd on-site
- [ ] By another person (name): _____
- [ ] Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ◯ yes ◯ no

Mail To:
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P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): *07/29/2020*

For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Malacothamnus hallii

Common Name: Hall's bush mallow

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 1 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO X Unk. ___

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology: _____ % vegetative _____ % flowering 100 % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Moitozo, Manuel G.)

Quad Name: _____ Elevation: _____

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ GPS make and model: iPad6

DATUM: **NAD27** ◯ **NAD83** ◯ **WGS84** ● Horizontal Accuracy: 5 m

Coordinate System: UTM Zone 10 ◯ UTM Zone 11 ◯ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.1164,-121.2867

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

One individual mapped as one point (see map/spatial data). Growing on a steep southeast-facing canyon slope; associated with Artemisia californica, Toxicodendron diversilobum, Heteromeles arbutifolia. Mapped as one point (see map/spatial data). <MALHAL_9>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ◯ Excellent ◯ Good ● Fair ◯ Poor

Immediate AND surrounding land use: Cattle ranch.

Visible disturbances: Grazing/trampling (cattle).

Threats: None

Comments:

Determination: *(check one or more, and fill in the blanks)*

☒ Keyed (cite reference): Jepson eFlora

☐ Compared with specimen housed at: _____

☒ Compared with photo/drawing in: Cal photos

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ◯ no

Mail To:
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California Dept. of Fish & Wildlife
P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): *07/30/2020*

For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Centromadia parryi ssp. rudis

Common Name: Parry's rough tarplant

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 1713 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO X Unk. ___

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer M. Oats, L. Hoffman

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

50 % vegetative | 50 % flowering | _____ % fruiting

Animal Information

_____ # adults | _____ # juveniles | _____ # larvae | _____ # egg masses | _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Lawler, William H.)

Quad Name: _____ Elevation: _____

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ○ M ○ S ● GPS make and model: Bad Elf GNSS

DATUM: **NAD27** ○ **NAD83** ○ **WGS84** ● Horizontal Accuracy: 9 ft

Coordinate System: UTM Zone 10 ○ UTM Zone 11 ○ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.1124,-121.3131

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Mapped as seven polygons and on two dates in 2020: 7/30 and 8/4. Growing in disturbed areas: gravel bars within dry river bed, grazed pastures/corral, dirt roadbed/roadside. Associated with Marrubium vulgare, Avena spp., Bromus hordeaceus. <CENPARRUD_1>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ● Good ○ Fair ○ Poor

Immediate AND surrounding land use: Cattle ranch/homestead.

Visible disturbances: Grazing/trampling (cattle).

Threats: Noxious weeds (Marrubium vulgare).

Comments:

Determination: *(check one or more, and fill in the blanks)*

☒ Keyed (cite reference): Jepson eFlora

☐ Compared with specimen housed at: _____

☐ Compared with photo/drawing in: _____

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☒
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ○ no

Mail To:
California Natural Diversity Database
California Dept. of Fish & Wildlife
P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): *07/30/2020*

For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Centromadia parryi ssp. rudis

Common Name: Parry's rough tarplant

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 1 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO X Unk. ___

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

_____ % vegetative | 100 % flowering | _____ % fruiting

Animal Information

_____ # adults | _____ # juveniles | _____ # larvae | _____ # egg masses | _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Lawler, William H.)

Quad Name: _____ Elevation: _____

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ○ M ○ S ● GPS make and model: Bad Elf GNSS

DATUM: **NAD27** ○ **NAD83** ○ **WGS84** ● Horizontal Accuracy: 9 ft

Coordinate System: UTM Zone 10 ○ UTM Zone 11 ○ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.1081,-121.3024

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Growing in gravel bar within dry river bed. <CENPARRUD_4>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ○ Good ● Fair ○ Poor

Immediate AND surrounding land use: Cattle ranch.

Visible disturbances: Grazing/trampling (cattle).

Threats: _____

Comments:

Determination: *(check one or more, and fill in the blanks)*

☒ Keyed (cite reference): Jepson eFlora

☐ Compared with specimen housed at: _____

☐ Compared with photo/drawing in: _____

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ○ no

Mail To:
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California Dept. of Fish & Wildlife
P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): *07/30/2020*

For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Centromadia parryi ssp. rudis

Common Name: Parry's rough tarplant

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 2 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO X Unk. ___

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

_____ % vegetative 100 % flowering _____ % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Lawler, William H.)

Quad Name: _____ Elevation: _____

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ○ M ○ S ● GPS make and model: Bad Elf GNSS

DATUM: **NAD27** ○ **NAD83** ○ **WGS84** ● Horizontal Accuracy: 9 ft

Coordinate System: UTM Zone 10 ○ UTM Zone 11 ○ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.1115,-121.307

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Growing in gravel bar within dry river bed. Mapped as one point. <CENPARRUD_5>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ○ Good ● Fair ○ Poor

Immediate AND surrounding land use: Cattle ranch.

Visible disturbances: Grazing/trampling (cattle).

Threats: _____

Comments:

Determination: *(check one or more, and fill in the blanks)*

☒ Keyed (cite reference): Jepson eFlora

☐ Compared with specimen housed at: _____

☐ Compared with photo/drawing in: _____

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ○ no

Mail To:
California Natural Diversity Database
California Dept. of Fish & Wildlife
P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): *07/31/2020*

For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Eryngium aristulatum var. hooveri

Common Name: Hoover's button-celery

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 4700 Subsequent visit? Yes ___ No ___

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO X Unk. ___

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer L. Hoffman, S. Tona

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

40 (% vegetative) 60 (% flowering) _____ (% fruiting)

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: San Benito Landowner/Mgr: Santa Clara Valley Water District, Soap Lake Ranch, LLC

Quad Name: _____ Elevation: _____

T ____ R ____ Sec ____, ____1/4 of ____1/4, Meridian: H ◯ M ◯ S ◯ Source of Coordinates (GPS, topo. map & type): _____

T ____ R ____ Sec ____, ____1/4 of ____1/4, Meridian: H ◯ M ◯ S ◯ GPS make and model: Bad Elf GNSS

DATUM: **NAD27** ◯ **NAD83** ◯ **WGS84** ● Horizontal Accuracy: 9 ft

Coordinate System: UTM Zone 10 ◯ UTM Zone 11 ◯ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 36.9766,-121.4521

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Several large populations mapped as eight polygons. Concentrated at the fringes of seasonally inundated/flooded, flat, low-lying areas near San Felipe Lake. Not directly associated with the lake, but in the same flood plain. Associated with Mavella leprosa, Ranunculus muricatus, Frankenia salina. Not flooded at the time of the survey; flooding observed earlier in the season during field visits ...

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ◯ Excellent ● Good ◯ Fair ◯ Poor

Immediate AND surrounding land use: Cattle ranch.

Visible disturbances: Grazing/trampling (cattle), varying inundation regime due to altered hydrology.

Threats: _____

Comments:

Determination: *(check one or more, and fill in the blanks)*

☒ Keyed (cite reference): Jepson eFlora

☐ Compared with specimen housed at: _____

☐ Compared with photo/drawing in: _____

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ◯ no

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California Dept. of Fish & Wildlife
P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): *08/04/2020*

For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Malacothamnus hallii

Common Name: Hall's bush mallow

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 1 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO X Unk. ___

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer L. Hoffman

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

_____ % vegetative _____ % flowering 100 % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Lawler, William H.)

Quad Name: _____ Elevation: _____

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ GPS make and model: iPhone12,8

DATUM: **NAD27** ◯ **NAD83** ◯ **WGS84** ● Horizontal Accuracy: 4.5m

Coordinate System: UTM Zone 10 ◯ UTM Zone 11 ◯ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.11693659,-121.31916554

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

One individual mapped as one point (see map/spatial data). Growing in gravelly bank of stream next to Pinus sabiniana and Baccharis salicifolia. <MALHAL_8>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ◯ Excellent ◯ Good ● Fair ◯ Poor

Immediate AND surrounding land use: Cattle ranch.

Visible disturbances: Grazing/trampling (cattle).

Threats: None

Comments:

Determination: *(check one or more, and fill in the blanks)*

☒ Keyed (cite reference): Jepson eFlora

☐ Compared with specimen housed at: _____

☒ Compared with photo/drawing in: Cal photos

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ◯ no

Mail To:
California Natural Diversity Database
California Dept. of Fish & Wildlife
P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): *08/10/2020*

For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Centromadia parryi ssp. rudis

Common Name: Parry's rough tarplant

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 200 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO X Unk. ___

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer M. Oats

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

50 % vegetative | 50 % flowering | _____ % fruiting

Animal Information

_____ # adults | _____ # juveniles | _____ # larvae | _____ # egg masses | _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: PASS, PACHECO DIST

Quad Name: _____ Elevation: _____

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ○ M ○ S ● GPS make and model: iPhone12,8

DATUM: **NAD27** ○ **NAD83** ○ **WGS84** ● Horizontal Accuracy: 10 ft

Coordinate System: UTM Zone 10 ○ UTM Zone 11 ○ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.0649,-121.2992

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Growing on dry edge of reservoir, below high water line. Mapped as one polyon. <CENPARRUD_2>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ○ Good ● Fair ○ Poor

Immediate AND surrounding land use: Cattle ranch, reservoir.

Visible disturbances: Grazing/trampling (cattle), inundation.

Threats: Inundation.

Comments:

Determination: *(check one or more, and fill in the blanks)*

☒ Keyed (cite reference): Jepson eFlora

☐ Compared with specimen housed at: _____

☐ Compared with photo/drawing in: _____

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ● yes ○ no

Mail To:
California Natural Diversity Database
California Dept. of Fish & Wildlife
P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): *08/11/2020*

For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Acanthomintha lanceolata

Common Name: Santa Clara thorn-mint

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 10 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO X Unk. ___

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

_____ % vegetative _____ % flowering 100 % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Jin, Edmund)

Quad Name: _____ Elevation: _____

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ◯ M ◯ S ◯ GPS make and model: Bad Elf GNSS

DATUM: **NAD27** ◯ **NAD83** ◯ **WGS84** ● Horizontal Accuracy: 9 ft

Coordinate System: UTM Zone 10 ◯ UTM Zone 11 ◯ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.12905003,-121.34551566

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

On toe of steep slope along river canyon, south-facing. Mapped as one point (see map/spatial data). Loose, rocky soils (scree). Associated spp.: Clarkia unguiculata, Toxicodendron diversilobum; Avena fatua; Madia gracilis; Carduus pycnocephalus; Centaurea melitensis. <ACALAN_10>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ◯ Excellent ◯ Good ● Fair ◯ Poor

Immediate AND surrounding land use: Cattle ranch, reservoir.

Visible disturbances: Cattle grazing and disturbance, feral hogs.

Threats: Noxious weeds (Centaurea melitensis)

Comments:

Determination: *(check one or more, and fill in the blanks)*

☒ Keyed (cite reference): Jepson eFlora

☐ Compared with specimen housed at: _____

☒ Compared with photo/drawing in: previously ID'd on-site

☐ By another person (name): _____

☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ◯ yes ◯ no

Mail To:
California Natural Diversity Database
California Dept. of Fish & Wildlife
P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

Date of Field Work (mm/dd/yyyy): *08/12/2020*

For Office Use Only

Source Code: _____ Quad Code: _____

Elm Code: _____ Occ No.: _____

EO Index: _____ Map Index: _____

California Native Species Field Survey Form

Scientific Name: Acanthomintha lanceolata

Common Name: Santa Clara thorn-mint

Species Found? Yes X No ___ _____ (If not found, why?)

Total No. Individuals: 300 Subsequent visit? Yes ___ No X

Is this an existing NDDB occurrence? _____ (Yes, Occ. #) NO X Unk. ___

Collection? If yes: _____ (Number) _____ (Museum/Herbarium)

Reporter: J. Holson, C. Singer, S. Creer

Address: 555 Capitol Mall, Suite 650, Sacramento, CA 95814

E-mail Address: john.holson@stantec.com

Phone: (916) 397-9832

Plant Information

Phenology:

_____ % vegetative | 70 % flowering | 30 % fruiting

Animal Information

_____ # adults | _____ # juveniles | _____ # larvae | _____ # egg masses | _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Santa Clara Landowner/Mgr: Private (Jin, Edmund)

Quad Name: _____ Elevation: _____

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ○ M ○ S ○ Source of Coordinates (GPS, topo. map & type): GPS

T ___ R ___ Sec ___, ___1/4 of ___1/4, Meridian: H ○ M ○ S ○ GPS make and model: Bad Elf GNSS

DATUM: **NAD27** ○ **NAD83** ○ **WGS84** ● Horizontal Accuracy: 9 ft

Coordinate System: UTM Zone 10 ○ UTM Zone 11 ○ **OR** Geographic (Latitude & Longitude) ●

Coordinates: 37.12352622,-121.35056203

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Adjacent to unpaved access road. On steep slope; south-facing. Mapped as one point (see map/spatial data). Loose, rocky soils (scree). Mapped as 1 polygon (see map/spatial data). <ACALAN_9>

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ○ Excellent ○ Good ● Fair ○ Poor

Immediate AND surrounding land use: Cattle ranch, reservoir.

Visible disturbances: Cattle grazing and disturbance, feral hogs.

Threats: Noxious weeds (Centaurea melitensis)

Comments:

Determination: *(check one or more, and fill in the blanks)*

- [X] Keyed (cite reference): Jepson eFlora
- [ ] Compared with specimen housed at: _____
- [X] Compared with photo/drawing in: previously ID'd on-site
- [ ] By another person (name): _____
- [ ] Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ○ yes ○ no

Mail to:
California Natural Diversity Database
California Dept. of Fish & Wildlife
P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

For Office Use Only
Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Date of Field Work (mm/dd/yyyy): 05/08/2020

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Navarretia prostrata*

Common Name: Prostrate vernal pool navarretia

Species Found? (●) Yes ( ) No _____ If not found, why?

Total No. Individuals: ~8, 667 Subsequent Visit? (●) Yes ( ) No

Is this an existing NDDB occurrence? 56 Yes, Occ. # ☐ No ☐ Unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Cristian Singer, Sheryl Creer, John Holson
Address: 555 Capitol Mall, Suite 650
Sacramento, 95814
E-mail Address: Cristian.singer@stantec.com
Phone: 916-397-9832

Plant Information
Phenology:
25 % vegetative | 75 % flowering | _____ % fruiting

Animal Information
_____ # adults | _____ # juveniles | _____ # larvae | _____ # egg masses | _____ # unknown
☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)
Observed on the southern margins of San Felipe Lake. See map.

County: San Benito Landowner / Mgr: Santa Clara Valley Water District, Soap Lake Ranch, LLC
Quad Name: _____ Elevation: _____
T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ( ) M ( ) S ( ) Source of Coordinates (GPS, topo. map & type): GPS
T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H ( ) M ( ) S ( ) GPS Make & Model: Bad Elf Surveyor
DATUM: **NAD27** ( ) **NAD83** ( ) **WGS84** ( ) Horizontal Accuracy: 0.5 meters/feet
Coordinate System: UTM Zone 10 ( ) UTM Zone 11 ( ) ***OR*** Geographic (Latitude & Longitude) ( )
Coordinates: See map

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Several large populations found in vernal margins of lake on southeast side of the reservoir from three field dates in 2020, 4/16, 5/4, and 5/8. Plants were observed in the low spots topographically and in areas that were flooded with 1-2" of water at the time of the April survey date, with no water observed in the May dates. Associated plants species include Baltic rush (Juncus arcticus var. balticus), perrenial ryegrass (Festuca perenne), saltgrass (Distichlis spicata), alkali heath (Frankenia salina), stalked popcorn flower (Plagiobothrys stipitatus var. micranthus), and saline clover (Trifolium hydrophilum).

Please fill out separate form for other rare taxa seen at this site. Saline clover (Trifolium hydrophilum)

Site Information Overall site/occurrence quality/viability (site + population): ( ) Excellent (●) Good ( ) Fair ( ) Poor
Immediate AND surrounding land use: Site and surrounding land use is a working cattle ranch.
Visible disturbances: Cattle grazing and disturbance
Threats: Perrenial pepperweed (Lepidium latifolium) observed throughout site.
Comments: Extension of previously mapped occurrence.

Determination: *(check one or more, and fill in blanks)*
☒ Keyed (cite reference): Jepson Eflora
☐ Compared with specimen housed at: _____
☒ Compared with photo / drawing in: Calflora
☐ By another person (name): _____
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☒
Habitat	☐	☐	☒
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? (●) yes ( ) no

Mail to:
California Natural Diversity Database
California Dept. of Fish & Wildlife
P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

For Office Use Only
Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Date of Field Work (mm/dd/yyyy): 05/08/2020

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Trifolium hydrophilum*

Common Name: Saline Clover

Species Found? (●) Yes ( ) No _____ If not found, why?

Total No. Individuals: ~50 Subsequent Visit? (●) Yes ( ) No

Is this an existing NDDB occurrence? _____ Yes, Occ. # [☒] No [☐] Unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Cristian Singer, Sheryl Creer, John Holson
Address: 555 Capitol Mall, Suite 650
Sacramento, 95814
E-mail Address: Cristian.singer@stantec.com
Phone: 916-397-9832

Plant Information
Phenology:
10 % vegetative | 90 % flowering | _____ % fruiting

Animal Information
_____ # adults | _____ # juveniles | _____ # larvae | _____ # egg masses | _____ # unknown
[☐] wintering [☐] breeding [☐] nesting [☐] rookery [☐] burrow site [☐] lek [☐] other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)
Observed on the southern margins of San Felipe Lake. See map.

County: San Benito Landowner / Mgr: Santa Clara Valley Water District, Soap Lake Ranch, LLC
Quad Name: _____ Elevation: _____
T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H( ) M( ) S( ) Source of Coordinates (GPS, topo. map & type): GPS
T___ R___ Sec___, ___¼ of ___ ¼, Meridian: H( ) M( ) S( ) GPS Make & Model: Bad Elf Surveyor
DATUM: **NAD27** ( ) **NAD83** ( ) **WGS84** ( ) Horizontal Accuracy: 0.5 meters/feet
Coordinate System: UTM Zone 10 ( ) UTM Zone 11 ( ) ***OR*** Geographic (Latitude & Longitude) ( )
Coordinates: See map

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Several large populations found in vernal margins of lake on southeast side of the reservoir from three field dates in 2020, 4/16, 5/4, and 5/8. Plants were observed in the low spots topographically and in areas that were flooded with 1-2" of water at the time of the April survey date, with no water observed in the May dates. Associated plants species include Baltic rush (Juncus arcticus var. balticus), perrenial ryegrass (Festuca perenne), saltgrass (Distichlis spicata), alkali heath (Frankenia salina), stalked popcorn flower (Plagiobothrys stipitatus var. micranthus), and prostrate navarretia (Navarretia prostrata).

Please fill out separate form for other rare taxa seen at this site. prostrate navarretia (Navarretia prostrata)

Site Information Overall site/occurrence quality/viability (site + population): ( ) Excellent (●) Good ( ) Fair ( ) Poor
Immediate AND surrounding land use: Site and surrounding land use is a working cattle ranch.
Visible disturbances: Cattle grazing and disturbance
Threats: Perrenial pepperweed (Lepidium latifolium) observed throughout site.
Comments:

Determination: *(check one or more, and fill in blanks)*
[☒] Keyed (cite reference): Jepson Eflora
[☐] Compared with specimen housed at: _____
[☒] Compared with photo / drawing in: Calflora
[☐] By another person (name): _____
[☐] Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☒
Habitat	☐	☐	☒
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? (●) yes ( ) no

Draft Environmental Impact Report

Appendix

Biological Resources – Botanical/Wildlife

Attachment A

Botanical and Wildlife Special-Status Species Habitat Assessment

Exhibit C

California Red-Legged Frog Site Assessment

Pacheco Reservoir Expansion Project

November 2021

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Appendices

Subexhibit A – CRLF Habitat Site Assessment Data Sheets
Subexhibit B – Site Assessment Results and Survey Locations

Acronyms and Abbreviations

CAS	California Academy of Sciences
CDFW	California Department of Fish and Wildlife
CNDDB	California Natural Diversity Database
CRLF	California red-legged frog (*Rana draytonii*)
Project	Pacheco Reservoir Expansion Project
SCVHP	Santa Clara Valley Habitat Plan
Stantec	Stantec Consulting Inc.
Report	California Red-Legged Frog Site Assessment Report
USFWS	United States Fish and Wildlife Service

Chapter 1. Introduction

This California Red-Legged Frog Site Assessment Report (Report) was prepared in support of the Pacheco Reservoir Expansion Project (Project). This Report has been prepared to describe the methods and results of the California red-legged frog (*Rana draytonii*) (CRLF) site assessment. The results presented in this Report are intended to further develop an understanding of CRLF potential to occur within and adjacent to the Project study area, identification of potential CRLF habitat, and provide both qualitative and quantitative information regarding CRLF potential habitat. The information generated from this Report is expected to be used to inform Project impact assessments/calculations for the species and the potential future mitigation needs that may be required for the Project.

Chapter 2. Methods

2.1 Project Study Area and Assessment Area

The Project study area for the purposes of this Report, generally encompass the existing Pacheco Reservoir and upstream areas (i.e., generally north of the existing North Fork Dam) surrounding the reservoir up to the expanded reservoir boundary plus an approximately 500-foot buffer. The Project study area also encompasses approximately 17 miles of Pacheco Creek along the 100-year floodplain from the existing North Fork Dam downstream to San Felipe Lake. The Project study area encompasses approximately 6,835 acres and includes all currently proposed impact areas associated with the Project (e.g., dam footprint, inundation area, borrow sites). The assessment area for this Report includes all areas within 1-mile of the Project study area and is approximately 39,220 acres in size. The Project study area and assessment area combined total approximately 46,055 acres. The location and boundaries of the Project study area and the assessment area are illustrated in Figure 2-1.

2.2 Site Assessment Methods

The site assessment was conducted in accordance with the U.S. Fish and Wildlife Service's (USFWS) *Revised Guidance on Site Assessments and Field Surveys for the California Red-Legged Frog* (USFWS 2005). The guidance provided by USFWS identifies criteria for performing CRLF site assessments and data sheet templates for surveys conducted in and around aquatic and riparian habitats to ensure standardization for CRLF site assessments across projects. The criteria included in the USFWS guidance consists of a review of the following: (1) if the Project study area is within the current or historical range of the species; (2) identification of documented occurrences/records of the species within one mile of the Project study area; and (3) the identification of potential habitat for CRLF within the Project study area and assessment area (i.e., within 1 mile of the Project study area).

CRLF occurrences records within the assessment area were compiled from a review of the following sources:

- California Department of Fish and Wildlife (CDFW) and California Natural Diversity Data Base (CNDDB) (CDFW 2020)
- USFWS Recovery Plan for the California Red-Legged Frog (USFWS 2002)
- Project-related documents and non-Project related studies within the Project study area and assessment area, including sources such as:
  - Aquatic Sampling at Canada de los Osos Reserve in 2013-2019 (Smith 2019)
  - Cedar Creek Property – Pond Survey Results – Santa Clara County (Olberding Environmental, 2020)
- California Academy of Sciences (CAS) (CAS 2020)
- iNaturalist (2020) CRLF observations
- Other publicly available databases and literature

Aquatic features within the assessment area were identified and mapped using publicly available desktop resources, such as current and historic aerial imagery, topographic maps,

USFWS National Wetland Inventory maps, and USFWS guidance (e.g., USFWS 2005) in addition to reconnaissance-level surveys. Reconnaissance-level field surveys were conducted for the potential aquatic habitats located within the Project study area where legal access was available. Assessment surveys documented the conditions at each of the potential aquatic features visited using the USFWS California Red-Legged Frog Habitat Site Assessment Data Sheet forms (USFWS 2005). Data collected included feature type (e.g., stock pond, perennial stream), apparent seasonality, approximate size (e.g., surface area or stream width), estimated depth at bank full, water depth at the time of the field survey, stream gradient, stream morphology (e.g., pools, riffles), substrate, vegetation (e.g., emergent, overhanging, dominant species), and bank/shoreline descriptions. Other aquatic habitat characteristics such as side channels or backwater areas were documented. Incidental observations of potential predators such as American bullfrogs (*Lithobates catesbeianus*) and centrarchids (e.g., bass, sunfish) were noted. Representative photographs depicting habitat conditions were also taken at each of the locations visited during the field surveys. Potential CRLF habitats on private property without legal access, which included those within the assessment area, were assessed by reviewing current and historic aerial imagery (e.g., Google Earth), topographic maps, and/or from points of public access (e.g., road ways adjacent to ponds). To determine the hydroperiods of the inaccessible aquatic features, aerial images from multiple years and seasons were reviewed in Google Earth.

2.3 Assessment Timeframe

Stantec Consulting Inc. (Stantec) biologists conducted reconnaissance-level pedestrian surveys to document potential CRLF habitat within the assessment area. The site assessment surveys were conducted on March 10–12 and 30, April 1–2, and May 7–8, 2020. The timing of the field surveys was performed to coincide with the spring months when CRLF tadpoles would be present within aquatic features (e.g., ponds) and while the aquatic features were inundated.

2.4 Biologists Qualifications

Stantec biologists, Jared Elia, Sara Cortez, Rob Stoddard, Scott Elder, and Brendan Cohen performed the reconnaissance-level surveys. A summary of their qualifications and experience performing CRLF surveys and site assessments are summarized below.

- Jared Elia – Over 13 years of experience conducting site assessments for CRLF, and performing reconnaissance and protocol-level surveys, which has included capture and relocation of individuals. He attended the Rare Pond Species Survey Techniques workshop offered by Sonoma State University and has been approved as a qualified biologist on numerous projects by CDFW and USFWS. Jared also has over 20 hours of protocol-level survey and handling hours for CRLF.

- Sara Cortez – Over 13 years of experience conducting site assessments for CRLF, and performing reconnaissance and protocol-level surveys, which has included capture and relocation of individuals. She has conducted surveys and site assessments for this species throughout the San Francisco Bay area and Sacramento-San Joaquin Valley.

- Rob Stoddard – Over 12 years of experience conducting site assessments for aquatic species, including CRLF. He has several years of experience conducting foothill yellow-legged frog surveys and is experienced identifying the unique characteristics that distinguish CRLF apart from other amphibian species.

- Scott Elder – Over 5 years of experience conducting site assessments and reconnaissance-level surveys for CRLF throughout the San Francisco Bay area. He has

also attended the Rare Pond Species Survey Techniques workshop offered by Sonoma State University. Scott is experienced in identifying the unique characteristics that distinguish CRLF apart from other amphibian species.

- Brendan Cohen – Over 5 years of experience conducting site assessments and reconnaissance-level surveys for CRLF. He has also attended the Rare Pond Species Survey Techniques workshop offered by Sonoma State University and the Amphibian of the Bay Area workshop in Santa Rosa, California. Brendan is experienced in identifying the unique characteristics that distinguish CRLF apart from other amphibian species.

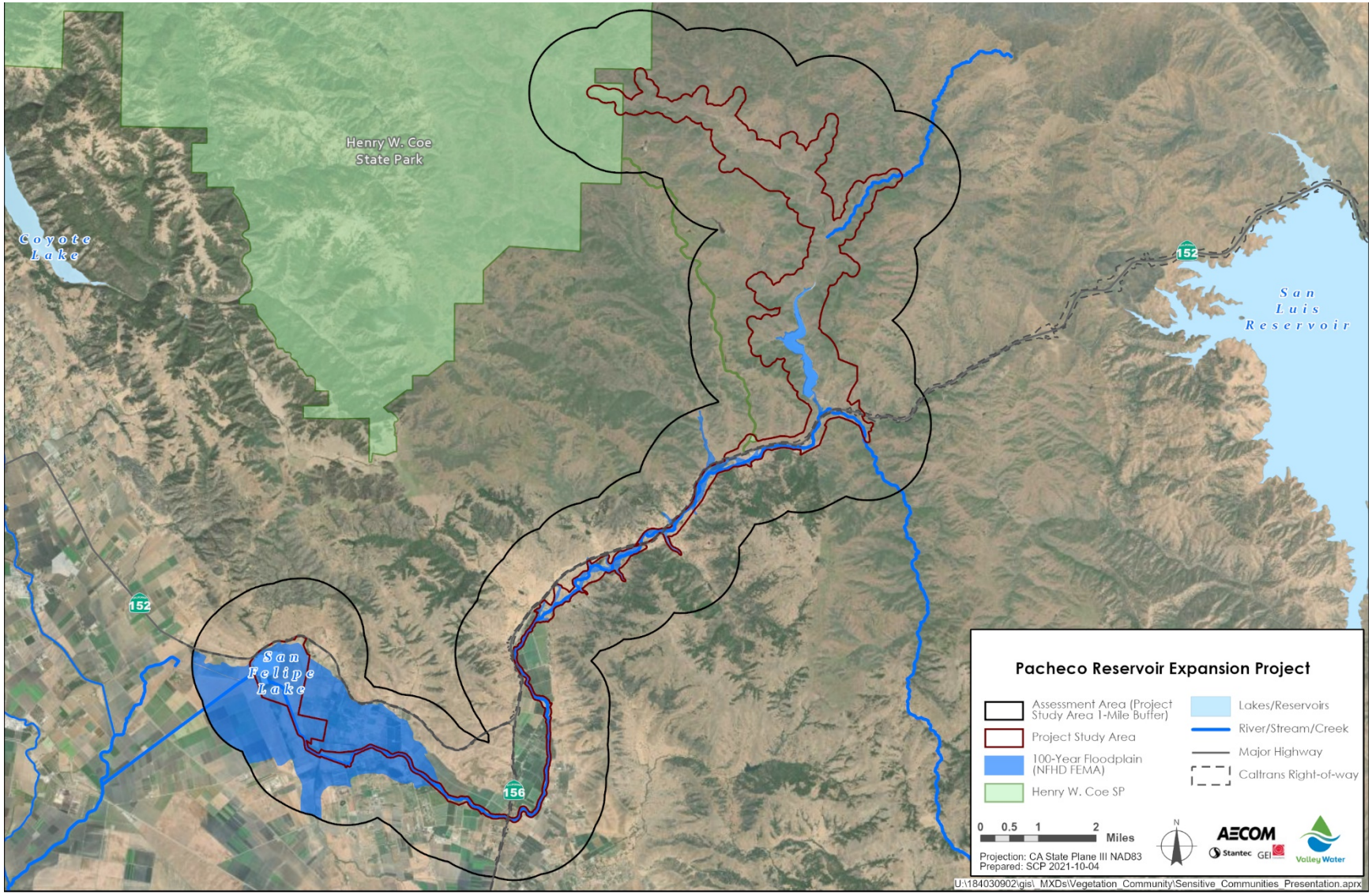

Figure 2-1. Project Study Area and Assessment Area

Chapter 3. Species Natural History

The CRLF was federally listed as a threatened species on June 24, 1996, by the USFWS under the Endangered Species Act (USFWS 1996) and it is the subject of a recovery plan published in 2002 (USFWS 2002). It is also a CDFW species of special concern. Revised Critical Habitat for this species was designated by USFWS on March 17, 2010 (USFWS 2010). The CRLF is the largest native frog in California (44–131 millimeters snout-vent length). The historical range of CRLF extended from Riverside County to Mendocino County along the Coast Range; from Calaveras County to Butte County in the Sierra Nevada; and to Baja California, Mexico (USFWS 2017). CRLF are still abundant within portions of the San Francisco Bay area (including Marin County) and the central coast (USFWS 2017).

The CRLF inhabits a variety of aquatic, upland, and riparian environments, including: ephemeral and permanent ponds, seasonal wetlands, perennial creeks, intermittent streams, manmade aquatic features (e.g., stock ponds), riparian corridors, nonnative annual grasslands, and oak savannahs (USFWS 1996). Preferred breeding habitat consists of still or slow-moving water or deep-water pools where it deposits large egg masses, usually attached to submergent or emergent vegetation. Breeding typically occurs during winter and early spring (i.e., late November through April). Well-vegetated upland habitats in proximity of a riparian corridor may also provide sheltering habitat during the breeding season. During the nonbreeding season (i.e., generally from May through mid-November), CRLF utilize a variety of aquatic habitats including small pools in streams, springs, water traps and other perennial water bodies (Miller et al. 1996; Fellers and Kleeman 2007). During the dry summer months, CRLF seek refuge in small mammal burrows, areas with structural cover, and moist leaf litter commonly associated with adjacent riparian habitat to avoid desiccation (Rathbun et al. 1993; Jennings and Hayes 1994). CRLFs have been recorded to cover distances from 0.25 mile to more than 2 miles without apparent regard to topography, vegetation type, or riparian corridors (USFWS 2005; Tartarian 2008).

Introduced species such as American bullfrogs, largemouth bass (*Micropterus salmoides*), common carp (*Cyprinus carpio*), and mosquitofish (*Gambusia affinis*) may prey upon one or more life stages (i.e., eggs, tadpoles, or adults) of CRLF, but the species can also coexist in certain habitats (Stebbins and McGinnis 2012; Moyle 1973). It is estimated that the CRLF has disappeared from approximately 75 percent of its former range and has nearly been extirpated from the Sierra Nevada, Central Valley and much of southern California (Miller et al. 1996).

3.1 Critical Habitat

The federal Endangered Species Act requires the federal government (i.e., USFWS) to designate critical habitat for any species it lists as endangered or threatened. It also requires the federal government to develop and implement recovery plans to promote the conservation of threatened and endangered species. The CRLF has designated critical habitat and is the subject of the USFWS Recovery Plan for the species (USFWS 2010).

Critical habitat is identified by the presence of physical or biological features, previously termed primary constituent elements, that are essential to the conservation of a federally listed species upon which designated or proposed critical habitat for the species is based. Physical and biological features may include, but are not limited to: space for growth of individuals and populations; food, water, air, light, minerals, or other nutritional or physiological requirements; cover or shelter; sites for breeding, reproduction, rearing of offspring, germination, or seed dispersal; and habitats that are protected from disturbance or are representative of the species'

historic geographic and ecological distribution. The physical and biological features for CRLF critical habitat are aquatic and upland areas where suitable breeding and nonbreeding habitat is interspersed throughout the landscape and is interconnected by unfragmented dispersal habitat. Aquatic habitat includes standing bodies of fresh water such as stock ponds or slow-moving streams or pools within streams, or other ephemeral or permanent water bodies. Aquatic breeding habitat must hold water for a minimum of 20 weeks per year. Upland habitat includes areas within one mile of the edge of riparian or aquatic habitat and composed of grassland, woodland, wetland/riparian vegetation communities and may include structural features such as rocks, woody debris and leaf litter, and small mammal burrows. Dispersal habitat includes upland habitats or riparian habitats within one mile of occupied locations.

Chapter 4. Site Assessment Results

4.1 Range and Critical Habitat

CRLF is endemic (native and restricted) to California and Baja California, Mexico at elevations ranging from sea level to approximately 5,000 feet (1,500 meters). The historical range of CRLF extended from Riverside County to Mendocino County along the Coast Range; from Calaveras County to Butte County in the Sierra Nevada; and to Baja California, Mexico (USFWS 2017). CRLF are still abundant within portions of the San Francisco Bay area and the central coast (USFWS 2017). Based on this information, the entire Project study area and assessment area is located within the historic and current range for CRLF.

Figure 4-1 shows that approximately 5,609 acres of USFWS-designated critical habitat for CRLF, STC-2 unit, is located within the Project study area from the northern portion of the Project study area, south to approximately the State Route 152 and State Route 156 interchange and approximately 28,078 acres within the assessment area (USFWS 2020). Physical and biological features (i.e., primary constituent elements) of critical habitat for CRLF include aquatic breeding and nonbreeding habitat, upland habitat, and dispersal habitat (USFWS 2010). Based on surveys conducted, the physical and biological features for CRLF critical habitat are present in the STC-2-unit boundary within the Project study area and assessment area.

4.2 Known Occurrences

A search of the CNDDB (CDFW 2020) indicated that there are 12 occurrences of CRLF within approximately one mile of the Project study area (Figure 4-1). These occurrence records are located primarily along the northern limits of the Project study area, with lesser occurrences downstream from North Fork Dam. CRLF CNDDB occurrences within the assessment area are described in Table 4-1. One CAS entry is known from the South Fork Pacheco Creek (#CAS 238607, collected 4/19/1999 and identified 4/19/1999). Two subadult CRLF were observed by Stantec biologists during the May 2020 site assessments along the South Fork Pacheco Creek within the Project study area. Other studies, not performed as part of the Project, have observed CRLF tadpoles in three ponds located west of Pacheco Reservoir and north of State Route 152 within the assessment area (Smith 2019). The Stantec and other studies observations of CRLF are not yet documented in CNDDB.

Table 4-1. California Red-Legged Frog Occurrences within 1 Mile of the Project Study Area

Occurrence Number	Feature Type	Distance from Project Study Area (miles)	Year Observed
CNDDB #39	Freshwater marsh vegetated by tulles and willows.	0.8 mile	1990
CNDDB #47	A pool within Pacheco Creek within Sycamore alluvial woodland.	Within Project study area	1991
CNDDB #308/ CAS #238607	A perennial stream within a rocky canyon.	0.3 mile	1999
CNDDB #352	Two artificial perennial ponds, within an intermittent drainage.	0.7 mile	2003
CNDDB #440	A 3-foot-deep stock pond with undercut banks over half of the perimeter.	0.5 mile	2001
CNDDB #696	A pond surrounded by oak woodland.	0.6 mile	2001
CNDDB #697	Two adjacent ponds surrounded by oak woodland.	0.9 mile	2016
CNDDB #700	Riparian along North Fork Pacheco Creek.	Within Project study area	2003
CNDDB #748	Willow riparian growing along a low gradient stream.	Within Project study area	2004
CNDDB #795	Intermittent stream with riparian.	0.2 mile	2005
CNDDB #800	An intermittent stream in a wooded canyon.	1 mile	2004
CNDDB #808	A 14-acre, usually perennial pond, pond is adjacent to Pacheco Creek.	Within Project study area	2005
N/A (Stantec 2020)	Subadult observed along the South Fork Pacheco Creek	Within Project study area	2020
N/A (Stantec 2020)	Subadult observed along the South Fork Pacheco Creek	Within Project study area	2020
N/A (Smith 2019)	Tadpoles observed in a pond (P-226) located west of Pacheco Reservoir and north of State Route 152.	0.7 mile	2019
N/A (Smith 2019)	Tadpoles observed in a pond (P-115) located west of Pacheco Reservoir and north of State Route 152.	0.6 mile	2019
N/A (Smith 2019)	Tadpoles observed in a pond (P-114) located west of Pacheco Reservoir and north of State Route 152.	0.7 mile	2019

Key:
N/A = No CNDDB occurrence number

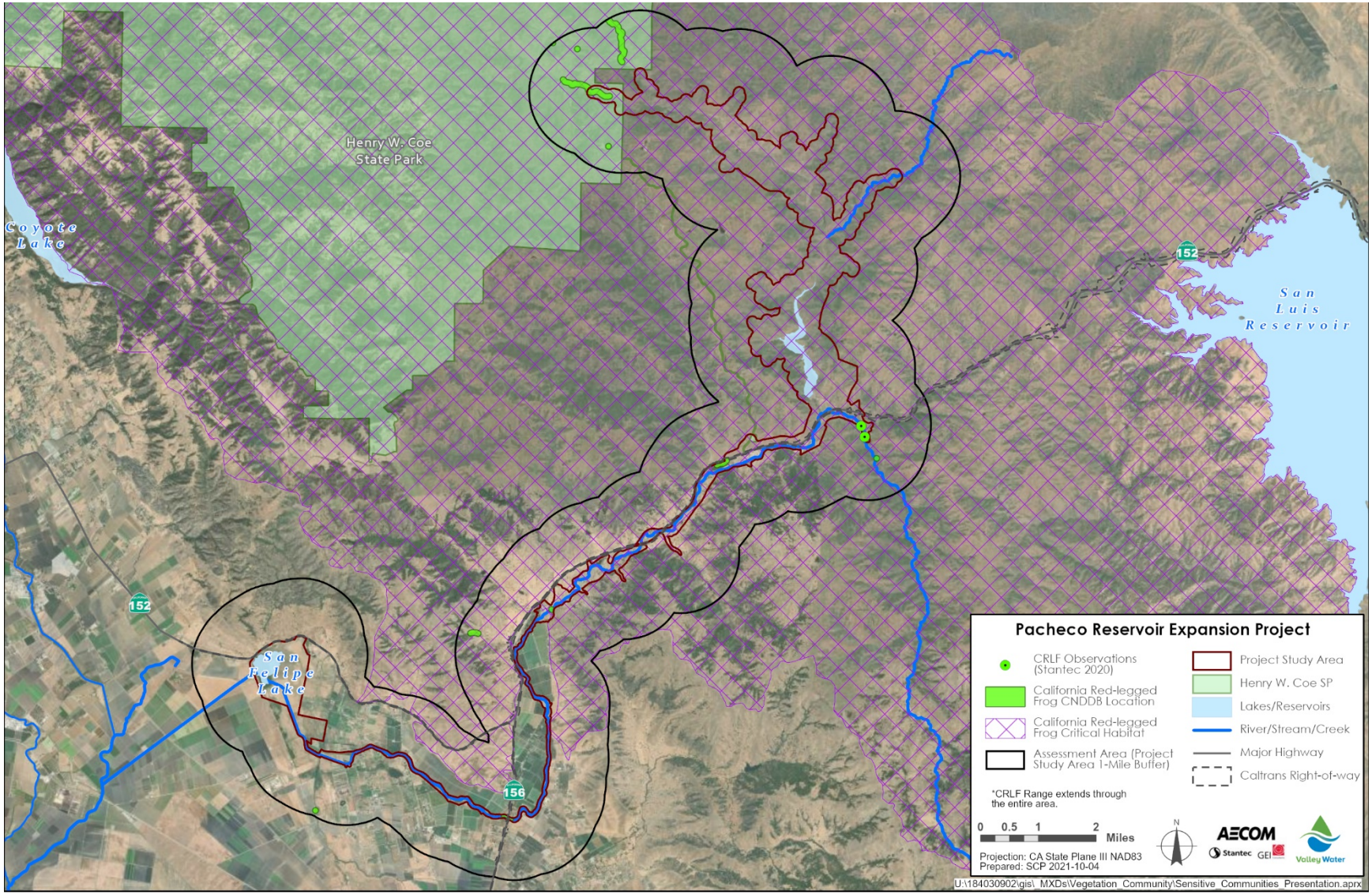

Figure 4-1. California Red-legged Frog California Natural Diversity Database Occurrences Within 1-Mile of the Project Study Area

4.3 Potential CRLF Habitats

Potential habitats for CRLF identified in the assessment area includes aquatic breeding, aquatic nonbreeding, and upland and dispersal habitats. Figure 4-1 provides the locations of aquatic habitats within the Project study area and assessment area. Copies of USFWS habitat site assessment data sheets are presented in Subexhibit A.

Migration barriers for CRLF within the assessment area include agricultural lands surrounding Pacheco Creek downstream from the existing Pacheco Reservoir and State Route 152, other than where the highway crosses waterways. These barriers minimize dispersal and migration for the species as they can reduce and/or prevent CRLF from breeding in aquatic habitats and/or using potential summer habitat that require crossing these barriers. Agricultural land creates barriers for movement, particularly in the summer as they typically do not provide refuge in the form of burrows or cover. Agricultural land can also be surrounded with fencing to prevent ungulates and rodents from foraging, which also prevents CRLF from migrating through these properties. Roadways such as State Route 152 create migration barriers as species are often killed trying to cross these large roadways or can become desiccated with no cover trying to cross during the hot summer months (e.g., June through September).

4.3.1 Aquatic Habitats

The aquatic features (i.e., ponds) that were evaluated during the CRLF habitat assessment consisted of 37 aquatic features located within the Project study area and 158 are located beyond the Project study area (i.e., within the assessment area). Of the 195 total aquatic features, 123 provide essential components of CRLF breeding habitat, 25 provide sub-optimal or marginal habitat (i.e., low quality) and 47 features do not provide breeding habitat.

A summary of the identified aquatic features within the Project study area and broader assessment area is provided in Table 4-2 below.

Table 4-2. Summary of Aquatic Features Identified

Analysis Area	Identified Aquatic Features			Total
	Breeding Habitat	Low Quality Breeding Habitat	Non-Breeding Habitat	
Project Study Area	11	11	15	37
Assessment Area[1]	112	14	32	158
TOTAL	123	25	47	195

Notes:
[1] Assessment area consists of a 1-mile buffer around the Project study area. The number of aquatic features represented in this table within the assessment area exclude those found within the Project study area.

4.3.1.1 Breeding

Of the 37 aquatic features that have been identified in the Project study area, 11 of them provide the essential components of CRLF breeding habitat (Table 4-2), including features L1, P3, P5, P6, P10, P18, P19, P100, P102, P146 and P-229 (see Figure 4-2 and Subexhibit B). These features are small to large sized ponds ranging in size from less-than 0.01 acre to-approximately 74 acres (San Felipe Lake is the largest) and have sufficient water depths and emergent or overhanging vegetation to provide potential CRLF breeding habitat. They also appear to hold water long enough for CRLF larvae to reach metamorphosis (i.e., generally until June and July). However, suitability or likelihood of successful California red-legged frog breeding within perennial San Felipe Lake (and Pacheco Reservoir) is diminished due to

presence of non-native predatory species (e.g., bass species [*Micropterus* spp.], sunfish [*Centrarchidae* spp.], American bullfrog). Emergent vegetation observed at these ponds during field surveys consisted of hardstem bulrush (*Schoenoplectus acutus*), salt grass (*Distichlis spicata*), curly dock (*Rumex crispus*), broadleaf cattail (*Typha latifolia*), spike rush (*Eleocharis macrostachya*), and spiny cocklebur (*Xanthium spinosum*). Overhanging vegetation observed around these ponds included red willow (*Salix laevigata*), coast live oak (*Quercus agrifolia*) and mule fat (*Baccharis salicifolia*). Animal species observed at these ponds included Pacific treefrog (*Hyla regilla*), western pond turtle (*Actinemys marmorata*), American bullfrog, unidentifiable fish species and numerous aquatic invertebrates such as water striders (*Gerridae*) and water boatman (*Corixidae*).

There are 11 aquatic features within the Project study area that provide marginal (i.e., low quality) CRLF breeding habitat (Table 4-2). These marginal features range from approximately 0.01 acre to approximately 35 acres in size and appear to only provide sufficient hydroperiod to support CRLF breeding during years with above average precipitation. Further, field surveys found these 11 aquatic features contained no vegetation, sparse vegetation, and/or nonnative vegetation—along with invasive predators/competitors (e.g., American bullfrog, sunfish).

Outside of the Project study area, but within the assessment area, 123 of the 158 identified aquatic features provide essential components necessary for CRLF breeding (Table 4-2) based on review of available aerial imagery (e.g., Google Earth) across multiple years and seasons. These aquatic features consist of characteristics (e.g., vegetation community composition) similar to those described for the ponds above that provide the essential components of CRLF breeding habitat found in the Project study area. There are 25 ponds within the assessment area that provide marginal (i.e., low quality) breeding habitat based on accessible aerial imagery.

4.3.1.2 Nonbreeding

The remaining 15 aquatic features identified in the Project study area are considered nonbreeding aquatic habitat for CRLF (Table 4-2), given they lack sufficient hydroperiod to support the species, are too large (e.g., the existing Pacheco Reservoir), or did not provide suitable upland habitat within the adjacent vicinity. Within the assessment area, 32 aquatic features do not provide breeding habitat. The characteristics of both the marginal breeding habitat and those aquatic features that do not provide breeding habitat are also similar to those identified above within the Project study area (i.e., insufficient hydroperiod, lack vegetation or are sparsely vegetated and/or nonnative, and invasive predators/competitors etc.). A complete list of all aquatic features, their location (i.e., inside the Project study area or within the assessment area), habitat type, size, and suitability ranking are provided in Subexhibit B.

4.3.2 Summer/Upland and Dispersal Habitats

Summer/upland habitat within the assessment area was identified as potential suitable upland refugia for CRLF during the species nonbreeding period (i.e., approximately May through mid-November). While CRLF have been documented to cover/disperse distances between 0.25 mile to more than 2 miles (USFWS 2005; Tartarian 2008), for the purposes of this Report, summer/upland habitat consists of areas within one mile of potential breeding sites that stay cool and moist throughout the summer (Fellers 2005), which is also consistent with the assessment area provided in the USFWS revised guidance for CRLF site assessments (USFWS 2005). Summer habitats must provide sufficient moisture to allow CRLF to survive throughout the nonbreeding season (i.e., up to 11 months) and sufficient cover to allow thermal regulation and provide protection from predators, (Fellers and Kleeman 2007). CRLF have been known to seek cover in summer habitats in areas such as small mammal burrows, leaf litter, or

downed woody debris (e.g., fallen/decomposing trees). Vegetation communities within the Project study area identified as suitable summer habitat consist primarily of annual grassland, woodland habitats, riparian and scrub/shrub habitats along with aquatic features that do not provide suitable breeding habitat.

Dispersal habitat is typically associated with vegetation communities that CRLF will travel through between the breeding and nonbreeding seasons (i.e., grasslands, woodlands, riparian or seeps/springs). This includes aquatic features that may not be suitable for breeding but may provide foraging habitat or refugia for dispersing CRLF. CRLF often disperse from their breeding habitat to forage and seek summer habitat if water is not available. CRLF may also take refuge in small mammal burrows and other refugia (e.g., leaf litter) up to approximately 328 feet (100 meters) from the water any time of the year and can be encountered in smaller, even ephemeral bodies of water in a variety of upland habitats (USFWS 2005). During periods of wet weather, starting with the first rains of fall, some CRLF disperse from upland habitats toward breeding habitat.

Table 4-3 below, provides approximate acreages of the land cover types within the Project study area that may provide potential upland and dispersal habitats for CRLF. The *Terrestrial Vegetation Community Mapping report* prepared for the Project, provides characterizations for the 18 land cover types mapped within the Project study area as part of the Project. In addition to the terrestrial vegetation community types identified above, all aquatic features meeting CRLF breeding habitat criteria for essential and marginal habitat, as well as aquatic features that did not meet the criteria for breeding were considered to meet the summer CRLF habitat criteria.

Table 4-3. California Red-Legged Frog Summer and Upland/Dispersal Land Cover Types within the Project Study Area

Land Cover Type	Acres Within Project Study Area
Blue oak woodland	2,188
California annual grassland	1,254
Central California sycamore alluvial woodland	106
Coast live oak forest and woodland	743
Coastal and valley freshwater marsh	15
Foothill pine and oak woodland	43
Mixed evergreen forest	110
Mixed riparian forest and woodland	85
Nonserpentine native grassland	40
Northern coastal scrub/Diablan sage scrub	286
Northern mixed chaparral/chamise chaparral	346
Ornamental woodland	47
Pond	22[1]
Reservoir	268[1]
Riverine	78[1]
Seasonal wetland	454[1]
Valley oak woodland	160
Willow riparian forest and scrub	329
Total Acreage	**6,573**

Note:
[1] Acreages for these land cover types also include suitable breeding habitat.

Potentially suitable upland and dispersal habitat for CRLF within the assessment area, but outside of the Project study area, was assessed using the Santa Clara Valley Habitat Plan (SCVHP) land cover data (Santa Clara Valley Habitat Agency 2017). These upland areas consist of 16 different land cover types and total approximately 27,281 acres. Approximately 10,006 acres in the assessment area are located outside the boundary established in the SCVHP and land cover mapping/data is unavailable for these areas (i.e., portions of the assessment area that overlap Henry Coe State Park and San Benito County). Table 4-4 below, provides approximate acreages of the SCVHP land cover types that may provide potential upland and dispersal habitats for CRLF.

Table 4-4. California Red-legged Frog Summer and Upland/Dispersal Land Cover Types within Assessment Area

Land Cover Type	Acres Within the Assessment Area
Blue oak woodland	1,589
California annual grassland	9,016
Central California sycamore alluvial woodland	42
Coast live oak forest and woodland	485
Coastal and valley freshwater marsh	7
Foothill pine and oak woodland	1,065
Mixed Oak Woodland and Forest	10,601
Mixed riparian forest and woodland	132
Mixed serpentine chaparral	202
Northern coastal scrub/Diablan sage scrub	190
Northern mixed chaparral/chamise chaparral	2,950
Ornamental woodland	9
Pond	53
Seasonal wetland	1
Valley oak woodland	924
Willow riparian forest and scrub	14
No Data – Henry Coe State Park	2,239*
No Data – San Benito County	7,767*
Total Acreage	**27,281****

Notes:
* No SCVHP land cover data available, but an acreage is provided to indicate the size of the areas within the assessment area.
**Total acreage does not include the 10,006 acres within Henry Coe State Park and San Benito County where SCVHP land cover mapping data is not available.

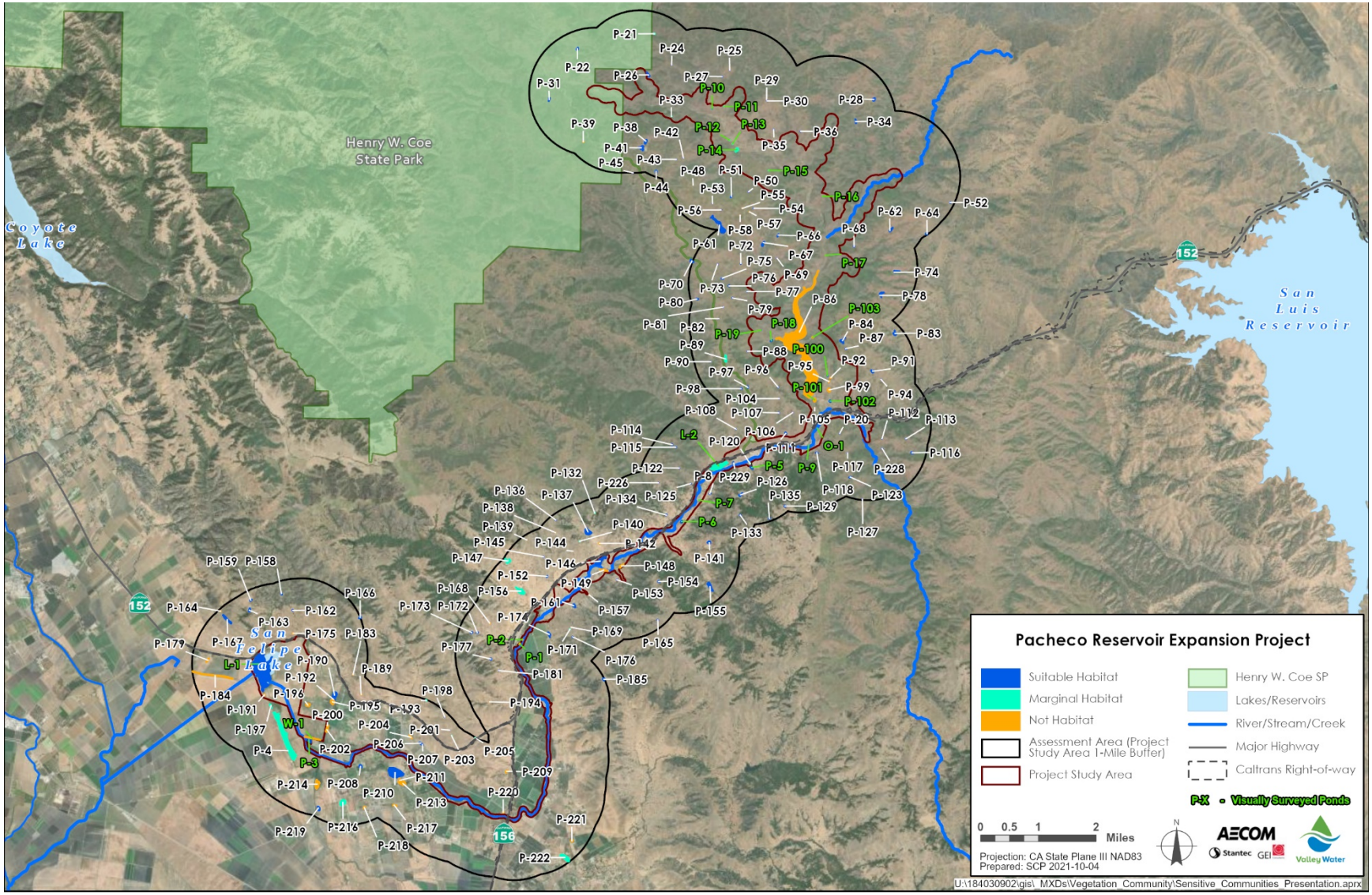

Figure 4-2. California Red-legged Frog Aquatic Habitats within Assessment Area

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Subexhibit A – CRLF Habitat Site Assessment Data Sheets

Pacheco_CRLF Habitat Site Assessment Data Sheet v2

Project	Pacheco Pass - CRLF Assessment
ID	77959
Survey Date	03/10/2020
User	Scott Elder
List all Site Assessment Biologists (last name) (first name)	[X] Elder, Scott [X] Elia, Jared [X] Stoddard, Rob [ ] Other [X] Sara Cortez

Site Location



Latitude	36.975777
Longitude	-121.461892
Accuracy	0 m

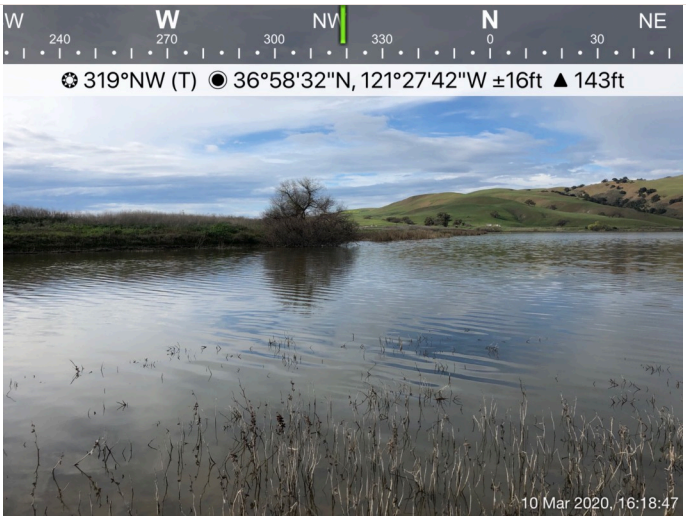
ATTACH A MAP (INCLUDE HABITAT TYPES, IMPORTANT FEATURES, AND SPECIES LOCATIONS)

Proposed project name:	Pacheco Reservoir Expansion Project
Brief description of proposed action:	
Attach Map (pdf)	None
Attach Map (jpg)	None
Is this site within the current or historic range of CRF?	[ ] No [X] Yes
Are there known records of CRF within 1.6 km (1 mi) of the site?	[ ] No [X] Yes

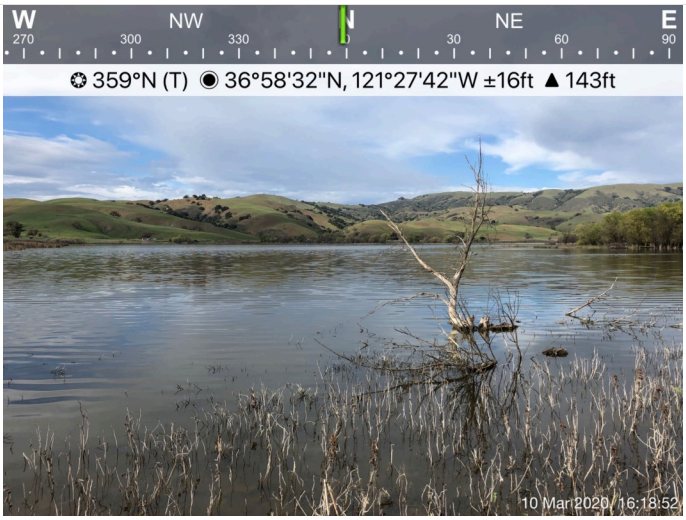
GENERAL AQUATIC HABITAT CHARACTERIZATION

POND	☐ No ☒ Yes
Size (ft)	
Maximum Depth (ft)	10
Vegetation emergent	*Schoenoplectus acutus* / Hardstem bulrush
Vegetation overhanging	*Salix laevigata* / Polished willow, Red willow
Dominant species	*Salix laevigata* / Polished willow, Red willow *Schoenoplectus acutus* / Hardstem bulrush
Substrate	Silt and clay
Perennial or Ephemeral?	☐ Ephemeral ☒ Perennial

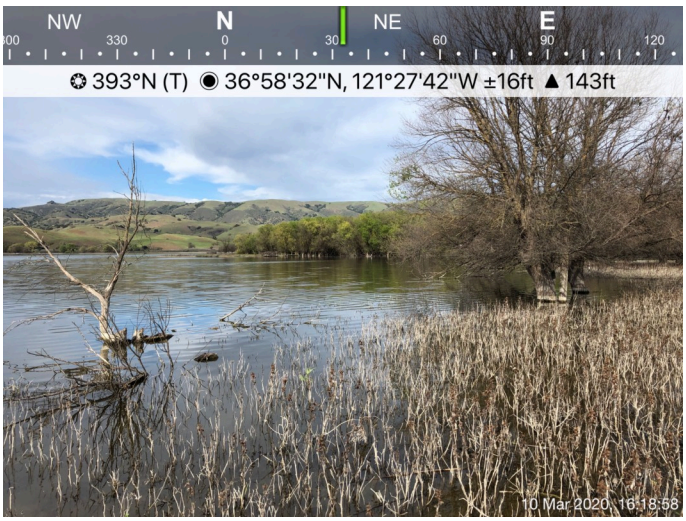
Pond photo(s)



L1



L1



L1

STREAM	[X] No [ ] Yes
Non-pool habitat other:	
Other aquatic habitat characteristics?	Mainly lined with tree and herbaceous species. Pacheco creek outlets into the lake. Small pockets of emergent vegetation (bulrush) around the lake.
Other plant species observations?	*Frankenia salina* / Yerba reuma, Alkali heath *Xanthium spinosum* / Spiny cocklebur
Other animal species observations?	*Haliaeetus leucocephalus* / Bald eagle *Pseudacris sierra* / Sierran treefrog
Additional drawings:	None
Comments	L1

Pacheco_CRLF Habitat Site Assessment Data Sheet v2

Project	Pacheco Pass - CRLF Assessment
ID	77960
Survey Date	03/10/2020
User	Scott Elder
List all Site Assessment Biologists (last name) (first name)	[X] Elder, Scott [X] Elia, Jared [X] Stoddard, Rob [ ] Other [X] Sara Cortez

Site Location



Latitude	36.96311
Longitude	-121.446855
Accuracy	0 m

ATTACH A MAP (INCLUDE HABITAT TYPES, IMPORTANT FEATURES, AND SPECIES LOCATIONS)

Proposed project name:	Pacheco Reservoir Expansion Project
Brief description of proposed action:	
Attach Map (pdf)	None
Attach Map (jpg)	None
Is this site within the current or historic range of CRF?	[ ] No [X] Yes
Are there known records of CRF within 1.6 km (1 mi) of the site?	[ ] No [X] Yes

GENERAL AQUATIC HABITAT CHARACTERIZATION

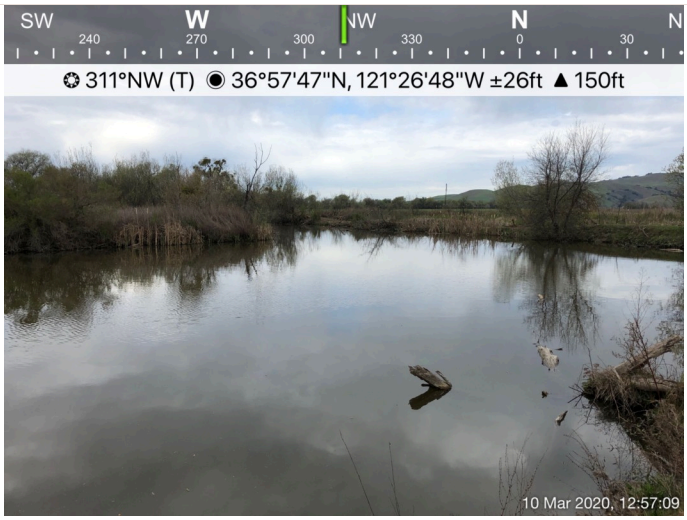
POND	[ ] No [X] Yes
Size (ft)	
Maximum Depth (ft)	8

Vegetation emergent	*Distichlis spicata* / Salt grass *Rumex crispus* / Curly dock *Schoenoplectus acutus* / Hardstem bulrush *Typha latifolia* / Boradleaf cattail, Broad-leaved cattail
Vegetation overhanging	*Salix laevigata* / Polished willow, Red willow
Dominant species	*Schoenoplectus acutus* / Hardstem bulrush *Typha latifolia* / Boradleaf cattail, Broad-leaved cattail
Substrate	Silt and clay
Perennial or Ephemeral?	☐ Ephemeral ☒ Perennial

Pond photo(s)



P3



P3

STREAM	☒ No ☐ Yes
Non-pool habitat other:	
Other aquatic habitat characteristics?	Man made pond with adjacent fresh emergent wetland. Edges of pond full of emergent vegetation.
Other plant species observations?	
Other animal species observations?	*Actinemys marmorata* / Western pond turtle
Additional drawings:	None
Comments	P3

Pacheco_CRLF Habitat Site Assessment Data Sheet v2

Project	Pacheco Pass - CRLF Assessment
ID	77961
Survey Date	03/10/2020
User	Scott Elder
List all Site Assessment Biologists (last name) (first name)	[X] Elder, Scott [X] Elia, Jared [X] Stoddard, Rob [ ] Other [X] Sara Cortez

Site Location



Latitude	36.988738
Longitude	-121.381177
Accuracy	0 m

ATTACH A MAP (INCLUDE HABITAT TYPES, IMPORTANT FEATURES, AND SPECIES LOCATIONS)

Proposed project name:	Pacheco Reservoir Expansion Project
Brief description of proposed action:	
Attach Map (pdf)	None
Attach Map (jpg)	None
Is this site within the current or historic range of CRF?	[ ] No [X] Yes
Are there known records of CRF within 1.6 km (1 mi) of the site?	[ ] No [X] Yes

GENERAL AQUATIC HABITAT CHARACTERIZATION

POND	[ ] No [X] Yes
Size (ft)	4905
Maximum Depth (ft)	5

Vegetation emergent	
Vegetation overhanging	*Eucalyptus globulus* / Blue gum *Umbellularia californica* / California bay
Dominant species	
Substrate	Sand and clay
Perennial or Ephemeral?	☐ Ephemeral ☒ Perennial

Pond photo(s)



P2



P2

STREAM	☒ No ☐ Yes
Non-pool habitat other:	
Other aquatic habitat characteristics?	Artificial pond. Dry at the time of observation.
Other plant species observations?	
Other animal species observations?	
Additional drawings:	None
Comments	P2: within casa de fruta property

Pacheco_CRLF Habitat Site Assessment Data Sheet v2

Project	Pacheco Pass - CRLF Assessment
ID	77962
Survey Date	03/10/2020
User	Scott Elder
List all Site Assessment Biologists (last name) (first name)	[X] Elder, Scott [X] Elia, Jared [X] Stoddard, Rob [ ] Other [X] Sara Cortez

Site Location



Latitude	36.987703
Longitude	-121.381888
Accuracy	0 m

ATTACH A MAP (INCLUDE HABITAT TYPES, IMPORTANT FEATURES, AND SPECIES LOCATIONS)

Proposed project name:	Pacheco Reservoir Expansion Project
Brief description of proposed action:	
Attach Map (pdf)	None
Attach Map (jpg)	None
Is this site within the current or historic range of CRF?	[ ] No [X] Yes
Are there known records of CRF within 1.6 km (1 mi) of the site?	[ ] No [X] Yes

GENERAL AQUATIC HABITAT CHARACTERIZATION

POND	[ ] No [X] Yes
Size (ft)	9074
Maximum Depth (ft)	4

Vegetation emergent	
Vegetation overhanging	*Salix laevigata* / Polished willow, Red willow *Sambucus mexicana* / Elderberry
Dominant species	
Substrate	Sand and clay
Perennial or Ephemeral?	[X] Ephemeral [ ] Perennial
Date it goes dry?	
Pond photo(s)	



P1



P1

STREAM	[X] No [ ] Yes
Non-pool habitat other:	
Other aquatic habitat characteristics?	Artificial pond within casa de fruta property.
Other plant species observations?	
Other animal species observations?	*Anas platyrhynchos* / Mallard *Chrysemys picta trachemys scripta* / Painted turtle pond slider
Additional drawings:	None
Comments	P1: Pond within Casa De Fruta park area. Landscaped and urban areas all around the pond. Red eared sliders and mallards within in pond. No emergent vegetation.

Pacheco_CRLF Habitat Site Assessment Data Sheet v2

Project	Pacheco Pass - CRLF Assessment
ID	79031
Survey Date	03/10/2020
User	Sara Cortez
List all Site Assessment Biologists (last name) (first name)	[X] Elder, Scott [X] Elia, Jared [X] Stoddard, Rob [ ] Other [X] Sara Cortez

Site Location



Latitude	36.963332
Longitude	-121.446203
Accuracy	5 m

ATTACH A MAP (INCLUDE HABITAT TYPES, IMPORTANT FEATURES, AND SPECIES LOCATIONS)

Proposed project name:	Pacheco Reservoir Expansion Project
Brief description of proposed action:	
Attach Map (pdf)	None
Attach Map (jpg)	None
Is this site within the current or historic range of CRF?	[ ] No [X] Yes
Are there known records of CRF within 1.6 km (1 mi) of the site?	[ ] No [ ] Yes

GENERAL AQUATIC HABITAT CHARACTERIZATION

POND	[X] No [ ] Yes
Perennial or Ephemeral?	[ ] Ephemeral [X] Perennial

STREAM	[X] No [ ] Yes
Non-pool habitat other:	
Other aquatic habitat characteristics?	Seasonal wetland - shallow area hydrologically connected to adj pond. Emergent veg throughout with some open water areas.
Other plant species observations?	*Nasturtium officinale* / Watercress, Water cress *Salix laevigata* / Polished willow, Red willow *Schoenoplectus acutus* / Hardstem bulrush *Typha angustifolia* / Narrow leaf cattail, Narrow-leaved cattail
Other animal species observations?	*Hyla regilla* / Pacific treefrog *Lithobates catesbeianus* / American bullfrog
Additional drawings:	None
Comments	W1

Pacheco_CRLF Habitat Site Assessment Data Sheet v2

Project	Pacheco Pass - CRLF Assessment
ID	78846
Survey Date	03/11/2020
User	Scott Elder
List all Site Assessment Biologists (last name) (first name)	[X] Elder, Scott [X] Elia, Jared [X] Stoddard, Rob [ ] Other [X] Sara Cortez

Site Location



Latitude	37.032512
Longitude	-121.310342
Accuracy	12 m

ATTACH A MAP (INCLUDE HABITAT TYPES, IMPORTANT FEATURES, AND SPECIES LOCATIONS)

Proposed project name:	Pacheco Reservoir Expansion Project
Brief description of proposed action:	
Attach Map (pdf)	None
Attach Map (jpg)	None
Is this site within the current or historic range of CRF?	[ ] No [X] Yes
Are there known records of CRF within 1.6 km (1 mi) of the site?	[ ] No [X] Yes

GENERAL AQUATIC HABITAT CHARACTERIZATION

POND	[ ] No [X] Yes
Size (ft)	
Maximum Depth (ft)	10

Vegetation emergent	*Typha latifolia* / Boradleaf cattail, Broad-leaved cattail
Vegetation overhanging	*Quercus agrifolia* / Coast live oak, Coast live oak, Encina *Salix laevigata* / Polished willow, Red willow
Dominant species	*Typha latifolia* / Boradleaf cattail, Broad-leaved cattail
Substrate	Silt and clay
Perennial or Ephemeral?	☐ Ephemeral ☒ Perennial
Pond photo(s)	



P5

STREAM	☒ No ☐ Yes
Non-pool habitat other:	
Other aquatic habitat characteristics?	Artificial stock pond. Overflows to Pacheco Creek through drainage.
Other plant species observations?	
Other animal species observations?	*Rana catesbeiana* / Bullfrog
Additional drawings:	None
Comments	P5

Pacheco_CRLF Habitat Site Assessment Data Sheet v2

Project	Pacheco Pass - CRLF Assessment
ID	78847
Survey Date	03/11/2020
User	Scott Elder
List all Site Assessment Biologists (last name) (first name)	[X] Elder, Scott [X] Elia, Jared [X] Stoddard, Rob [ ] Other [X] Sara Cortez

Site Location



Latitude	37.018547
Longitude	-121.331558
Accuracy	12 m

ATTACH A MAP (INCLUDE HABITAT TYPES, IMPORTANT FEATURES, AND SPECIES LOCATIONS)

Proposed project name:	Pacheco Reservoir Expansion Project
Brief description of proposed action:	
Attach Map (pdf)	None
Attach Map (jpg)	None
Is this site within the current or historic range of CRF?	[ ] No [X] Yes
Are there known records of CRF within 1.6 km (1 mi) of the site?	[ ] No [X] Yes

GENERAL AQUATIC HABITAT CHARACTERIZATION

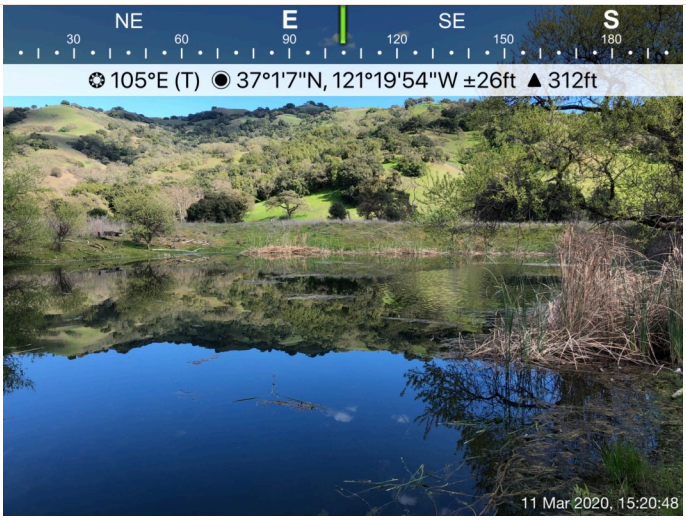
POND	[ ] No [X] Yes
Size (ft)	
Maximum Depth (ft)	8

Vegetation emergent	*Eleocharis macrostachya* / Spike rush *Typha latifolia* / Boradleaf cattail, Broad-leaved cattail
Vegetation overhanging	*Baccharis salicifolia* / Mule fat *Quercus agrifolia* / Coast live oak, Coast live oak, Encina *Salix laevigata* / Polished willow, Red willow
Dominant species	*Salix laevigata* / Polished willow, Red willow *Typha latifolia* / Boradleaf cattail, Broad-leaved cattail
Substrate	Clay, sand, cobble
Perennial or Ephemeral?	☐ Ephemeral ☒ Perennial

Pond photo(s)



P6



P6

STREAM	☒ No ☐ Yes
Non-pool habitat other:	
Other aquatic habitat characteristics?	Pond with surrounding berms. Patchy emergent vegetation along the shoreline. Overhanging trees on the majority of the shoreline. Fish species observed in pond: suckers and minnows.
Other plant species observations?	*Rumex acetosella* / Sheep sorrel *Toxicodendron diversilobum* / Poison oak, Western poison oak
Other animal species observations?	*Actinemys marmorata* / Western pond turtle
Additional drawings:	None
Comments	P6.

Pacheco_CRLF Habitat Site Assessment Data Sheet v2

Project	Pacheco Pass - CRLF Assessment
ID	78849
Survey Date	03/11/2020
User	Scott Elder
List all Site Assessment Biologists (last name) (first name)	[X] Elder, Scott [X] Elia, Jared [X] Stoddard, Rob [ ] Other [X] Sara Cortez

Site Location



Latitude	37.024188
Longitude	-121.326335
Accuracy	5 m

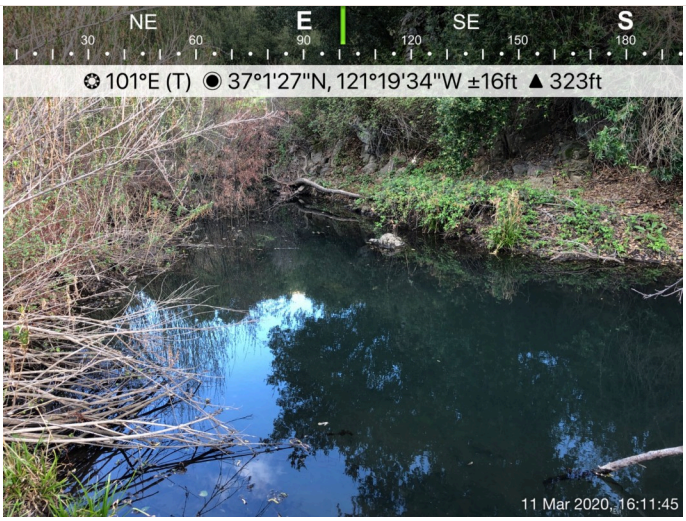
ATTACH A MAP (INCLUDE HABITAT TYPES, IMPORTANT FEATURES, AND SPECIES LOCATIONS)

Proposed project name:	Pacheco Reservoir Expansion Project
Brief description of proposed action:	
Attach Map (pdf)	None
Attach Map (jpg)	None
Is this site within the current or historic range of CRF?	[ ] No [X] Yes
Are there known records of CRF within 1.6 km (1 mi) of the site?	[ ] No [X] Yes

GENERAL AQUATIC HABITAT CHARACTERIZATION

POND	[ ] No [X] Yes
Size (ft)	1000
Maximum Depth (ft)	4

Vegetation emergent	*Cyperus eragrostis* / Tall cyperus
Vegetation overhanging	*Baccharis salicifolia* / Mule fat *Platanus racemosa* / California sycamore, Western sycamore *Salix laevigata* / Polished willow, Red willow
Dominant species	*Baccharis salicifolia* / Mule fat
Substrate	Silt and clay
Perennial or Ephemeral?	☐ Ephemeral ☒ Perennial
Pond photo(s)	



P7



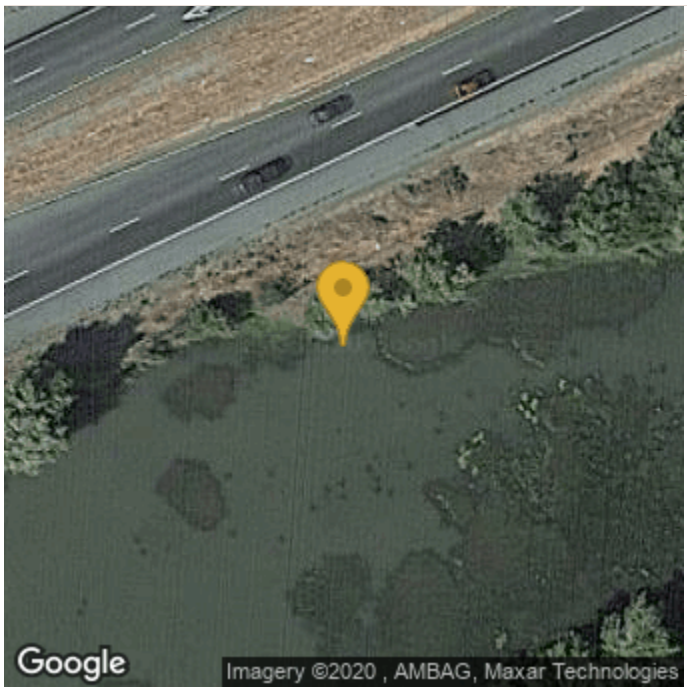
P7

STREAM	☒ No ☐ Yes
Non-pool habitat other:	
Other aquatic habitat characteristics?	Source of water is potentially from a seep. Little emergent vegetation on the banks. Mule fat represents a majority of over hanging vegetation.
Other plant species observations?	
Other animal species observations?	
Additional drawings:	None
Comments	P7

Pacheco_CRLF Habitat Site Assessment Data Sheet v2

Project	Pacheco Pass - CRLF Assessment
ID	79032
Survey Date	03/11/2020
User	Sara Cortez
List all Site Assessment Biologists (last name) (first name)	[X] Elder, Scott [X] Elia, Jared [ ] Stoddard, Rob [ ] Other [X] Sara Cortez

Site Location



Latitude	37.0331
Longitude	-121.320907
Accuracy	5 m

ATTACH A MAP (INCLUDE HABITAT TYPES, IMPORTANT FEATURES, AND SPECIES LOCATIONS)

Proposed project name:	Pacheco Reservoir Expansion Project
Brief description of proposed action:	
Attach Map (pdf)	None
Attach Map (jpg)	None
Is this site within the current or historic range of CRF?	[ ] No [X] Yes
Are there known records of CRF within 1.6 km (1 mi) of the site?	[X] No [ ] Yes

GENERAL AQUATIC HABITAT CHARACTERIZATION

POND	[X] No [ ] Yes
Perennial or Ephemeral?	[ ] Ephemeral [X] Perennial

STREAM	[X] No [ ] Yes
Non-pool habitat other:	
Other aquatic habitat characteristics?	Large shallow lake (avg 3-4' depth), encircled by narrow strip of shrubby riparian habitat. Majority of banks support no emergent habitat, but small pockets along eastern end.
Other plant species observations?	*Platanus racemosa* / California sycamore, Western sycamore *Salix exigua* / Narrowleaf willow *Salix lasiolepis* / Arroyo willow
Other animal species observations?	*Lithobates catesbeianus* / American bullfrog
Additional drawings:	None
Comments	L2.

Pacheco_CRLF Habitat Site Assessment Data Sheet v2

Project	Pacheco Pass - CRLF Assessment
ID	78848
Survey Date	03/12/2020
User	Scott Elder
List all Site Assessment Biologists (last name) (first name)	[X] Elder, Scott [X] Elia, Jared [X] Stoddard, Rob [ ] Other [X] Sara Cortez

Site Location



Latitude	37.038002
Longitude	-121.292164
Accuracy	6 m

ATTACH A MAP (INCLUDE HABITAT TYPES, IMPORTANT FEATURES, AND SPECIES LOCATIONS)

Proposed project name:	Pacheco Reservoir Expansion Project
Brief description of proposed action:	
Attach Map (pdf)	None
Attach Map (jpg)	None
Is this site within the current or historic range of CRF?	[ ] No [X] Yes
Are there known records of CRF within 1.6 km (1 mi) of the site?	[ ] No [X] Yes

GENERAL AQUATIC HABITAT CHARACTERIZATION

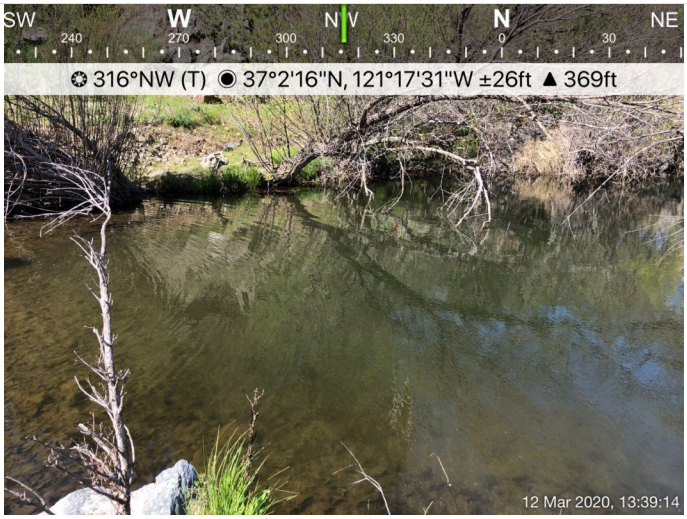
POND	[ ] No [X] Yes
Size (ft)	
Maximum Depth (ft)	5

Vegetation emergent	*Juncus effusus* / Common bog rush, Soft or lamp rush *Typha latifolia* / Boradleaf cattail, Broad-leaved cattail
Vegetation overhanging	*Salix laevigata* / Polished willow, Red willow
Dominant species	*Salix laevigata* / Polished willow, Red willow
Substrate	Sand and gravel
Perennial or Ephemeral?	☐ Ephemeral ☒ Perennial

Pond photo(s)



P9



P9

STREAM	☒ No ☐ Yes
Non-pool habitat other:	
Other aquatic habitat characteristics?	Patchy emergent veg along shoreline with minimal overhang from willows. Pond within a side channel of Pacheco Creek.
Other plant species observations?	
Other animal species observations?	*Actinemys marmorata* / Western pond turtle *Rana catesbeiana* / Bullfrog
Additional drawings:	None
Comments	P9

Pacheco_CRLF Habitat Site Assessment Data Sheet v2

Project	Pacheco Pass - CRLF Assessment
ID	79033
Survey Date	03/12/2020
User	Sara Cortez
List all Site Assessment Biologists (last name) (first name)	☐ Elder, Scott ☐ Elia, Jared ☐ Stoddard, Rob ☐ Other ☐ Sara Cortez

Site Location



Latitude	37.042312
Longitude	-121.289292
Accuracy	5 m

ATTACH A MAP (INCLUDE HABITAT TYPES, IMPORTANT FEATURES, AND SPECIES LOCATIONS)

Proposed project name:	Pacheco Reservoir Expansion Project
Brief description of proposed action:	
Attach Map (pdf)	None
Attach Map (jpg)	None
Is this site within the current or historic range of CRF?	☐ No ☒ Yes
Are there known records of CRF within 1.6 km (1 mi) of the site?	☐ No ☒ Yes

GENERAL AQUATIC HABITAT CHARACTERIZATION

POND	☒ No ☐ Yes
Perennial or Ephemeral?	☒ Ephemeral

	☐ Perennial
Date it goes dry?	
STREAM	☒ No ☐ Yes
Non-pool habitat other:	
Other aquatic habitat characteristics?	Avg depth 2-3', ponds ~10-30' long, 5-10' wide
Other plant species observations?	*Carex obnupta* / Slough sedge, Slough sedge *Equisetum arvense* / Common horsetail *Juncus xiphioides* / Iris leaved rush, Iris-leaved rush *Salix laevigata* / Polished willow, Red willow
Other animal species observations?	*Hyla regilla* / Pacific treefrog
Additional drawings:	None
Comments	Feature O1. Cluster of ponds within floodplain of Pacheco Creek (DS of S Fork confluence) appear you be filled at last extremely high flow event. Potentially observed CRLF, not confirmed.

Pacheco_CRLF Habitat Site Assessment Data Sheet v2

Project	Pacheco Pass - CRLF Assessment
ID	83932
Survey Date	03/31/2020
User	Scott Elder
List all Site Assessment Biologists (last name) (first name)	[X] Elder, Scott [X] Elia, Jared [ ] Stoddard, Rob [ ] Other [ ] Sara Cortez

Site Location



Latitude	
Longitude	
Accuracy	0 m

ATTACH A MAP (INCLUDE HABITAT TYPES, IMPORTANT FEATURES, AND SPECIES LOCATIONS)

Proposed project name:	Pacheco Reservoir Expansion Project
Brief description of proposed action:	
Attach Map (pdf)	None
Attach Map (jpg)	None
Is this site within the current or historic range of CRF?	[ ] No [X] Yes
Are there known records of CRF within 1.6 km (1 mi) of the site?	[ ] No [X] Yes

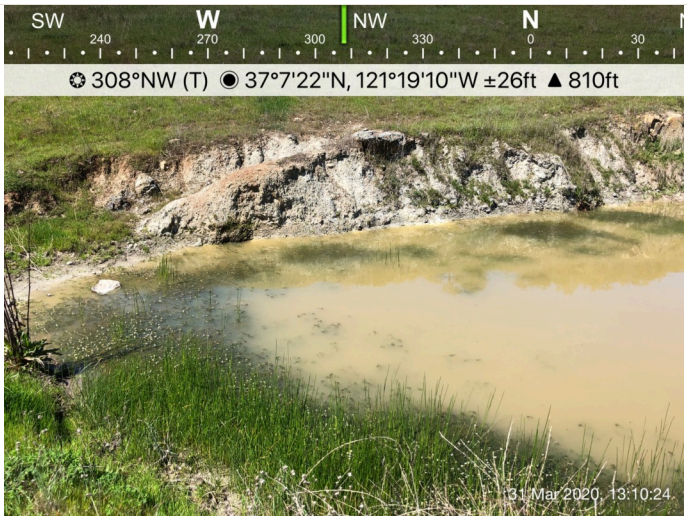
GENERAL AQUATIC HABITAT CHARACTERIZATION

POND	[ ] No [X] Yes
Size (ft)	1900
Maximum Depth (ft)	3

Vegetation emergent	*Eleocharis macrostachya* / Spike rush
Vegetation overhanging	
Dominant species	*Eleocharis macrostachya* / Spike rush
Substrate	Clay, silt, sand
Perennial or Ephemeral?	[X] Ephemeral [ ] Perennial
Date it goes dry?	09/01/2020
Pond photo(s)	



P11



P11

STREAM	[X] No [ ] Yes
Non-pool habitat other:	
Other aquatic habitat characteristics?	Stock pond within grassland. Minimal emergent vegetation.
Other plant species observations?	*Rumex crispus* / Curly dock
Other animal species observations?	*Pseudacris sierra* / Sierran treefrog
Additional drawings:	None
Comments	P11. Treefrog tadpoles and aquatic invertebrates including water boatmen, water striders.

Pacheco_CRLF Habitat Site Assessment Data Sheet v2

Project	Pacheco Pass - CRLF Assessment
ID	83933
Survey Date	03/31/2020
User	Scott Elder
List all Site Assessment Biologists (last name) (first name)	[X] Elder, Scott [X] Elia, Jared [ ] Stoddard, Rob [ ] Other [ ] Sara Cortez

Site Location



Latitude	
Longitude	
Accuracy	0 m

ATTACH A MAP (INCLUDE HABITAT TYPES, IMPORTANT FEATURES, AND SPECIES LOCATIONS)

Proposed project name:	Pacheco Reservoir Expansion Project
Brief description of proposed action:	
Attach Map (pdf)	None
Attach Map (jpg)	None
Is this site within the current or historic range of CRF?	[ ] No [X] Yes
Are there known records of CRF within 1.6 km (1 mi) of the site?	[ ] No [X] Yes

GENERAL AQUATIC HABITAT CHARACTERIZATION

POND	[ ] No [X] Yes
Size (ft)	10000
Maximum Depth (ft)	10

Vegetation emergent	*Rumex crispus* / Curly dock
Vegetation overhanging	*Salix laevigata* / Polished willow, Red willow
Dominant species	
Substrate	Clay, silt, sand
Perennial or Ephemeral?	☐ Ephemeral ☒ Perennial
Pond photo(s)	



P14



P14

STREAM	☒ No ☐ Yes
Non-pool habitat other:	
Other aquatic habitat characteristics?	Large stock pond within grassland. Drainage from hillslope flows into pond. Minimal to no emergent vegetation along the shoreline.
Other plant species observations?	
Other animal species observations?	
Additional drawings:	None
Comments	P14. Aquatic invertebrates. Marginal breeding habit for CRLF.

Pacheco_CRLF Habitat Site Assessment Data Sheet v2

Project	Pacheco Pass - CRLF Assessment
ID	83934
Survey Date	03/31/2020
User	Scott Elder
List all Site Assessment Biologists (last name) (first name)	[X] Elder, Scott [X] Elia, Jared [ ] Stoddard, Rob [ ] Other [ ] Sara Cortez

Site Location



Latitude	
Longitude	
Accuracy	0 m

ATTACH A MAP (INCLUDE HABITAT TYPES, IMPORTANT FEATURES, AND SPECIES LOCATIONS)

Proposed project name:	Pacheco Reservoir Expansion Project
Brief description of proposed action:	
Attach Map (pdf)	None
Attach Map (jpg)	None
Is this site within the current or historic range of CRF?	[ ] No [X] Yes
Are there known records of CRF within 1.6 km (1 mi) of the site?	[ ] No [X] Yes

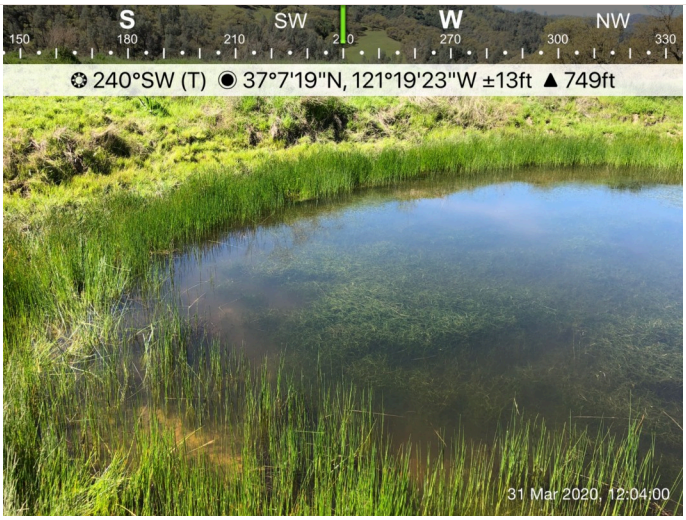
GENERAL AQUATIC HABITAT CHARACTERIZATION

POND	[ ] No [X] Yes
Size (ft)	2400
Maximum Depth (ft)	3

Vegetation emergent	*Eleocharis macrostachya* / Spike rush
Vegetation overhanging	
Dominant species	*Eleocharis macrostachya* / Spike rush
Substrate	Clay and silt
Perennial or Ephemeral?	[X] Ephemeral [ ] Perennial
Date it goes dry?	09/01/2020
Pond photo(s)	



P10



P10

STREAM	[X] No [ ] Yes
Non-pool habitat other:	
Other aquatic habitat characteristics?	Stock pond within grassland on hill slope.
Other plant species observations?	
Other animal species observations?	*Pseudacris sierra* / Sierran treefrog
Additional drawings:	None
Comments	P10. Various aquatic invertebrates within pond: Dragonfly larvae, diving beetle, water boatmen.

Pacheco_CRLF Habitat Site Assessment Data Sheet v2

Project	Pacheco Pass - CRLF Assessment
ID	83935
Survey Date	03/31/2020
User	Scott Elder
List all Site Assessment Biologists (last name) (first name)	[X] Elder, Scott [X] Elia, Jared [ ] Stoddard, Rob [ ] Other [ ] Sara Cortez

Site Location



Latitude	
Longitude	
Accuracy	0 m

ATTACH A MAP (INCLUDE HABITAT TYPES, IMPORTANT FEATURES, AND SPECIES LOCATIONS)

Proposed project name:	Pacheco Reservoir Expansion Project
Brief description of proposed action:	
Attach Map (pdf)	None
Attach Map (jpg)	None
Is this site within the current or historic range of CRF?	[ ] No [X] Yes
Are there known records of CRF within 1.6 km (1 mi) of the site?	[ ] No [X] Yes

GENERAL AQUATIC HABITAT CHARACTERIZATION

POND	[ ] No [X] Yes
Size (ft)	2100
Maximum Depth (ft)	2

Vegetation emergent	*Eleocharis macrostachya* / Spike rush *Rumex crispus* / Curly dock
Vegetation overhanging	
Dominant species	*Eleocharis macrostachya* / Spike rush
Substrate	Clay and silt
Perennial or Ephemeral?	[X] Ephemeral [ ] Perennial
Date it goes dry?	09/01/2020
Pond photo(s)	



P12



P12

STREAM	[X] No [ ] Yes
Non-pool habitat other:	
Other aquatic habitat characteristics?	Stock pond within grassland. Adjacent wetland. Fed by seep/ drainage from hill slope.
Other plant species observations?	
Other animal species observations?	*Pseudacris sierra* / Sierran treefrog
Additional drawings:	None
Comments	P12. Tree frog tadpoles, water boatmen, diving beetles. Marginal aquatic breeding habitat for CRLF.

Pacheco_CRLF Habitat Site Assessment Data Sheet v2

Project	Pacheco Pass - CRLF Assessment
ID	83936
Survey Date	03/31/2020
User	Scott Elder
List all Site Assessment Biologists (last name) (first name)	[X] Elder, Scott [X] Elia, Jared [ ] Stoddard, Rob [ ] Other [ ] Sara Cortez

Site Location



Latitude	
Longitude	
Accuracy	0 m

ATTACH A MAP (INCLUDE HABITAT TYPES, IMPORTANT FEATURES, AND SPECIES LOCATIONS)

Proposed project name:	Pacheco Reservoir Expansion Project
Brief description of proposed action:	
Attach Map (pdf)	None
Attach Map (jpg)	None
Is this site within the current or historic range of CRF?	[ ] No [X] Yes
Are there known records of CRF within 1.6 km (1 mi) of the site?	[ ] No [X] Yes

GENERAL AQUATIC HABITAT CHARACTERIZATION

POND	[ ] No [X] Yes
Size (ft)	1500
Maximum Depth (ft)	5

Vegetation emergent	*Eleocharis macrostachya* / Spike rush *Rumex crispus* / Curly dock
Vegetation overhanging	*Baccharis pilularis* / Coyote brush *Salix laevigata* / Polished willow, Red willow
Dominant species	*Rumex crispus* / Curly dock
Substrate	Clay and silt
Perennial or Ephemeral?	☐ Ephemeral ☒ Perennial

Pond photo(s)



P13



P13

STREAM	☒ No ☐ Yes
Non-pool habitat other:	
Other aquatic habitat characteristics?	Stock pond within grassland. Adjacent wetland fed by seep/ drainage from hill slope.
Other plant species observations?	
Other animal species observations?	
Additional drawings:	None
Comments	P13. No tadpoles observed.

Pacheco_CRLF Habitat Site Assessment Data Sheet v2

Project	Pacheco Pass - CRLF Assessment
ID	84373
Survey Date	04/01/2020
User	Robert Stoddard
List all Site Assessment Biologists (last name) (first name)	[X] Elder, Scott [ ] Elia, Jared [X] Stoddard, Rob [ ] Other [ ] Sara Cortez

Site Location



Latitude	37.085749
Longitude	-121.287411
Accuracy	5 m

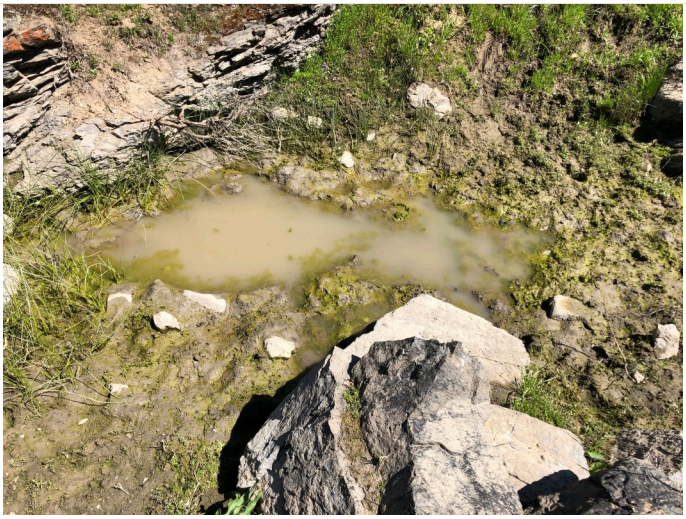
ATTACH A MAP (INCLUDE HABITAT TYPES, IMPORTANT FEATURES, AND SPECIES LOCATIONS)

Proposed project name:	Pacheco Reservoir Expansion Project
Brief description of proposed action:	
Attach Map (pdf)	None
Attach Map (jpg)	None
Is this site within the current or historic range of CRF?	[ ] No [X] Yes
Are there known records of CRF within 1.6 km (1 mi) of the site?	[ ] No [X] Yes

GENERAL AQUATIC HABITAT CHARACTERIZATION

POND	[ ] No [X] Yes
Size (ft)	20
Maximum Depth (ft)	0.5

Vegetation emergent	*Eleocharis macrostachya* / Spike rush *Juncus acutus* / Spiny rush *Rumex crispus* / Curly dock
Vegetation overhanging	
Dominant species	*Eleocharis macrostachya* / Spike rush
Substrate	Silt, clay, and boulder
Perennial or Ephemeral?	[X] Ephemeral [ ] Perennial
Date it goes dry?	05/01/2020
Pond photo(s)	



STREAM	[X] No [ ] Yes
Non-pool habitat other:	
Other aquatic habitat characteristics?	
Other plant species observations?	
Other animal species observations?	*Hyla regilla* / Pacific treefrog
Additional drawings:	None
Comments	P17. Swale adjacent to access road.

Pacheco_CRLF Habitat Site Assessment Data Sheet v2

Project	Pacheco Pass - CRLF Assessment
ID	84374
Survey Date	04/01/2020
User	Robert Stoddard
List all Site Assessment Biologists (last name) (first name)	[X] Elder, Scott [ ] Elia, Jared [X] Stoddard, Rob [ ] Other [ ] Sara Cortez

Site Location



Latitude	37.100586
Longitude	-121.28841
Accuracy	5 m

ATTACH A MAP (INCLUDE HABITAT TYPES, IMPORTANT FEATURES, AND SPECIES LOCATIONS)

Proposed project name:	Pacheco Reservoir Expansion Project
Brief description of proposed action:	
Attach Map (pdf)	None
Attach Map (jpg)	None
Is this site within the current or historic range of CRF?	[ ] No [X] Yes
Are there known records of CRF within 1.6 km (1 mi) of the site?	[ ] No [X] Yes

GENERAL AQUATIC HABITAT CHARACTERIZATION

POND	[ ] No [X] Yes
Size (ft)	300
Maximum Depth (ft)	1.5

Vegetation emergent	*Eleocharis macrostachya* / Spike rush *Rumex crispus* / Curly dock
Vegetation overhanging	
Dominant species	*Eleocharis macrostachya* / Spike rush
Substrate	Clay, silt, and sand.
Perennial or Ephemeral?	[X] Ephemeral [ ] Perennial
Date it goes dry?	06/01/2020
Pond photo(s)	



STREAM	[X] No [ ] Yes
Non-pool habitat other:	
Other aquatic habitat characteristics?	Cattle pond in grassland. Woody debris.
Other plant species observations?	
Other animal species observations?	*Hyla regilla* / Pacific treefrog
Additional drawings:	None
Comments	P16_Marginal breeding habitat for RLF.

Pacheco_CRLF Habitat Site Assessment Data Sheet v2

Project	Pacheco Pass - CRLF Assessment
ID	84375
Survey Date	04/01/2020
User	Robert Stoddard
List all Site Assessment Biologists (last name) (first name)	[X] Elder, Scott [ ] Elia, Jared [X] Stoddard, Rob [ ] Other [ ] Sara Cortez

Site Location



Latitude	37.106777
Longitude	-121.30533
Accuracy	5 m

ATTACH A MAP (INCLUDE HABITAT TYPES, IMPORTANT FEATURES, AND SPECIES LOCATIONS)

Proposed project name:	Pacheco Reservoir Expansion Project
Brief description of proposed action:	
Attach Map (pdf)	None
Attach Map (jpg)	None
Is this site within the current or historic range of CRF?	[ ] No [X] Yes
Are there known records of CRF within 1.6 km (1 mi) of the site?	[ ] No [X] Yes

GENERAL AQUATIC HABITAT CHARACTERIZATION

POND	[ ] No [X] Yes
Size (ft)	2250
Maximum Depth (ft)	4

Vegetation emergent	*Eleocharis macrostachya* / Spike rush
Vegetation overhanging	
Dominant species	*Eleocharis macrostachya* / Spike rush
Substrate	Clay/ silt
Perennial or Ephemeral?	[X] Ephemeral [ ] Perennial
Date it goes dry?	09/01/2020
Pond photo(s)	



P15

STREAM	[X] No [ ] Yes
Non-pool habitat other:	
Other aquatic habitat characteristics?	Stock pond in grassland. Adjacent to drainage. Near abandoned burrow complex.
Other plant species observations?	
Other animal species observations?	
Additional drawings:	None
Comments	P15_No wildlife observed at pond. Pond contains aquatic insects. Marginal breeding habitat for RLF.

Pacheco_CRLF Habitat Site Assessment Data Sheet v2

Project	Pacheco Pass - CRLF Assessment
ID	84669
Survey Date	04/02/2020
User	Robert Stoddard
List all Site Assessment Biologists (last name) (first name)	[X] Elder, Scott [ ] Elia, Jared [X] Stoddard, Rob [ ] Other [ ] Sara Cortez

Site Location



Latitude	37.064248
Longitude	-121.303662
Accuracy	5 m

ATTACH A MAP (INCLUDE HABITAT TYPES, IMPORTANT FEATURES, AND SPECIES LOCATIONS)

Proposed project name:	Pacheco Reservoir Expansion Project
Brief description of proposed action:	
Attach Map (pdf)	None
Attach Map (jpg)	None
Is this site within the current or historic range of CRF?	[ ] No [X] Yes
Are there known records of CRF within 1.6 km (1 mi) of the site?	[ ] No [X] Yes

GENERAL AQUATIC HABITAT CHARACTERIZATION

POND	[ ] No [X] Yes
Size (ft)	100000
Maximum Depth (ft)	6

Vegetation emergent	*Juncus acutus* / Spiny rush *Rumex crispus* / Curly dock *Xanthium spinosum* / Spiny cocklebur
Vegetation overhanging	*Quercus lobata* / Valley oak, Valley oak, Roble *Salix laevigata* / Polished willow, Red willow
Dominant species	*Eleocharis macrostachya* / Spike rush
Substrate	Clay and mud
Perennial or Ephemeral?	☐ Ephemeral ☒ Perennial
Pond photo(s)	



STREAM	☒ No ☐ Yes
Non-pool habitat other:	
Other aquatic habitat characteristics?	Algae abscess aquatic vegetation. Fed by seasonal drainage.
Other plant species observations?	
Other animal species observations?	*Rana catesbeiana* / Bullfrog
Additional drawings:	None
Comments	P18. Cattle pond in seasonal drainage. Hills with mixed oaks and grassland. Suitable breeding habitat for RLF.

Pacheco_CRLF Habitat Site Assessment Data Sheet v2

Project	Pacheco Pass - CRLF Assessment
ID	84670
Survey Date	04/02/2020
User	Robert Stoddard
List all Site Assessment Biologists (last name) (first name)	[X] Elder, Scott [ ] Elia, Jared [X] Stoddard, Rob [ ] Other [ ] Sara Cortez

Site Location



Latitude	37.06672
Longitude	-121.307268
Accuracy	10 m

ATTACH A MAP (INCLUDE HABITAT TYPES, IMPORTANT FEATURES, AND SPECIES LOCATIONS)

Proposed project name:	Pacheco Reservoir Expansion Project
Brief description of proposed action:	
Attach Map (pdf)	None
Attach Map (jpg)	None
Is this site within the current or historic range of CRF?	[ ] No [X] Yes
Are there known records of CRF within 1.6 km (1 mi) of the site?	[ ] No [X] Yes

GENERAL AQUATIC HABITAT CHARACTERIZATION

POND	[ ] No [X] Yes
Size (ft)	500
Maximum Depth (ft)	2.5

Vegetation emergent	*Eleocharis macrostachya* / Spike rush *Rumex crispus* / Curly dock
Vegetation overhanging	
Dominant species	*Eleocharis macrostachya* / Spike rush *Rumex crispus* / Curly dock
Substrate	Clay silt
Perennial or Ephemeral?	☐ Ephemeral ☒ Perennial
Pond photo(s)	



STREAM	☒ No ☐ Yes
Non-pool habitat other:	
Other aquatic habitat characteristics?	Fed by underground seep.
Other plant species observations?	
Other animal species observations?	*Hyla regilla* / Pacific treefrog *Rana catesbeiana* / Bullfrog
Additional drawings:	None
Comments	P19_Seep fed cattle pond in grassland. Suitable breeding habitat for RLF.

Subexhibit B – Site Assessment Results and Survey Locations

Label	Latitude	Longitude	Area (acre)	Suitability (Yes/Marginal/No)	Aquatic Feature Type	Within Study Area
L-1	36.980396	-121.462298	73.889	Yes	lake	Yes
L-2	37.032612	-121.320222	12.246	Marginal	lake	Yes
O-1	37.042294	-121.289511	0.023	No	floodplain pool	Yes
P-1	36.987601	-121.381910	0.149	No	pond	Yes
P-10	37.122130	-121.323233	0.057	Yes	pond	Yes
P-100	37.055473	-121.286376	0.120	Yes	pond	Yes
P-101	37.049362	-121.290357	1.031	No	pond	Yes
P-102	37.049139	-121.285561	0.464	Yes	pond	Yes
P-103	37.065109	-121.291127	0.279	No	pond	Yes
P-104	37.049689	-121.301513	0.046	Yes	pond	
P-105	37.047410	-121.290344	0.039	No	pond	Yes
P-106	37.046156	-121.297227	0.052	Yes	pond	
P-107	37.046094	-121.301623	0.147	Yes	pond	
P-108	37.041905	-121.314929	0.088	Yes	pond	
P-11	37.122831	-121.319499	0.044	Marginal	pond	Yes
P-111	37.040977	-121.299344	0.415	Yes	pond	
P-112	37.039881	-121.269176	0.054	Yes	pond	
P-113	37.039839	-121.261739	0.083	Yes	pond	
P-114	37.037894	-121.334848	0.205	Yes	pond	
P-115	37.037262	-121.333700	0.162	Yes	pond	
P-116	37.036351	-121.259737	0.521	Yes	pond	
P-117	37.036170	-121.279937	0.053	Yes	pond	
P-118	37.036148	-121.289592	0.286	Yes	pond	
P-12	37.114334	-121.317700	0.049	Marginal	pond	Yes
P-120	37.033295	-121.310387	0.075	Marginal	pond	Yes
P-122	37.032054	-121.332549	0.087	Yes	pond	
P-123	37.030095	-121.279017	0.484	Yes	pond	
P-125	37.028166	-121.328897	0.111	Yes	pond	
P-126	37.025496	-121.313235	0.994	Yes	pond	
P-127	37.024616	-121.275211	0.047	Yes	pond	
P-129	37.022733	-121.299327	0.365	Yes	pond	
P-13	37.113399	-121.316736	0.073	Marginal	pond	Yes
P-132	37.020590	-121.358816	0.117	Marginal	pond	
P-133	37.020359	-121.313344	0.230	Yes	pond	
P-134	37.020263	-121.336493	0.208	Yes	pond	
P-135	37.019596	-121.304223	0.192	Yes	pond	
P-136	37.018739	-121.371019	0.097	Yes	pond	
P-137	37.015825	-121.360921	4.556	Yes	pond	
P-138	37.015599	-121.371076	0.065	No	pond	
P-139	37.013691	-121.380053	0.031	No	pond	
P-14	37.111925	-121.315358	1.264	Marginal	pond	Yes
P-140	37.013470	-121.363415	0.091	Marginal	pond	
P-141	37.013433	-121.322999	1.120	Yes	pond	
P-142	37.012980	-121.357207	0.334	No	pond	
P-144	37.010966	-121.365551	0.023	No	pond	
P-145	37.009484	-121.374653	0.136	Yes	pond	
P-146	37.008465	-121.357088	6.067	Yes	pond	Yes
P-147	37.008343	-121.385925	2.567	Marginal	pond	
P-148	37.007363	-121.350414	0.882	No	pond	Yes
P-149	37.006304	-121.355750	1.666	No	pond	Yes
P-15	37.106825	-121.305356	0.052	Marginal	pond	Yes
P-152	37.004577	-121.373547	0.269	Yes	pond	
P-153	37.003929	-121.351680	0.088	Yes	pond	
P-154	37.003552	-121.338632	0.362	Yes	pond	
P-155	37.002468	-121.322590	3.253	Yes	pond	
P-156	37.000815	-121.381737	5.336	Marginal	pond	

P-157	37.000014	-121.360272	0.063	No	pond	
P-158	36.999597	-121.456538	0.264	Yes	pond	
P-159	36.997878	-121.466056	0.289	Yes	pond	
P-16	37.100475	-121.288421	0.010	Marginal	pond	Yes
P-161	36.997307	-121.365024	1.225	Yes	pond	
P-162	36.995441	-121.452950	0.249	Yes	pond	
P-163	36.995390	-121.466411	0.876	Yes	pond	
P-164	36.995063	-121.475500	0.072	No	pond	
P-165	36.993910	-121.338856	0.149	Yes	pond	
P-166	36.993860	-121.431866	0.665	Yes	pond	
P-167	36.993034	-121.473423	2.608	Yes	pond	
P-168	36.992725	-121.391312	0.156	No	pond	
P-169	36.991867	-121.365797	0.034	No	pond	
P-17	37.085692	-121.287412	0.006	No	pond	Yes
P-171	36.991364	-121.366260	0.092	Marginal	pond	
P-172	36.990327	-121.395129	0.287	Yes	pond	
P-173	36.990327	-121.396947	0.460	Yes	pond	
P-174	36.990078	-121.372726	1.119	Yes	pond	
P-175	36.989668	-121.452706	0.186	No	pond	
P-176	36.989481	-121.365363	0.161	Yes	pond	
P-177	36.983745	-121.390934	0.467	Yes	pond	
P-179	36.982731	-121.479313	0.715	No	pond	
P-18	37.064163	-121.304040	0.384	Yes	pond	Yes
P-181	36.980858	-121.388310	0.090	Yes	pond	
P-183	36.979585	-121.433864	0.123	No	pond	
P-184	36.978929	-121.477334	6.017	No	pond	
P-185	36.978915	-121.355522	0.753	Yes	pond	
P-189	36.974570	-121.431273	0.109	No	pond	
P-19	37.066753	-121.307282	0.017	Yes	pond	Yes
P-190	36.974340	-121.439554	3.660	Yes	pond	
P-191	36.974188	-121.461520	0.275	No	pond	Yes
P-192	36.973268	-121.439971	0.803	Yes	pond	
P-193	36.973221	-121.410909	0.172	Marginal	pond	
P-194	36.973009	-121.391117	0.058	No	pond	
P-195	36.972612	-121.440227	2.372	No	pond	
P-196	36.971777	-121.447881	1.631	No	pond	
P-197	36.971394	-121.459512	0.833	Marginal	pond	
P-198	36.969048	-121.405125	0.041	Yes	pond	
P-2	36.988654	-121.381070	0.078	No	pond	Yes
P-20	37.041067	-121.282485	0.090	Yes	pond	
P-200	36.966573	-121.441628	0.369	No	pond	
P-201	36.965831	-121.403511	0.033	Yes	pond	
P-202	36.965591	-121.441855	1.368	No	pond	
P-203	36.964427	-121.402862	0.029	Marginal	pond	
P-204	36.963988	-121.415640	0.380	No	pond	
P-205	36.963895	-121.395534	0.101	Marginal	pond	
P-206	36.962466	-121.412635	0.481	Yes	pond	
P-207	36.962090	-121.411990	0.254	Yes	pond	
P-208	36.956485	-121.431284	1.272	Yes	pond	
P-209	36.955618	-121.385618	0.510	No	pond	
P-21	37.140853	-121.341604	0.226	Marginal	pond	
P-210	36.955000	-121.420395	19.876	Yes	pond	
P-211	36.953003	-121.418902	1.810	No	pond	
P-213	36.952329	-121.417901	2.526	No	pond	
P-214	36.951902	-121.444741	4.553	No	pond	
P-216	36.947383	-121.436719	4.404	Marginal	pond	
P-217	36.946818	-121.420424	0.745	No	pond	

P-218	36.946206	-121.429943	0.494	No	pond	
P-219	36.945864	-121.444212	1.339	Yes	pond	
P-22	37.136875	-121.365598	0.505	Yes	pond	
P-220	36.945371	-121.386528	0.252	No	pond	
P-221	36.938392	-121.364986	0.552	No	pond	
P-222	36.934138	-121.367072	5.927	Marginal	pond	
P-226	37.028313	-121.339049	0.05182	Yes	pond	
P-228	37.037368	-121.269137	0.075	Yes	pond	
P-229	37.033536	-121.315671	0.176	Yes	pond	Yes
P-24	37.133099	-121.336078	0.033	Yes	pond	
P-25	37.131902	-121.317853	0.046	Yes	pond	
P-26	37.130511	-121.343267	0.685	Yes	pond	
P-27	37.130273	-121.320212	0.101	Yes	pond	
P-28	37.124838	-121.272652	1.018	Yes	pond	
P-29	37.124615	-121.306190	0.030	Yes	pond	
P-3	36.963102	-121.447580	3.221	Yes	pond	Yes
P-30	37.124236	-121.306008	0.049	Yes	pond	
P-31	37.124210	-121.374243	0.514	Yes	pond	
P-33	37.120187	-121.335920	0.048	Marginal	pond	Yes
P-34	37.119298	-121.278224	0.493	Yes	pond	
P-35	37.117068	-121.303920	0.142	Yes	pond	
P-36	37.116729	-121.295499	0.070	Yes	pond	
P-38	37.113778	-121.343922	1.143	Yes	pond	
P-39	37.113621	-121.363498	0.162	No	pond	
P-4	36.963550	-121.454853	35.327	Marginal	pond	
P-40	37.112313	-121.371766	0.282	Yes	pond	
P-41	37.112220	-121.345196	1.982	Yes	pond	
P-42	37.109825	-121.332098	0.080	Yes	pond	
P-43	37.109406	-121.334313	0.043	Yes	pond	
P-44	37.106328	-121.340607	0.442	Yes	pond	
P-45	37.105932	-121.347840	0.055	Yes	pond	
P-47	37.103347	-121.347747	0.807	Yes	pond	
P-48	37.103041	-121.328990	0.024	No	pond	
P-5	37.032279	-121.309866	0.774	Yes	pond	Yes
P-50	37.101443	-121.311592	0.094	Yes	pond	
P-51	37.100234	-121.316993	0.379	Yes	pond	
P-52	37.099205	-121.248397	0.194	Yes	pond	
P-53	37.098445	-121.322877	0.043	Yes	pond	
P-54	37.097302	-121.309945	0.094	Yes	pond	
P-55	37.097252	-121.313553	0.030	No	pond	
P-56	37.096829	-121.320201	0.051	Yes	pond	
P-57	37.096376	-121.311226	0.066	No	pond	
P-58	37.095503	-121.314200	0.053	No	pond	
P-6	37.018623	-121.331592	0.622	Yes	pond	Yes
P-61	37.092789	-121.320502	8.930	Yes	pond	
P-62	37.092223	-121.266954	0.967	Yes	pond	
P-64	37.091333	-121.255755	0.395	Yes	pond	
P-66	37.090588	-121.302230	0.312	Yes	pond	
P-67	37.088398	-121.306958	1.224	Yes	pond	
P-68	37.088027	-121.278450	0.291	Yes	pond	
P-69	37.084826	-121.302532	0.055	Yes	pond	
P-7	37.024033	-121.326257	0.031	Marginal	pond	Yes
P-70	37.083898	-121.329248	0.948	Yes	pond	
P-72	37.083488	-121.313818	0.095	Yes	pond	
P-73	37.083214	-121.321096	0.065	Yes	pond	
P-74	37.081760	-121.265180	1.101	Yes	pond	
P-75	37.079683	-121.319556	0.279	Yes	pond	

P-76	37.077795	-121.317415	0.204	Yes	pond	
P-77	37.076457	-121.311809	0.074	Yes	pond	
P-78	37.076107	-121.269848	1.415	Yes	pond	
P-79	37.074793	-121.316333	0.120	Yes	pond	
P-8	37.025681	-121.322899	0.186	Yes	pond	
P-80	37.074454	-121.327394	0.465	Yes	pond	
P-81	37.072474	-121.319176	0.070	Yes	pond	
P-82	37.069530	-121.320633	0.029	Yes	pond	
P-83	37.066211	-121.265445	1.275	Yes	pond	
P-84	37.064376	-121.281799	1.897	Yes	pond	
P-86	37.062311	-121.294533	181.260	No	pond	Yes
P-87	37.062300	-121.280689	0.220	Yes	pond	
P-88	37.061479	-121.311482	0.081	Yes	pond	
P-89	37.059509	-121.318317	1.655	Marginal	pond	
P-9	37.038018	-121.292141	0.038	Marginal	pond	Yes
P-90	37.058802	-121.323051	0.051	Yes	pond	
P-91	37.056714	-121.272397	0.767	Yes	pond	
P-92	37.055032	-121.285345	0.268	No	wetland	Yes
P-94	37.054645	-121.269610	0.053	Yes	pond	
P-95	37.054071	-121.285961	0.102	No	wetland	Yes
P-96	37.052540	-121.301855	0.093	Yes	pond	
P-97	37.052490	-121.311338	0.249	Yes	pond	
P-98	37.052114	-121.313388	0.273	Yes	pond	
P-99	37.051894	-121.285910	1.398	No	wetland	Yes
W-1	36.963476	-121.446606	2.002	No	wetland	Yes

Draft Environmental Impact Report

Appendix

Biological Resources – Botanical/Wildlife

Attachment A

Botanical and Wildlife Special-Status Species Habitat Assessment

Exhibit D

California Tiger Salamander Site Assessment

Pacheco Reservoir Expansion Project

November 2021

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Appendices

Subexhibit A – Representative Aquatic and Terrestrial Habitat Photographs
Subexhibit B – List of all Aquatic Features, Location, Habitat Type, Size and Suitability

Acronyms and Abbreviations

CAS	California Academy of Sciences
CDFW	California Department of Fish and Wildlife
CNDDB	California Natural Diversity Database
CTS	California tiger salamander (*Ambystoma californiense*)
DPS	Distinct Population Segment
Project	Pacheco Reservoir Expansion Project
SCVHP	Santa Clara Valley Habitat Plan
Stantec	Stantec Consulting Inc.
Report	California Tiger Salamander Site Assessment Report
USFWS	United States Fish and Wildlife Service

Chapter 1 Introduction

This California Tiger Salamander Site Assessment Report (Report) was prepared in support of the Pacheco Reservoir Expansion Project (Project) and describes the methods and results of the California tiger salamander (*Ambystoma californiense*) (CTS) site assessment conducted for the Project. The results presented in this Report are intended to further develop an understanding of CTS (i.e., specifically the Central Coast District Population Segment [DPS]) potential to occur within and adjacent to the Project study area, identification of potential CTS habitat, and provide both qualitative and quantitative information regarding the potential CTS habitat identified. The information generated from this Report is expected to be used to inform Project impact assessments/calculations for the species and the potential future mitigation needs that may be required for the Project.

Chapter 2 Methods

2.1 Project Study Area and Assessment Area

The Project study area, for the purposes of this Report, generally encompasses the existing Pacheco Reservoir and upstream areas (i.e., generally north of the existing North Fork Dam) surrounding the reservoir up to the expanded reservoir boundary plus an approximately 500-foot buffer. The Project study area also encompasses approximately 17 miles of Pacheco Creek along the 100-year floodplain from the existing North Fork Dam downstream to San Felipe Lake. The Project study area encompasses approximately 6,835 acres and includes all currently proposed impact areas associated with the Project (e.g., dam footprint, inundation area, borrow sites). The assessment area for this Report includes all areas within 1.24 miles of the Project study area and is approximately 48,500 acres in size. The Project study area and assessment area combined total 55,336 acres. The location and boundaries of the Project study area and the assessment area are illustrated in Figure 2-1.

2.2 Site Assessment Methods

The site assessment was conducted in accordance with the United States Fish and Wildlife Service (USFWS) Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander (USFWS 2003). The guidance provided by USFWS identifies criteria for performing CTS site assessments to ensure standardization across projects. The criteria included in the USFWS guidance consists of a review of the following: (1) if the Project study area is within the current or historical range of the species; (2) identification of documented occurrences/records of the species within 3.1 miles of the Project study area; and (3) the identification of potential habitat for CTS within the Project study area and assessment area (i.e., within 1.24 miles of the Project study area).

CTS occurrences records within 3.1 miles of the Project study area were compiled from a review of the following sources:

- California Department of Fish and Wildlife (CDFW), California Natural Diversity Database (CNDDB) (CDFW 2020)
- USFWS Draft Recovery Plan for CTS (USFWS 2017)
- California Academy of Sciences (CAS) (CAS 2020)
- iNaturalist (2020) CTS observations
- Other publicly available databases and literature

Additional reports for other CTS surveys within the Project study area and 3.1-mile buffer were also consulted and reviewed to obtain additional information regarding the presence of CTS in the area. The additional reports reviewed for the purpose of this Report included: the Aquatic Sampling at Canada de los Osos Reserve in 2013–2019; the Cedar Creek Property – Pond Survey Results – Santa Clara County (Smith 2019; Olberding Environmental 2020); Santa Clara Valley Habitat Plan – Subexhibit K (County of Santa Clara 2012); personal communications (Smith 2020).

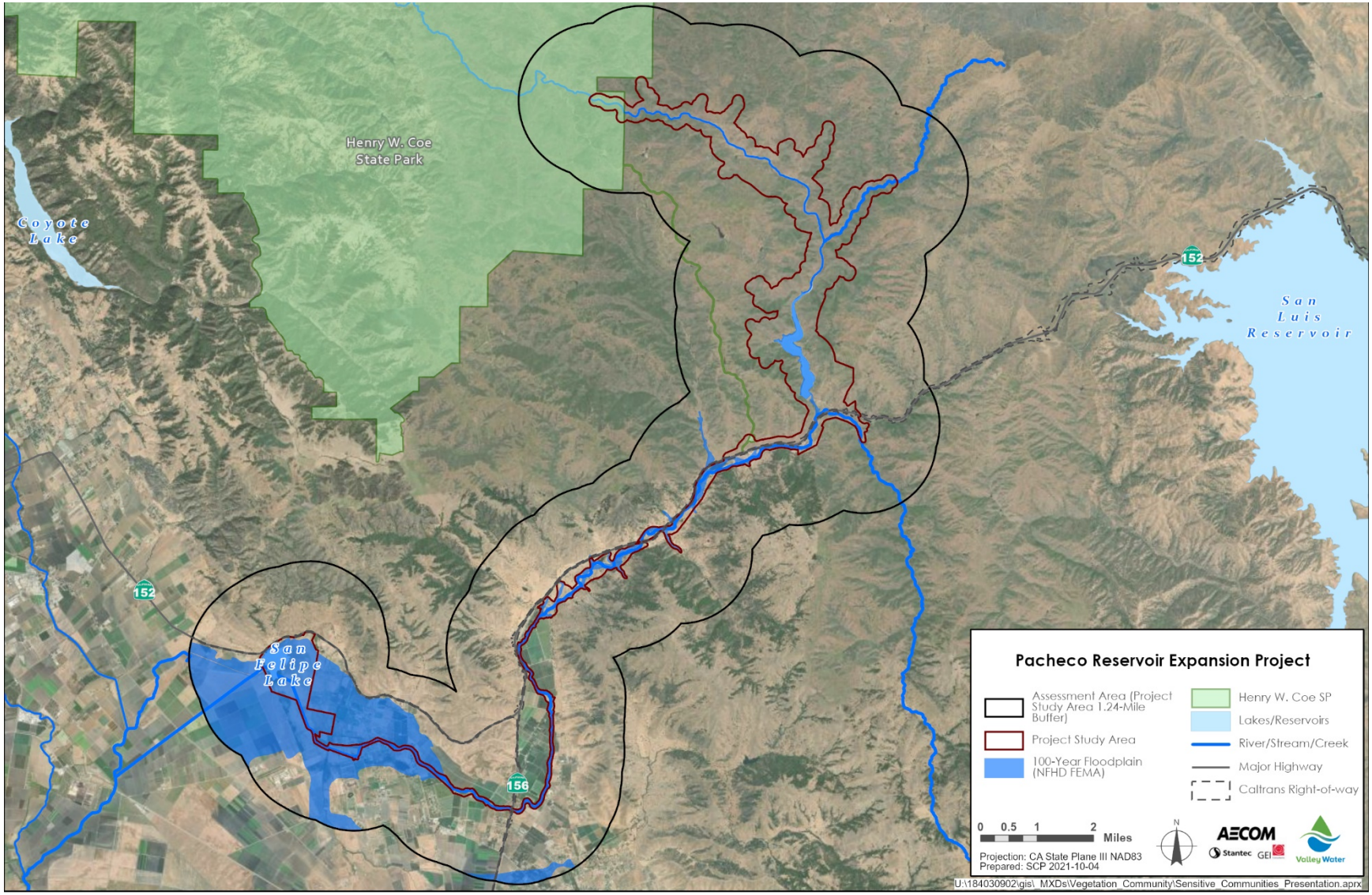

Figure 2-1. Project Study Area and Assessment Area

Aquatic features that could provide potentially suitable CTS habitat were identified and mapped using publicly available desktop resources, such as current and historic aerial imagery, topographic maps, and USFWS National Wetland Inventory maps. Reconnaissance-level field surveys were conducted to review potential aquatic and upland habitats located within the Project study area that were accessible following a review of the desktop resources. The surveys focused on identifying the essential elements of CTS breeding habitat (e.g., emergent vegetation, pond depth/size, proximity to burrows) that were accessible during the survey efforts (e.g., seasonal wetlands, livestock ponds, and other modified ephemeral and permanent ponds). The field survey efforts collected data on potential aquatic habitats including: habitat type (e.g., stock pond, seasonal wetland), apparent seasonality, approximate size (e.g., surface area), water depth at the time of the site assessment, substrate, vegetation (e.g., emergent, overhanging, dominant species), shoreline descriptions, potential water sources, and incidental observations of potential predators/competitors such as American bullfrogs (*Lithobates catesbeianus*) and centrarchids (e.g., bass, sunfish). Potential upland habitat (i.e., areas dominated by grassland, oak savanna, or oak woodland vegetation communities around potential aquatic habitat) within the assessment area, where accessible, were also characterized and evaluated during the surveys. Information collected for the upland habitat included the identification and mapping of small mammal burrows from species such as California ground squirrel (*Otospermophilus beecheyi*) and Botta's pocket gopher (*Thomomys bottae*) that would provide upland refugia habitat for CTS. During the survey efforts, representative photographs of potential aquatic habitat and upland habitat were taken. Potential CTS habitats on private property without legal access beyond the Project study area were assessed by reviewing current and historic aerial imagery (e.g., Google Earth), topographic maps, and/or from points of public access (e.g., publicly accessible roadways). To determine the hydroperiods of the inaccessible aquatic features, aerial images from multiple years and seasons were reviewed in Google Earth.

2.3 Assessment Timeframe

Stantec Consulting Inc. (Stantec) biologists conducted reconnaissance-level pedestrian surveys to document potential CTS habitat within the assessment area. The site assessment surveys were conducted on March 10–12 and 30, April 1–2, and May 7–8, 2020. The timing of the field surveys were performed to coincide with the spring months when CTS larva would be present within ponds and while the aquatic features were inundated.

2.4 Biologists Qualifications

Stantec biologists, Jared Elia, Sara Cortez, Rob Stoddard, Scott Elder, and Brendan Cohen performed the reconnaissance-level surveys. A summary of their qualifications and experience performing CTS surveys and site assessments are summarized below.

- Jared Elia – Over 13 years of experience conducting site assessments for CTS, and performing reconnaissance and protocol-level surveys, which has included capture and relocation of individuals. He attended the Rare Pond Species Survey Techniques workshop offered by Sonoma State University and has been approved as a qualified biologist on numerous projects by CDFW and USFWS. Jared also has over 20 hours of protocol-level survey and handling hours for CTS.

- Sara Cortez – Over 13 years of experience conducting site assessments for CTS, and performing reconnaissance and protocol-level surveys, which has included capture and relocation of individuals. She conducted surveys and site assessments for this species throughout the San Francisco Bay area and Sacramento-San Joaquin Valley.

- Rob Stoddard – Over 12 years of experience conducting site assessments for aquatic species, including CTS. He has several years of experience conducting foothill yellow-legged frog surveys and is experienced identifying the unique characteristics that distinguish CTS apart from other amphibian species.
- Scott Elder – Over 5 years of experience conducting habitat assessments and informal surveys for CTS throughout the San Francisco Bay area. He has also attended the Rare Pond Species Survey Techniques workshop offered by Sonoma State University. Scott is experienced in identifying the unique characteristics that distinguish CTS apart from other amphibian species.
- Brendan Cohen – Over 5 years of experience conducting site assessments and reconnaissance-level surveys for CTS. He has also attended the Rare Pond Species Survey Techniques workshop offered by Sonoma State University and the Amphibian of the Bay Area workshop in Santa Rosa, California. Brendan is experienced in identifying the unique characteristics that distinguish CTS apart from other amphibian species.

Chapter 3 Species Natural History

The CTS Central California DPS was federally listed by the USFWS under the Endangered Species Act as threatened on August 8, 2004 (USFWS 2004) and it is the subject of a recovery plan published in 2017 (USFWS 2017). It was also listed as threatened throughout its entire range, which included the Central California, Santa Barbara, and Sonoma DPSs, under the California Endangered Species Act on August 19, 2010 (CDFW 2019). Critical Habitat for this species was designated by USFWS on August 23, 2005 (USFWS 2005).

The CTS Central California DPS is restricted to disjunct populations that form a ring along the foothills of the Central Valley and Inner Coast Range from San Luis Obispo, Kern, and Tulare Counties in the south, to Sacramento and Yolo Counties in the north. The recovery priority number for the CTS Central California DPS is 9C, which indicates that the DPS faces a moderate degree of threat, has a high potential for recovery, and is in conflict with development projects, such as conversion to agriculture or urban development.

The CTS is a large, stocky, terrestrial salamander with a broad, rounded snout. Total body length of adults ranges approximately from 6 to 9.5 inches (16 to 24 centimeters) (USFWS 2017). CTS has an obligate biphasic life cycle where it utilizes both aquatic and terrestrial habitats. Although larvae develop in the ponds and wetlands in which they were born, once a metamorph leaves its natal pond and enters a burrow, it will then spend the vast majority of its life underground.

Adult CTS Central California DPS engage in mass migrations during a few rainy nights per year, typically from November through April, although migrating adults have been observed as early as October and as late as May. During these rain events, adults will leave their underground burrows and return to breeding ponds to mate before returning to their underground burrows. Males typically arrive before the females and generally remain in the ponds longer than females (USFWS 2017). CTS Central California DPS have been documented to cover distances from 492 feet (150 meters) to 1.3 miles (2.2 kilometers) travelling from breeding ponds to upland terrestrial habitat (Orloff 2011). On average, it is estimated that CTS migrate 1,844 feet (562 meters) and could potentially migrate 1.5 miles (2.4 kilometers) each breeding season (Searcy and Shaffer 2011).

Females lay their eggs in the water, attaching their eggs to twigs, grass stems, or other vegetation or debris. Streams or riverine environments are typically not associated with breeding habitat and are rarely used because water velocities within these systems during the typical breeding season (November through April) do not support egg laying, as eggs would be prone to wash away. The amount of time necessary for hatching is likely related to water temperature, with eggs hatching quicker in colder water temperatures. Reported hatching time for eggs ranges from 10 to 28 days (USFWS 2017). The larval stage of the CTS Central California DPS usually lasts 3 to 6 months, with metamorphosis beginning in late spring or early summer. Once metamorphosis occurs, juveniles typically depart their natal ponds at night and enter into terrestrial habitat in search of underground burrows. Peak periods for metamorphs to leave their natal ponds have been reported from May to July. In rare instances, larvae have been reported to overwinter in ponds (USFWS 2017).

Numerous factors contribute to the decline of this species, including habitat loss, habitat fragmentation, disease, predation, and hybridization. Introduced species such as American bullfrogs, largemouth bass, largemouth bass (*Micropterus salmoides*), blue gill (*Lepomis macrochirus*), mosquitofish (*Gambusia affinis*), and nonnative crayfish species (*Pacifastacus,*

Orconectes, and *Procambarus* spp.) may prey upon one or more life stages (i.e., eggs, larvae, or adults) (USFWS 2017). In addition, the introduction of the non-native Barred tiger salamander (*Ambystoma tigrinum*) into California over 50 years ago have hybridized with the native CTS. Based on review of available documents and personal communications, some level of hybridization is most likely present in a large number of ponds throughout Santa Clara County and hybrid CTS have been documented within the Project study area.

3.1 Critical Habitat

The federal Endangered Species Act requires the federal government (i.e., USFWS) to designate critical habitat for any species it lists as endangered or threatened. It also requires the federal government to develop and implement recovery plans to promote the conservation of threatened and endangered species. The CTS Central California DPS has designated critical habitat and is the subject of the USFWS Recovery Plan for the species (USFWS 2017).

Critical habitat is identified by the presence of physical or biological features, previously termed primary constituent elements, that are essential to the conservation of a federally listed species upon which designated or proposed critical habitat for the species is based. Physical and biological features may include, but are not limited to: space for growth of individuals and populations; food, water, air, light, minerals, or other nutritional or physiological requirements; cover or shelter; sites for breeding, reproduction, rearing of offspring, germination, or seed dispersal; and habitats that are protected from disturbance or are representative of the species' historic geographic and ecological distribution.

Chapter 4 Site Assessment Results

4.1 Range and Critical Habitat

Historically, the CTS Central California DPS was endemic to the San Joaquin-Sacramento River Valleys, bordering foothills, and coastal valleys of Central California (Stebbins 1985; Shaffer et al. 2013). Although the historical distribution of the CTS Central California DPS is not known in detail, their current distribution suggests that they may have been continuously distributed along the low-elevation grassland-oak woodland plant communities of the valleys and foothills (Shaffer et al. 1993; Shaffer et al. 2013) (Figure 4-1). The species is known from sites on the Central Valley floor near sea level, up to a maximum elevation of roughly 3,940 feet (1,200 meters) in the coast range and 1,640 feet (500 meters) in the Sierra Nevada foothills (Shaffer et al. 2013); therefore, the study area is within the current range of the species.

There is approximately 5,890 acres of USFWS-designated critical habitat for CTS, Unit 12, located within the Project study area and assessment area (USFWS 2020) from San Felipe Lake east along State Route 152 to approximately Casa De Fruta Parkway (Figure 4-1). The physical and biological features (i.e., primary constituent elements) of critical habitat for CTS include aquatic breeding habitat (i.e., freshwater aquatic features such as ponds, wetlands or vernal pools that support inundation during winter rains and hold water for a minimum of 12 weeks in a year of average rainfall), upland habitat adjacent and accessible to and from breeding ponds that contain small mammal burrows or other underground habitat, and accessible upland dispersal habitat between aquatic breeding habitat (USFWS 2020). Based on survey efforts conducted, the physical and biological features for CTS critical habitat is present in the Unit 12 boundary within the assessment area.

4.2 Known Occurrences

A search of the CNDDB (CDFW 2020) indicated that there were 15 occurrences of CTS within 3.1 miles of the Project study area from 1975 to 2016 (Figure 4-1). These occurrence records are located primarily along the southern limits of the assessment area and are described in Table 4-1. No incidental observations of CTS were observed during the reconnaissance-level surveys. Two CAS entries are known from the Pacheco Creek drainage and vicinity (#CAS 178447, collected 11/1/1974 and identified 5/22/1991; # CAS 178451, collected 4/6/1975 and identified 5/22/1991).

Other assessments of ponds within 3.1 miles of the assessment area have observed CTS larvae in two ponds located west of Pacheco Reservoir and north of State Route 152; the Aquatic Sampling at Canada de los Osos Reserve in 2013–2019, and the Cedar Creek Property – Pond Survey Results – Santa Clara County (Smith 2019; Olberding Environmental 2020). These surveys occurred between 2016 and 2019. In one of the ponds, 68 CTS larvae were captured during the May 20, 2016 survey; however, no CTS were captured during the 2017 or 2018 surveys conducted in the same pond. In a separate pond, three CTS larvae were captured in 2016 and 2017. These occurrence results are not yet documented in CNDDB.

Table 4-1. California Tiger Salamander Occurrences within 3.1 Miles of the Project Study Area

Occurrence Number	Habitat Type	Distance from Project Study Area (miles)	Year Observed
CNDDB #112	Pond	0.6 mile	1990
CNDDB #176	Pond	1 mile	1992
CNDDB #177	Pond	0.7 mile	1992
CNDDB #178	Pond	0.6 mile	1992
CNDDB #179	Pond	0.7 mile	1992
CNDDB #180	Pond	0.7 mile	1992
CNDDB #181	Pond	0.1 mile	1992
CNDDB #182	Pond	0.05 mile	1992
CNDDB #183	Pond	Within	1992
CNDDB #184	Pond	1.1 miles	1992
CNDDB #478	Pond	0.6 mile	2000
CNDDB #525	Reservoir	2 miles	2000
CNDDB #598 / #CAS 178447/ #CAS 178451	Pacheco Creek Drainage	Within	1974 and 1975
CNDDB #1225	Pond	2.4 miles	2015
CNDDB #1251	Pond	2.8 miles	2016
N/A (Smith 2019)	Observed 68 CTS larvae in a pond located west of Pacheco Reservoir and north of State Route 152.	N/A	2016
N/A (Smith 2019)	Observed 3 CTS larvae in a pond located west of Pacheco Reservoir and north of State Route 152.	N/A	2016/2017

Key:
N/A = No CNDDB occurrence number

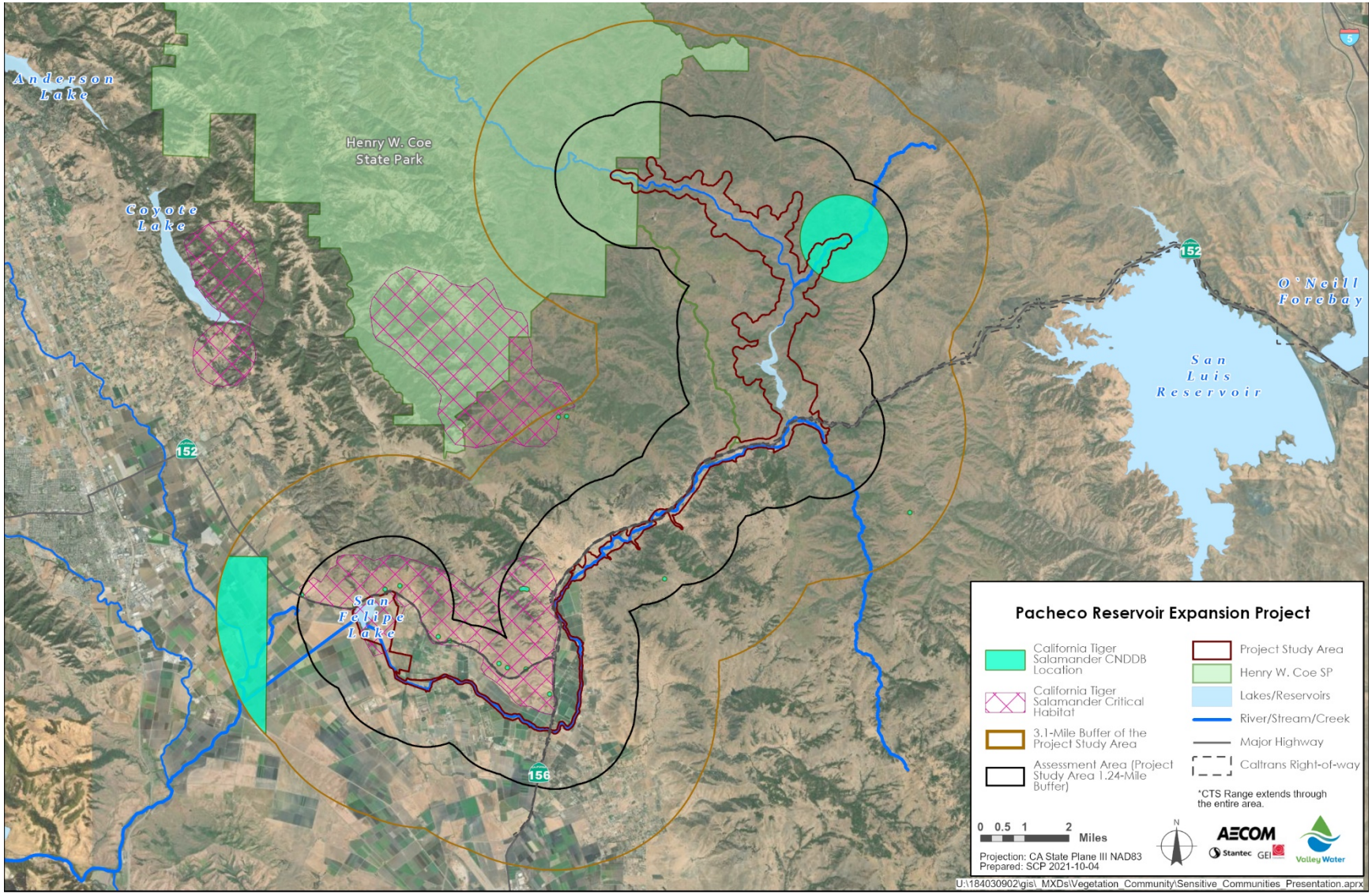

Figure 4-1. California Tiger Salamander California Natural Diversity Database Occurrences Within 3.1 Miles of the Project Study Area

4.3 Potential California Tiger Salamander Habitats

Potential habitats for CTS identified in the assessment includes aquatic breeding, upland refugia, and dispersal habitats (Figure 4-2). Representative photographs of aquatic and terrestrial habitat observed during the field surveys are provided in Subexhibit A. A complete list of all features, their location, habitat type, size and suitability are provided in Subexhibit B.

Migration barriers for CTS within the Project study area include agricultural lands surrounding Pacheco Creek downstream from the existing Pacheco Reservoir and State Route 152. These barriers minimize dispersal and migration for the species as they can reduce and/or prevent CTS from breeding in aquatic habitats and/or using upland habitat that require crossing these barriers. Agricultural land creates barriers for movement, particularly in the summer as they typically do not provide refuge in the form of burrows or cover. Agricultural land can also be surrounded with fencing to prevent ungulates and rodents from foraging, which also prevents CTS from migrating through these properties. Roadways such as State Route 152 also create migration barriers as species are often killed trying to cross these large roadways or can become emaciated with no cover trying to cross during the hot summer months.

4.4 Aquatic Habitat

The aquatic features (i.e., ponds) that were evaluated during the CTS habitat assessment consisted of 37 aquatic features located within the Project study area and 195 located beyond the Project study area (i.e., within the assessment area). Of the 232 total ponds, 162 ponds provide essential components of CTS breeding habitat, 23 ponds provide sub-optimal or marginal habitat (i.e., low quality) and 47 ponds do not provide breeding habitat. A summary of the identified aquatic features within the Project study area and assessment area is provided in Table 4-2 below.

Table 4-2. Summary of Aquatic Features Identified

Analysis Area	Identified Aquatic Features			Total
	Breeding Habitat	Low Quality Breeding Habitat	Non-Breeding Habitat	
Project Study Area	11	8	18	37
Assessment Area[1]	151	15	29	195
TOTAL	162	23	47	232

Notes:
[1] Assessment area consists of a 1.24-mile buffer around the Project study area. The number of aquatic features represented in this table within the assessment area exclude those found within the Project study area.

4.4.1 Breeding

Within the Project study area, of the 37 features identified, 11 provided the essential components necessary for CTS breeding habitat (Table 4-1), including features L1, P3, P5, P6, P10, P19, P100, P102, P103, P146 and P229 as shown in Figure 4-2. These features are small to large size ponds, ranging in size from less-than 0.01 acre to approximately 74 acres (San Felipe Lake is the largest), and have sufficient water depths and emergent vegetation to provide potential CTS breeding habitat. Suitability or likelihood of successful California tiger salamander breeding within perennial San Felipe Lake (and Pacheco Reservoir) is diminished due to the presence of non-native predatory species (e.g., bass species [*Micropterus* spp.], sunfish [*Centrarchidae* spp.], American bullfrog). They also appear to hold water long enough for CTS larvae to reach metamorphosis (i.e., generally until June and July). Emergent vegetation observed at these ponds consisted of hardstem bulrush (*Schoenoplectus acutus*), salt grass

(*Distichlis spicata*), curly dock (*Rumex crispus*), broadleaf cattail (*Typha latifolia*), spike rush (*Eleocharis macrostachya*), and spiny cocklebur (*Xanthium spinosum*). Species observed at these ponds included Pacific treefrog (*Hyla regilla)*, western pond turtle (*Actinemys marmorata*), American bullfrog and numerous aquatic invertebrates such as water boatmen (*Corixidae* sp.), water strider (*Gerridae* sp.), and predaceous diving beetles (*Dytiscidae* sp.).

Outside of the Project study area, but within the assessment area, 151 of the 195 identified aquatic features provide the essential components necessary for CTS breeding (Table 4-1), based on review of available aerial imagery (e.g., Google Earth) across multiple years and seasons. These aquatic features consist of characteristics (e.g., vegetation community composition), similar to the ponds described above, that provide the essential components necessary for CTS breeding habitat found in the Project study area.

Aquatic features that provide suboptimal or marginal (i.e., low quality) CTS breeding habitat include 15 features within the assessment area and eight within the Project study area (i.e., 23 locations in total) (Table 4-1). These aquatic features are considered suboptimal or marginal (i.e., low quality) CTS breeding habitat due to limiting habitat characteristics (e.g., observations of predators/competitors and nonnative and invasive species, lack of vegetation for egg mass attachment) or were relatively small/shallow ponds which only have sufficient hydroperiod to support CTS breeding during years with above average precipitation (i.e., above normal and wet water years) based on review of multiple years and seasons of aerial imagery. No vegetation, sparse vegetation, and/or nonnative vegetation—along with invasive predators/competitors (e.g., American bullfrog, sunfish)—were observed in the various ponds visited. The 23 ponds range in size between 0.04 acre to approximately 12 acres in size.

4.4.2 Nonbreeding

The remaining 47 aquatic features include 29 features within the assessment area and 18 within the Project study area (Table 4-1) that do not provide suitable breeding habitat for CTS. These features lack sufficient hydroperiod and vegetation to support breeding and larval development. A complete list of all aquatic features, their location (i.e., inside the Project study area or within larger assessment area), habitat type, size, and suitability ranking are provided in Subexhibit B.

4.5 Upland and Dispersal Terrestrial Habitat

Potentially suitable upland and dispersal habitat for CTS was observed throughout the Project study area during the site assessment field efforts. These upland areas included the presence of underground refugia (e.g., small mammal burrows) and total approximately 5,815 acres. Table 4-3 below, provides approximate acreages of the terrestrial vegetation community types within the Project study area that may provide potential upland and dispersal habitats for CTS. These upland areas were identified and characterized based on the *Terrestrial Vegetation Community Mapping* report, which provides characterizations for all terrestrial vegetation communities mapped within the Project study area as part of the Project.

Table 4-3. California Tiger Salamander Upland/Dispersal Land Cover Types Within Project Study Area

Land Cover Type	Acres
Blue oak woodland	2,188
California annual grassland	1,254
Central California sycamore alluvial woodland	106
Coast live oak forest and woodland	743
Foothill pine and oak woodland	43
Mixed evergreen forest	110
Mixed riparian forest and woodland	85
Nonserpentine native grassland	40
Northern coastal scrub/Diablan sage scrub	286
Northern mixed chaparral/chamise chaparral	346
Ornamental woodland	47
Riverine	78
Valley oak woodland	160
Willow riparian forest and scrub	329
Total Acreage	**5,815**

Potentially suitable upland and dispersal habitat for CTS within the assessment area, but outside of the Project study area, was assessed using the Santa Clara Valley Habitat Plan (SCVHP) land cover data (Santa Clara Valley Habitat Agency 2017). Based on the data available, these upland areas consist of 12 different land cover types and total approximately 33,416 acres. Approximately 12,638 acres in the assessment area are located outside of the boundary established for the SCVHP and detailed land cover mapping/data is unavailable for these areas (i.e., portions of the assessment area that overlap Henry Coe State Park and San Benito County). Table 4-4 below, provides approximate acreages of the SCVHP land cover types that may provide potential upland and dispersal habitats for CTS, and the acreages of areas within Henry Coe State Park and San Benito County where no SCVHP land cover data is available.

Table 4-4. California Tiger Salamander Upland/Dispersal Land Cover Types within Assessment Area

Land Cover Type	Acres
Blue oak woodland	1,834
California annual grassland	11,585
Central California sycamore alluvial woodland	46
Coast live oak forest and woodland	902
Foothill pine and oak woodland	1,206
Mixed Oak Woodland and Forest	12,740
Mixed riparian forest and woodland	153
Northern coastal scrub/Diablan sage scrub	324
Northern mixed chaparral/chamise chaparral	3,519
Ornamental woodland	9
Valley oak woodland	1,082
Willow riparian forest and scrub	16
No Data – Henry Coe State Park	3,113*
No Data – San Benito County	9,525*
Total Acreage	**33,416**

Notes:
*This data was not available through the SCVHP land cover data, but an acreage is provided to indicate the size of the areas within the assessment area.
**This total acreage does not include the 12,638 acres where data was unavailable.

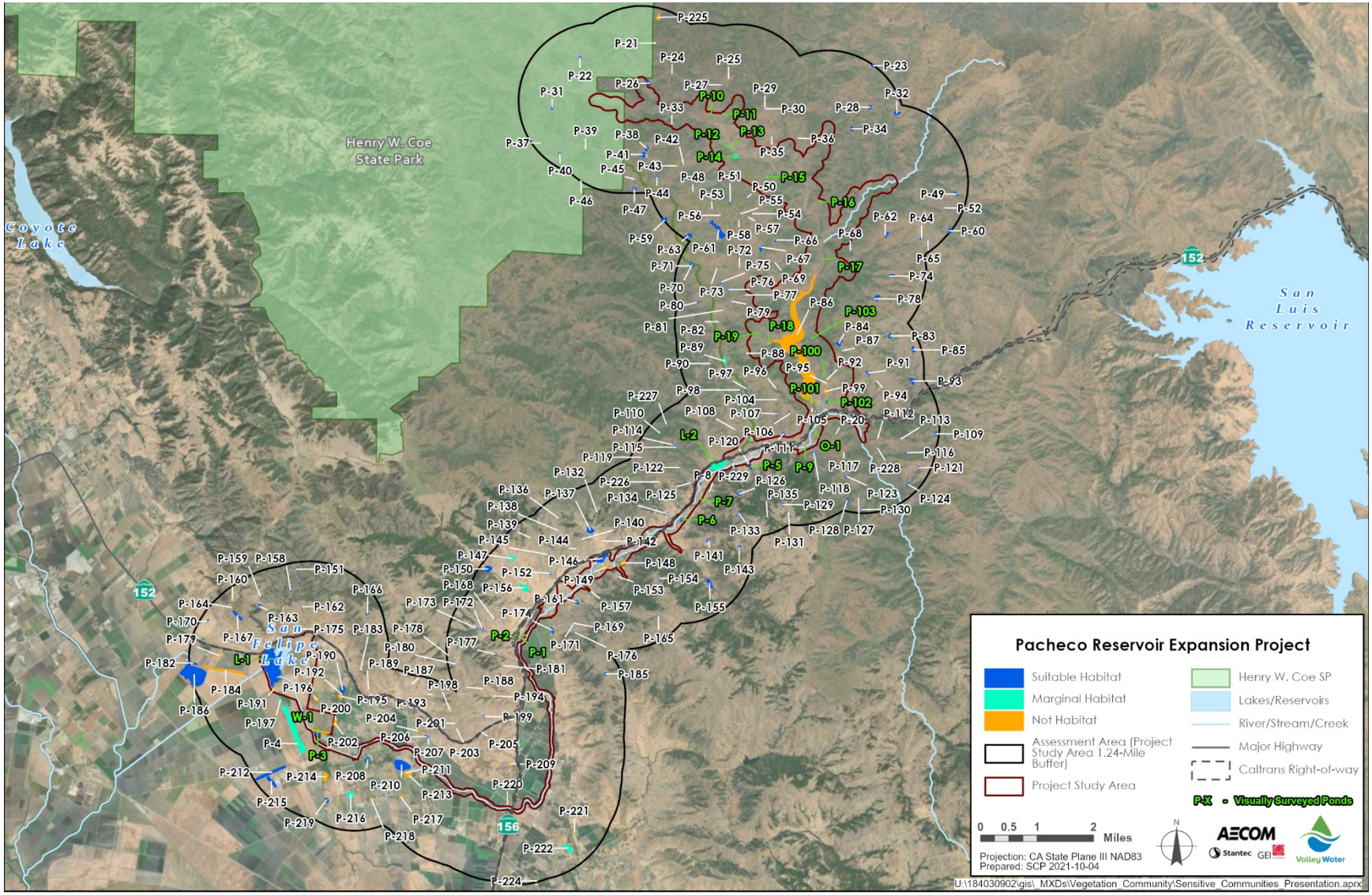

Figure 4-2. California Tiger Salamander Aquatic Habitats Within Assessment Area

Chapter 5 References

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Subexhibit A – Representative Aquatic and Terrestrial Habitat Photographs

The following photos are documentation of conditions within the study area during the CTS habitat assessments conducted from March to April 2020.

<table>
<tr>
<td>
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<tr>
<td>Photo 1. Stock pond (P-10) upstream of Pacheco Reservoir with suitable aquatic and terrestrial habitat for CTS. Emergent vegetation is growing along the entire shoreline of the pond.</td>
<td>Photo 2. Stock pond (P-19) upstream of an ephemeral drainage that flows to Pacheco Reservoir. P-19 has suitable aquatic and terrestrial habitat for CTS.</td>
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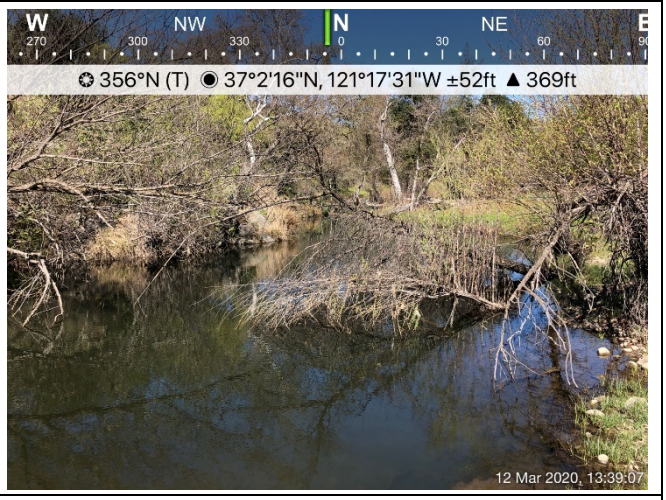
<td>
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</tr>
<tr>
<td>Photo 3. Pond (P-7) within the floodplain of Pacheco Creek, downstream of the North Fork Dam. P-7 does not provide suitable aquatic or terrestrial habitat for CTS.</td>
<td>Photo 4. Pond (P-9) within the floodplain of Pacheco Creek, downstream of the North Fork Dam. P-9 lacks emergent vegetation and does not provide suitable aquatic or terrestrial habitat for CTS.</td>
</tr>
</table>



Photo 5. Stock pond (P-15) upstream of Pacheco Reservoir with marginal suitable aquatic and terrestrial habitat for CTS. Minimal emergent vegetation is present along the shoreline.

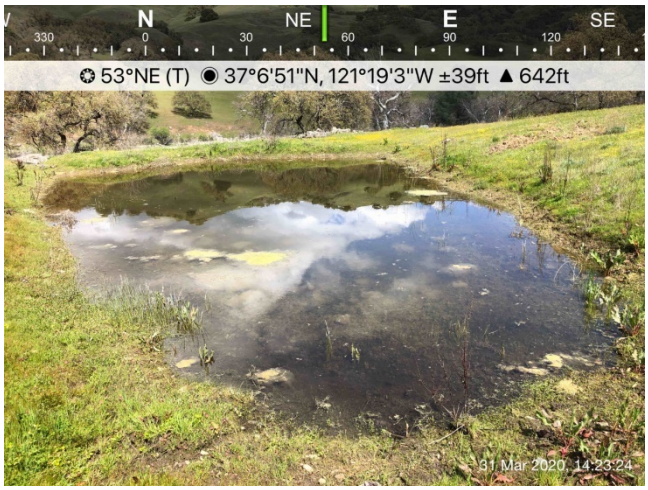

Photo 6. Stock pond (P-12) upstream of Pacheco Reservoir with marginal suitable aquatic and terrestrial habitat for CTS.



Photo 7. Ground squirrel burrows within terrestrial habitat upstream of Pacheco Reservoir.



Photo 8. Burrow colony located in grasslands upstream of Pacheco Reservoir.

Subexhibit B – List of all Aquatic Features, Location, Habitat Type, Size and Suitability

Label	Latitude	Longitude	Area (acre)	Suitability (Yes/Marginal/No)	Aquatic Feature Type	Within Study Area
L-1	36.980396	-121.462298	73.889	Yes	lake	Yes
L-2	37.032612	-121.320222	12.246	Marginal	lake	Yes
O-1	37.042294	-121.289511	0.023	No	floodplain pool	Yes
P-1	36.987601	-121.381910	0.149	No	pond	Yes
P-10	37.122130	-121.323233	0.057	Yes	pond	Yes
P-100	37.055473	-121.286376	0.120	Yes	pond	Yes
P-101	37.049362	-121.290357	1.031	No	pond	Yes
P-102	37.049139	-121.285561	0.464	Yes	pond	Yes
P-103	37.065109	-121.291127	0.279	Yes	pond	Yes
P-104	37.049689	-121.301513	0.046	Yes	pond	
P-105	37.047410	-121.290344	0.039	Marginal	pond	Yes
P-106	37.046156	-121.297227	0.052	Yes	pond	
P-107	37.046094	-121.301623	0.147	Yes	pond	
P-108	37.041905	-121.314929	0.088	Yes	pond	
P-109	37.041306	-121.250486	0.717	Yes	pond	
P-11	37.122831	-121.319499	0.044	Marginal	pond	Yes
P-110	37.041003	-121.339071	0.052	Marginal	pond	
P-111	37.040977	-121.299344	0.415	Yes	pond	
P-112	37.039881	-121.269176	0.054	Yes	pond	
P-113	37.039839	-121.261739	0.083	Yes	pond	
P-114	37.037894	-121.334848	0.205	Yes	pond	
P-115	37.037262	-121.333700	0.162	Yes	pond	
P-116	37.036351	-121.259737	0.521	Yes	pond	
P-117	37.036170	-121.279937	0.053	Yes	pond	
P-118	37.036148	-121.289592	0.286	Yes	pond	
P-119	37.034613	-121.344637	0.118	Yes	pond	
P-12	37.114334	-121.317700	0.049	Marginal	pond	Yes
P-120	37.033295	-121.310387	0.075	Marginal	pond	Yes
P-121	37.032522	-121.255917	0.148	Yes	pond	
P-122	37.032054	-121.332549	0.087	Yes	pond	
P-123	37.030095	-121.279017	0.484	Yes	pond	
P-124	37.028205	-121.259307	0.576	Yes	pond	
P-125	37.028166	-121.328897	0.111	Yes	pond	
P-126	37.025496	-121.313235	0.994	Yes	pond	
P-127	37.024616	-121.275211	0.047	Yes	pond	
P-128	37.023933	-121.278818	0.671	Yes	pond	
P-129	37.022733	-121.299327	0.365	Yes	pond	
P-13	37.113399	-121.316736	0.073	Marginal	pond	Yes
P-130	37.021650	-121.274030	0.142	Yes	pond	
P-131	37.020944	-121.297496	0.127	Yes	pond	
P-132	37.020590	-121.358816	0.117	Marginal	pond	
P-133	37.020359	-121.313344	0.230	Yes	pond	
P-134	37.020263	-121.336493	0.208	Yes	pond	
P-135	37.019596	-121.304223	0.192	Yes	pond	
P-136	37.018739	-121.371019	0.097	Yes	pond	
P-137	37.015825	-121.360921	4.556	Yes	pond	
P-138	37.015599	-121.371076	0.065	Yes	pond	

P-139	37.013691	-121.380053	0.031	Yes	pond	
P-14	37.111925	-121.315358	1.264	Marginal	pond	Yes
P-140	37.013470	-121.363415	0.091	Marginal	pond	
P-141	37.013433	-121.322999	1.120	Yes	pond	
P-142	37.012980	-121.357207	0.334	No	pond	
P-143	37.011807	-121.313148	0.653	Yes	pond	
P-144	37.010966	-121.365551	0.023	Yes	pond	
P-145	37.009484	-121.374653	0.136	Yes	pond	
P-146	37.008465	-121.357088	6.067	Yes	pond	Yes
P-147	37.008343	-121.385925	2.567	Marginal	pond	
P-148	37.007363	-121.350414	0.882	No	pond	Yes
P-149	37.006304	-121.355750	1.666	No	pond	Yes
P-15	37.106825	-121.305356	0.052	Marginal	pond	Yes
P-150	37.005599	-121.393474	4.827	Yes	pond	
P-151	37.005018	-121.454835	0.206	Yes	pond	
P-152	37.004577	-121.373547	0.269	Yes	pond	
P-153	37.003929	-121.351680	0.088	Yes	pond	
P-154	37.003552	-121.338632	0.362	Yes	pond	
P-155	37.002468	-121.322590	3.253	Yes	pond	
P-156	37.000815	-121.381737	5.336	Marginal	pond	
P-157	37.000014	-121.360272	0.063	Marginal	pond	
P-158	36.999597	-121.456538	0.264	Yes	pond	
P-159	36.997878	-121.466056	0.289	Yes	pond	
P-16	37.100475	-121.288421	0.010	No	pond	Yes
P-160	36.997369	-121.475074	0.103	No	pond	
P-161	36.997307	-121.365024	1.225	Yes	pond	
P-162	36.995441	-121.452950	0.249	Yes	pond	
P-163	36.995390	-121.466411	0.876	Yes	pond	
P-164	36.995063	-121.475500	0.072	No	pond	
P-165	36.993910	-121.338856	0.149	Yes	pond	
P-166	36.993860	-121.431866	0.665	Yes	pond	
P-167	36.993034	-121.473423	2.608	Yes	pond	
P-168	36.992725	-121.391312	0.156	Yes	pond	
P-169	36.991867	-121.365797	0.034	No	pond	
P-17	37.085692	-121.287412	0.006	No	pond	Yes
P-170	36.991527	-121.482897	0.444	Yes	pond	
P-171	36.991364	-121.366260	0.092	Marginal	pond	
P-172	36.990327	-121.395129	0.287	Yes	pond	
P-173	36.990327	-121.396947	0.460	Yes	pond	
P-174	36.990078	-121.372726	1.119	Yes	pond	
P-175	36.989668	-121.452706	0.186	No	pond	
P-176	36.989481	-121.365363	0.161	Yes	pond	
P-177	36.983745	-121.390934	0.467	Yes	pond	
P-178	36.983222	-121.405745	0.192	Yes	pond	
P-179	36.982731	-121.479313	0.715	No	pond	
P-18	37.064163	-121.304040	0.384	No	pond	Yes
P-180	36.981119	-121.403265	0.159	Yes	pond	
P-181	36.980858	-121.388310	0.090	Yes	pond	
P-182	36.980674	-121.487535	0.932	Yes	pond	

P-183	36.979585	-121.433864	0.123	No	pond	
P-184	36.978929	-121.477334	6.017	No	pond	
P-185	36.978915	-121.355522	0.753	Yes	pond	
P-186	36.977620	-121.487038	61.986	Yes	pond	
P-187	36.975766	-121.417535	0.060	Yes	pond	
P-188	36.975199	-121.399958	0.063	Yes	pond	
P-189	36.974570	-121.431273	0.109	No	pond	
P-19	37.066753	-121.307282	0.017	Yes	pond	Yes
P-190	36.974340	-121.439554	3.660	Yes	pond	
P-191	36.974188	-121.461520	0.275	No	pond	Yes
P-192	36.973268	-121.439971	0.803	Yes	pond	
P-193	36.973221	-121.410909	0.172	Marginal	pond	
P-194	36.973009	-121.391117	0.058	No	pond	
P-195	36.972612	-121.440227	2.372	No	pond	
P-196	36.971777	-121.447881	1.631	No	pond	
P-197	36.971394	-121.459512	0.833	Marginal	pond	
P-198	36.969048	-121.405125	0.041	Yes	pond	
P-199	36.967761	-121.394165	0.339	Yes	pond	
P-2	36.988654	-121.381070	0.078	No	pond	Yes
P-20	37.041067	-121.282485	0.090	Yes	pond	
P-200	36.966573	-121.441628	0.369	No	pond	
P-201	36.965831	-121.403511	0.033	Yes	pond	
P-202	36.965591	-121.441855	1.368	No	pond	
P-203	36.964427	-121.402862	0.029	Marginal	pond	
P-204	36.963988	-121.415640	0.380	No	pond	
P-205	36.963895	-121.395534	0.101	Marginal	pond	
P-206	36.962466	-121.412635	0.481	Yes	pond	
P-207	36.962090	-121.411990	0.254	Yes	pond	
P-208	36.956485	-121.431284	1.272	Yes	pond	
P-209	36.955618	-121.385618	0.510	No	pond	
P-21	37.140853	-121.341604	0.226	No	pond	
P-210	36.955000	-121.420395	19.876	Yes	pond	
P-211	36.953003	-121.418902	1.810	No	pond	
P-212	36.952769	-121.462184	7.365	Yes	pond	
P-213	36.952329	-121.417901	2.526	No	pond	
P-214	36.951902	-121.444741	4.553	No	pond	
P-215	36.950554	-121.462018	3.856	Yes	pond	
P-216	36.947383	-121.436719	4.404	Marginal	pond	
P-217	36.946818	-121.420424	0.745	No	pond	
P-218	36.946206	-121.429943	0.494	No	pond	
P-219	36.945864	-121.444212	1.339	Yes	pond	
P-22	37.136875	-121.365598	0.505	Yes	pond	
P-220	36.945371	-121.386528	0.252	No	pond	
P-221	36.938392	-121.364986	0.552	No	pond	
P-222	36.934138	-121.367072	5.927	Marginal	pond	
P-224	36.925698	-121.377155	0.166	No	pond	
P-225	37.147426	-121.340591	1.192	No	pond	
P-226	37.028313	-121.339049	0.05182	No	pond	
P-227	37.043057	-121.336837	0.178743	Yes	pond	

P-228	37.037368	-121.269137	0.075	Yes	pond	
P-229	37.033536	-121.315671	0.176	Yes	pond	Yes
P-23	37.135501	-121.271545	0.593	Yes	pond	
P-24	37.133099	-121.336078	0.033	Yes	pond	
P-25	37.131902	-121.317853	0.046	Yes	pond	
P-26	37.130511	-121.343267	0.685	Yes	pond	
P-27	37.130273	-121.320212	0.101	Yes	pond	
P-28	37.124838	-121.272652	1.018	Yes	pond	
P-29	37.124615	-121.306190	0.030	Yes	pond	
P-3	36.963102	-121.447580	3.221	Yes	pond	Yes
P-30	37.124236	-121.306008	0.049	Yes	pond	
P-31	37.124210	-121.374243	0.514	Yes	pond	
P-32	37.123428	-121.263952	1.564	Yes	pond	
P-33	37.120187	-121.335920	0.048	No	pond	Yes
P-34	37.119298	-121.278224	0.493	Yes	pond	
P-35	37.117068	-121.303920	0.142	Yes	pond	
P-36	37.116729	-121.295499	0.070	Yes	pond	
P-37	37.114935	-121.378140	0.102	No	pond	
P-38	37.113778	-121.343922	1.143	Yes	pond	
P-39	37.113621	-121.363498	0.162	No	pond	
P-4	36.963550	-121.454853	35.327	Marginal	pond	
P-40	37.112313	-121.371766	0.282	Yes	pond	
P-41	37.112220	-121.345196	1.982	Yes	pond	
P-42	37.109825	-121.332098	0.080	Yes	pond	
P-43	37.109406	-121.334313	0.043	Yes	pond	
P-44	37.106328	-121.340607	0.442	Yes	pond	
P-45	37.105932	-121.347840	0.055	Yes	pond	
P-46	37.105262	-121.364781	0.156	Yes	pond	
P-47	37.103347	-121.347747	0.807	Yes	pond	
P-48	37.103041	-121.328990	0.024	Yes	pond	
P-49	37.102785	-121.244688	0.628	Yes	pond	
P-5	37.032279	-121.309866	0.774	Yes	pond	Yes
P-50	37.101443	-121.311592	0.094	Yes	pond	
P-51	37.100234	-121.316993	0.379	Yes	pond	
P-52	37.099205	-121.248397	0.194	Yes	pond	
P-53	37.098445	-121.322877	0.043	Yes	pond	
P-54	37.097302	-121.309945	0.094	Yes	pond	
P-55	37.097252	-121.313553	0.030	Yes	pond	
P-56	37.096829	-121.320201	0.051	Yes	pond	
P-57	37.096376	-121.311226	0.066	Yes	pond	
P-58	37.095503	-121.314200	0.053	Yes	pond	
P-59	37.095452	-121.338121	1.976	Yes	pond	
P-6	37.018623	-121.331592	0.622	Yes	pond	Yes
P-60	37.093382	-121.246610	0.951	Yes	pond	
P-61	37.092789	-121.320502	8.930	Yes	pond	
P-62	37.092223	-121.266954	0.967	Yes	pond	
P-63	37.091515	-121.330181	1.947	Yes	pond	
P-64	37.091333	-121.255755	0.395	Yes	pond	
P-65	37.090863	-121.253691	0.090	Yes	pond	

P-66	37.090588	-121.302230	0.312	Yes	pond	
P-67	37.088398	-121.306958	1.224	Yes	pond	
P-68	37.088027	-121.278450	0.291	Yes	pond	
P-69	37.084826	-121.302532	0.055	Yes	pond	
P-7	37.024033	-121.326257	0.031	No	pond	Yes
P-70	37.083898	-121.329248	0.948	Yes	pond	
P-71	37.083752	-121.329924	0.047	Yes	pond	
P-72	37.083488	-121.313818	0.095	Yes	pond	
P-73	37.083214	-121.321096	0.065	Yes	pond	
P-74	37.081760	-121.265180	1.101	Yes	pond	
P-75	37.079683	-121.319556	0.279	Yes	pond	
P-76	37.077795	-121.317415	0.204	Yes	pond	
P-77	37.076457	-121.311809	0.074	Yes	pond	
P-78	37.076107	-121.269848	1.415	Yes	pond	
P-79	37.074793	-121.316333	0.120	Yes	pond	
P-8	37.025681	-121.322899	0.186	Yes	pond	
P-80	37.074454	-121.327394	0.465	Yes	pond	
P-81	37.072474	-121.319176	0.070	Yes	pond	
P-82	37.069530	-121.320633	0.029	Yes	pond	
P-83	37.066211	-121.265445	1.275	Yes	pond	
P-84	37.064376	-121.281799	1.897	Yes	pond	
P-85	37.062723	-121.257955	1.405	Yes	pond	
P-86	37.062311	-121.294533	181.260	No	pond	Yes
P-87	37.062300	-121.280689	0.220	Yes	pond	
P-88	37.061479	-121.311482	0.081	Yes	pond	
P-89	37.059509	-121.318317	1.655	Marginal	pond	
P-9	37.038018	-121.292141	0.038	No	pond	Yes
P-90	37.058802	-121.323051	0.051	Yes	pond	
P-91	37.056714	-121.272397	0.767	Yes	pond	
P-92	37.055032	-121.285345	0.268	No	wetland	Yes
P-93	37.054774	-121.258156	1.650	Yes	pond	
P-94	37.054645	-121.269610	0.053	Yes	pond	
P-95	37.054071	-121.285961	0.102	No	wetland	Yes
P-96	37.052540	-121.301855	0.093	Yes	pond	
P-97	37.052490	-121.311338	0.249	Yes	pond	
P-98	37.052114	-121.313388	0.273	Yes	pond	
P-99	37.051894	-121.285910	1.398	No	wetland	Yes
W-1	36.963476	-121.446606	2.002	No	wetland	Yes

Draft Environmental Impact Report

Appendix

Biological Resources – Botanical/Wildlife

Attachment A

Botanical and Wildlife Special-Status Species Habitat Assessment

Exhibit E

Other Special-Status Species Habitat Assessment

Pacheco Reservoir Expansion Project

November 2021

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Acronyms and Abbreviations

CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
ESA	Endangered Species Act
FGC	Fish and Game Code
FP	Fully protected
LBV	Least Bell's vireo
MBTA	Migratory Bird Treaty Act
Project	Pacheco Reservoir Expansion Project
SR 152	State Route 152
SSC	Species of special concern
Report	Other Special-Status Species Habitat Assessment Report
U.S.	United States
USFWS	United States Fish and Wildlife Service
WAFWA	Western Association of Fish and Wildlife Agencies
XSIC	Xerces Society for Invertebrate Conservation

Chapter 1. Introduction

This Other Special-Status Species Habitat Assessment Report (Report) has been prepared as an attachment to the *Botanical and Wildlife Special-Status Species Habitat Assessment report* to provide the results of special-status species reconnaissance-level habitat assessment surveys conducted in 2019 and 2020 in support of the Pacheco Reservoir Expansion Project (Project). Information on special-status plant species, California red-legged frog, and California tiger salamander are included as additional appendices to the *Botanical and Wildlife Special-Status Species Habitat Assessment report*. Separate reports are being prepared for the results of the terrestrial vegetation communities mapping, aquatic resources delineation, stream habitat mapping, and focused eagle surveys performed for the Project. As such, this Report addresses the "other special-status species" not addressed in the other *Botanical and Wildlife Special-Status Species Habitat Assessment report* or the other separate reports describe above (i.e., this Report excludes special-status plants, California red-legged frog, California tiger salamander, terrestrial vegetation mapping, aquatic resources delineation information, stream habitat mapping, and the results of focused eagle surveys).

Chapter 2. Methods

The study area for the purposes of the other special-status species habitat assessment surveys and this Report, generally encompass the existing Pacheco Reservoir and upstream areas (i.e., generally north of the existing North Fork Dam) surrounding the reservoir up to the expanded reservoir boundary plus an approximately 500-foot buffer. The study area also encompasses approximately 17 miles of Pacheco Creek along the 100-year floodplain from the existing North Fork Dam downstream to San Felipe Lake. In total, the study area encompasses approximately 6,835 acres and includes the currently proposed impact areas associated with construction of the proposed dam and inundation area (i.e., the study area does not include future landowner access routes or auxiliary roads or transmission lines). See Figure 2-1 for the study area.

Numerous surveys were conducted within the study area in 2019 and 2020 to assess if suitable potential habitat for special-status birds, amphibian, reptile, and mammalian species are present. These surveys were generally conducted between August and September 2019 and March through May of 2020. Surveys to identify suitable habitat for special-status insects were conducted in February and May 2019, March through May 2020, and July through August 2020 in conjunction with the vegetation mapping and botanical surveys.

2.1 Special-Status Species Desktop and Literature Review

Special-status species that may occur in the study area were determined, in part, by reviewing natural resource agency databases, literature, and other relevant sources. Regionally occurring special-status species were identified based on a review of pertinent literature, the United States (U.S.) Fish and Wildlife Service (USFWS) species list, California Natural Diversity Database (CNDDB) and California Native Plant Society (CNPS) database records. For each special-status species identified during the desktop/literature review process, habitat requirements were assessed and compared to the habitats identified in the study area to determine if potential suitable habitat for the species is present.

The desktop and pertinent literature review results identified 50 regionally occurring special-status wildlife species. The habitat requirement for each of these 50 species were assessed and compared to the habitats identified in the study area during field surveys to determine if potentially suitable habitat to support the species occurs within the study area. Out of the 50 special-status wildlife species, 36 were determined to have potential to occur. Excluding California red-legged frog, California tiger salamander, fish, and eagles, there are 32 “other special-status” wildlife species that have a potential to occur.

2.2 Special-Status Species

For the purpose of this Report, special-status species includes wildlife species that are (1) listed as threatened or Endangered under the California Endangered Species Act (CESA) or the federal Endangered Species Act (ESA); (2) proposed for ESA listing as threatened or endangered; (3) CESA or ESA candidate species; (4) identified by the California Department of Fish and Wildlife (CDFW) as species of special concern (SSC) or fully protected species (FP); or (5) have been identified by resource agencies as having the potential to be proposed for listing in the immediate future. As mentioned above, information on the special-status plant species, California red-legged frog, California tiger salamander, and eagles are not included as part of this Report; they are discussed in separate appendices of the *Botanical and Wildlife Special-Status Species Habitat Assessment report* and as standalone reports for eagles and fish.

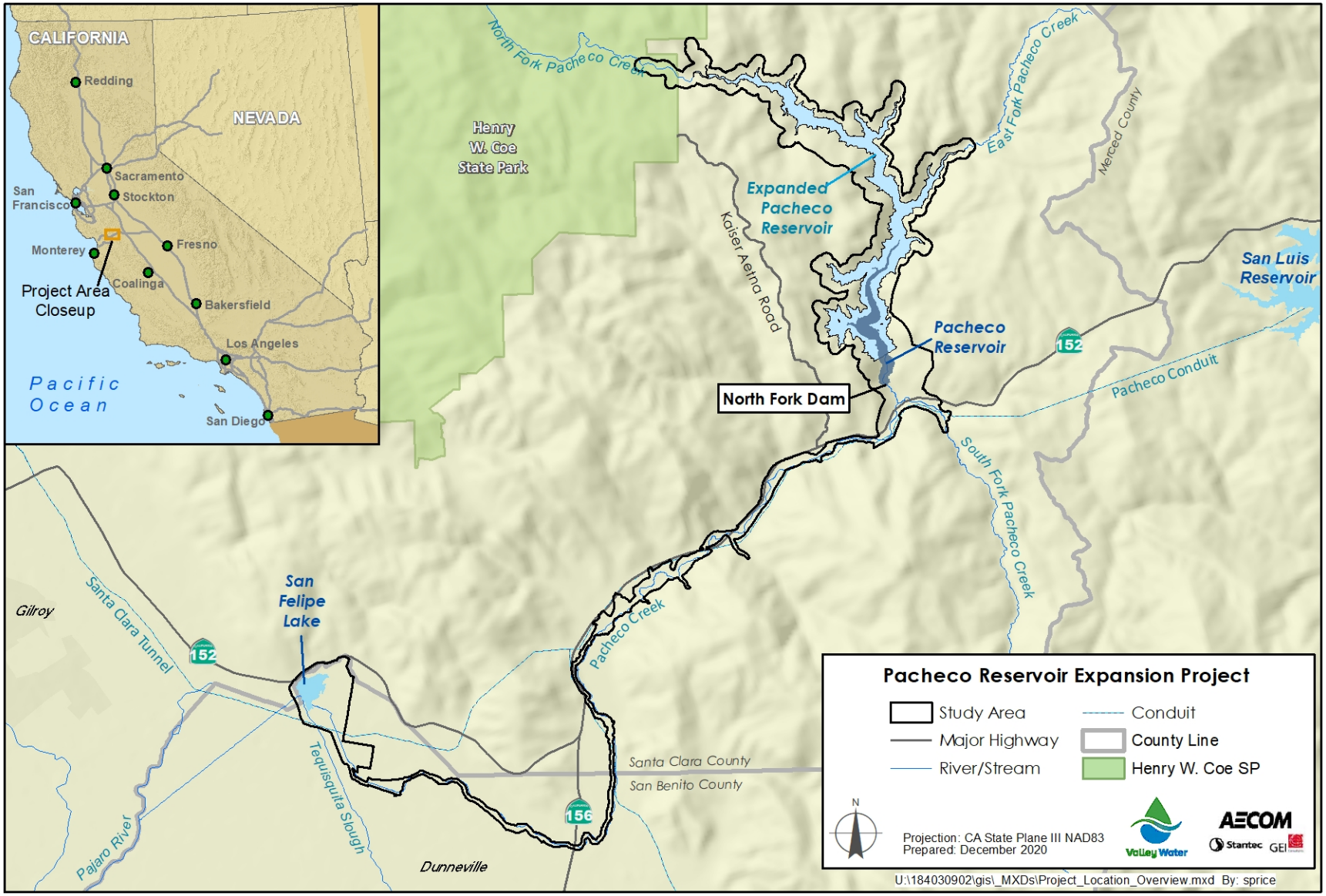

Figure 2-1. Pacheco Reservoir Expansion Project Botanical and Wildlife Habitat Assessment Study Area

Chapter 3. Results

Results for special-status wildlife species that have potential to occur in the study area were based on a desktop review of available literature and databases, including CNDDB occurrence data. Survey results and data from the aquatic resources delineation, terrestrial vegetation communities mapping, botanical surveys, and the California red-legged frog and California tiger salamander site assessments were used to further inform the potential for the "other special-status" species to occur. Excluding the special-status plants, California red-legged frog, California tiger salamander, fish, and eagles, 32 "other special-status species" identified in Table 3-1 below, have potential to occur, and are further described in the sections below:

Table 3-1. Other Special-Status Species with Potential to Occur in the Study Area

Species Name (Common/*Scientific*)	Listing Status (Federal/State)
Insects	
Monarch butterfly (Danaus plexippus plexippus)	NL/NL
Bay checkerspot butterfly (*Euphydryas editha bayensis*)	T/NL
Western bumble bee (*Bombus occidentallis*)	NL/CE
Crotch bumble bee (*Bombus crotchii*)	NL/CE
Herpetofauna	
Foothill yellow-legged frog (*Rana boylii*)	NL/E
Western pond turtle (*Emys marmorata*)	NL/SSC
Silvery legless lizard (*Aniella pulchra pulchra)*	NL/SSC
San Joaquin coachwhip (Masticophis flagellum ruddocki)	NL/SSC
Coast horned lizard (*Phrynosoma blainvillii*)	NL/SSC
Birds	
Grasshopper sparrow (*Ammodramus savannarum*)	NL/SSC
Tricolored blackbird (*Agelaius tricolor*)	NL/T
Short-eared owl (*Asio flammeus*)	NL/SSC
Long-eared owl (*Asio otus*)	NL/SSC
Western burrowing owl (*Athene cunicularia*)	NL/SSC
Swainson's hawk (*Buteo swainsoni*)	NL/T
Northern harrier (*Circus cyaneus*)	NL/SSC
Yellow warbler (Setophaga petechia)	NL/SSC
White-tailed kite (*Elanus leucurus*)	NL/FP
California condor (Gymnogyps californianus)	E/E, FP
American peregrine falcon (*Falco peregrinus anatum*)	NL/FP
Yellow-breasted chat (*IIcteria virens)*	NL/SSC
Loggerhead shrike (*Lanius ludovicianus*)	NL/SSC
Purple martin (Progne subis)	NL/SSC
Least Bell's vireo (*Vireo bellii pusillus*)	E/E

Table 3-1. Other Special-Status Species with Potential to Occur in the Study Area (contd.)

Species Name (Common/*Scientific*)	Listing Status (Federal/State)
Mammals	
Pallid bat (Antrozous pallidus)	NL/SSC
Townsend's big-eared bat (*Corynorhinus townsendii*)	NL/SSC
Western mastiff bat (Eumops perotis californicus)	NL/SSC
Western red bat (Lasiurus blossevillii)	NL/SSC
Ringtail (Bassariscus astutus)	NL/FP
Mountain lion (*Pumas concolor*)	NL/CT
American badger (*Taxidea taxus*)	NL/SSC
San Joaquin kit fox (*Vulpes macrotis mutica*)	E/T

Note:
[1]Status Codes: Federal and State Codes: E = Endangered; T = Threatened; CT= Candidate Threatened; CE= Candidate Endangered; FP = Fully Protected; SSC= CDFW Species of Special Concern; NL-Not Listed.

3.1 Special-Status Insects

3.1.1 Monarch Butterfly

Distribution, Biology, and Habitat Requirements

The monarch butterfly has no formal federal or state listing status but is considered a candidate by the USFWS for listing under the federal ESA. The USFWS determined that the listing is warranted, but precluded by higher priority listing actions; however, the listing status could change in the next 1-3 years. This large butterfly has a wingspan of about 3.9 inches and distinct coloring on the wings, with dark to brown veins on an orange background and two rows of white spots at the margin (Western Association of Fish and Wildlife Agencies [WAFWA] 2019). The monarch butterfly is in the family Nymphalidae. The monarch butterfly range includes almost all of North America, excluding Canada north of 50 degrees latitude (northern limit of milkweed [*Asclepias* spp.]) and parts of British Columbia, Washington, and Oregon (The Center for Biological Diversity Center et al. 2014).

Monarch butterflies overwinter at forested groves along coastal California and Baja California, arriving at overwintering locations in September and March (WAFWA 2019). Migrating monarchs depend on milkweed for nectar and as a host plant for laying eggs and larval development. Other plant species are used as nectar plants for adults including thistles (*Carduus* sp.) and purple loosestrife (*Lythrum salicaria*) (WAFWA 2019). Most overwintering monarchs are in reproductive diapause and their activity is limited to feeding, sunning, and rehydrating.

Migratory and breeding habitats consists of the same characteristics including milkweed for feeding and for egg laying/larval development, nectar plants, and places to roost (e.g., trees and shrubs), with connectivity between the feeding and roosting habitats. Both fall and spring migrations require the same habitat elements (WAFWA 2019). The host and nectar plants for monarchs grow in a variety of vegetation communities including forests, woodlands, chaparral, and grasslands. Overwintering habitat is primarily located along the coast, within approximately 1.5 miles from the Pacific Ocean and includes groves of trees that create microclimates for monarch survival (WAFWA 2019). Native tree species used for overwintering include Monterey pine (*Pinus radiata*), Monterey cypress (*Cupressus macrocarpa*), western sycamore (*Platanus racemosa*), and other native tree species. Monarchs will also overwinter in non-native eucalyptus (*Eucalyptus* spp.) trees but will choose native tree species when available (WAFWA

2019). Suitable grove conditions include dappled sunlight, access to water and nectar, high humidity, temperatures above freezing, and protection from strong winds and storms.

Monarch butterflies go through metamorphosis, consisting of four stages: egg, larva, pupa, and adult, in approximately one month. However, the rate of metamorphosis is dependent on temperature, with colder temperatures slowing development (WAFWA 2019). Breeding adults can live from 2 to 5 weeks and adults in reproductive diapause can live 6 to 9 months.

Occurrence Records
There are no CNDDB occurrences within 5-miles of the study area.

Suitable Habitat Within the Study Area
Potential suitable breeding and migration habitat for the monarch butterfly occurs adjacent to and upstream from Pacheco Reservoir. Downstream from the reservoir, habitat becomes fragmented due to State Route 152 (SR 152) and developed areas, creating marginal breeding and migration habitat. The study area does not support overwintering habitat. Breeding and migration habitat are dependent upon the species host and nectar plants, which grow in a variety of vegetation communities. Within the upstream and downstream reaches of the Project Area, 11 populations of approximately 7,300 host plants (e.g., milkweed [*Asclepias* spp.]) were identified within 24 acres of the Project Area were identified that could provide potential breeding habitat for the species. Migration habitat is also present in the study area consisting of forests, woodlands, chaparral, and grasslands. Based on the potential breeding and migration habitat within the study area and occurrences of monarch butterfly, this species has a moderate potential to occur within the study area.

3.1.2 Bay Checkerspot Butterfly

Distribution, Biology, and Habitat Requirements
The bay checkerspot butterfly is listed under the federal ESA as a threatened species. This butterfly is included in the *Recovery Plan for Serpentine Soil Species of the San Francisco Bay Area* (USFWS 1998a). This species is not State listed. This medium sized butterfly has a wingspan of approximately 2 inches and is checkered with bright red, yellow and white spots amongst heavy black banding (USFWS 2009). This butterfly subspecies is in the family Nymphalidae, the brush-footed butterflies. Historically, bay checkerspot butterfly occurred in the San Francisco Bay area region; however, the current range of the bay checkerspot butterfly has been significantly reduced and currently only one core area remains in the Coyote Ridge area of Santa Clara County. All known extant occurrences of bay checkerspot butterfly are within a 9-mile radius of Coyote Ridge and the home range of the species is extremely limited given they are only known to disperse up to 4.7 miles from an existing population (USFWS 2009). Populations known to occupy specific sites one year and move to another site the following year and may continue repeating this pattern. The nearest documented population of bay checkerspot butterfly is approximately 10 miles west of the Project Area.

The primary host plant for bay checkerspot butterfly is California plantain (*Plantago erecta*), with secondary host plants including dense flower owl's clover (*Castilleja densiflora*) or purple owl's clover (*Castilleja exserta*). These host plants occur in grasslands associated with serpentine and ultramafic soils throughout the current range of this species but are not strict serpentine endemic plant species. Furthermore, the range of the host plants is greater than bay checkerspot butterfly (USFWS 2009). Bay checkerspot butterflies require grasslands with topographic diversity including warm south and west facing slopes along with cool north and east facing slopes. Depending on the time of year and annual weather conditions, slopes can become unfavorable (USFWS 2009). Adults emerge from pupae from late February to April and

their lifespan can range from 10 days to 3 weeks. During the 4 to 6-week flight season (i.e., late February to early May), mating occurs, and females can lay one to five egg masses, with five to 350 eggs per mass (USFWS 2009). Eggs hatch within 10 days and the larvae feed for approximately 2 weeks. Once the larvae reach their fourth instar, they enter diapause which lasts through the summer dry season. The larvae break diapause once the host plants germinate at the start of the rainy season, typically November to January (USFWS 2009).

Occurrence Records
There are no CNDDB occurrences within 5 miles of the study area.

Suitable Habitat Within the Study Area
Based on the field surveys conducted in 2019 and 2020 grasslands associated with serpentine or ultramafic soils to support egg laying and larval development is absent from the study area; however, the host plants (i.e., dwarf plantain [*Plantago erecta*] and/or purple owl's clover [*Castilleja densiflora* or *C. exserta*]) for bay checkerspot butterfly were observed in low abundances intermixed with non-native annual grasslands in the upstream and downstream areas of the Project Area. These host plant species are not strict serpentine endemics and occur in non-serpentine soils. Bay checkerspot butterflies will not feed on larval host plants that grow in non-serpentine soils that are intermixed with NNIPs (USFWS 2009); and therefore, the Project Area offers very limited habitat value for the species. As such, bay checkerspot butterfly has no potential to occur in the Project study area and is not evaluated further in this document given the distance of the nearest known extant bay checkerspot butterfly population to the Project study area (i.e., over 10 miles) and the currently understood dispersal distance of the species (i.e., under 5 miles); and the limited value of the potential breeding habitat identified during the survey efforts within the Project study area (i.e., only small patches of host plants intermixed with NNIP species were identified in areas of non-serpentine soils).

3.1.3 Western Bumble Bee

Distribution, Biology, and Habitat Requirements
The western bumble bee is not Federally listed and is State listed as candidate endangered. Western bumble bee is easily distinguished from other species in the Apidae family based on hair coloration. The size of western bumble bees varies, with queens measuring approximately 0.8 inches in length (The Xerces Society for Invertebrate Conservation [XSIC] et al. 2018). Workers range from approximately 0.4 to 0.6 inches long, and males range from approximately 0.5 to 0.7 inches in length (XSIC et al. 2018). Historically, western bumble bees occurred throughout the west coast of North America, from southern British Columbia to central California. Currently in California, western bumble bee populations are restricted to high elevation sites in the Sierra Nevada and along the Northern California coast (XSIC et al. 2018).

Western bumble bees utilize meadows and grasslands for both foraging and nesting habitat. They primarily nest underground in old ground squirrel (*Otospermophilus beecheyi*) or other animal burrows but can also nest above-ground in hollowed out logs (XSIC et al. 2018). Nesting sites are usually in open west-southwest facing slopes bordered by trees. Colonies can include over 1,600 workers and produce around 360 new queens, making western bumble bee colonies relatively large with respect to many other bumble bee species colonies. Western bumble bees visit a large variety of flowering plants to forage for nectar and pollen and require plants that bloom throughout the colony's life cycle (typically early February to late November) (XSIC et al. 2018). Some of the more common plant genera associated with western bumble bees include *Cirsium* spp., *Erigonum* spp., *Solidago* spp., *Ceanothus* spp., *Centaurea* spp., and *Penstemon* spp. Very little is known about overwintering sites, but studies show that western bumble bees hibernate approximately 2 inches underground (XSIC et al. 2018).

Occurrence Records
There is one occurrence for western bumble bee in Santa Clara County from May 23, 2018 located at Happy Hallow Park, approximately 30 miles northwest of the study area (Bumble Bee Watch 2020).

Suitable Habitat Within the Study Area
Approximately 1,297 acres of grassland habitat in the study area provide potential foraging and nesting habitat for western bumble bee; however, this species nests primarily in underground cavities such as old squirrel or other animal nests and in open west-southwest slopes bordered by trees. Within the grassland habitats in the study area, minimal ground squirrel (*Otospermophilus beecheyi*) burrows were observed within the study area but smaller burrows (i.e., gopher [*Thomomys bottae*]) were observed. Although the study area may provide foraging and nesting habitat, current research indicates populations are restricted to high elevations sites in California and along the Northern California coast (CDFW 2019). In addition, the nearest documented occurrence of western bumble bee is over 20 miles away from the study area. Based on these results, this species has a low potential to occur within the study area.

3.1.4 Crotch Bumble Bee

Distribution, Biology, and Habitat Requirements
The crotch bumble bee is not Federally listed and is State listed as candidate endangered. Crotch bumble bee is easily distinguished from other species in the Apidae family based on hair coloration. The size of crotch bumble bees varies, with queens ranging from approximately 0.9 to 1 inches in length (XSIC et al. 2018). Workers range from approximately 0.5 to 0.8 inches, and males range from 0.6 to 0.7 inches in length (XSIC et al. 2018). Historically, crotch bumble bees were common throughout most of the southern two-thirds of California, northern Mexico, and southwest Nevada. Currently, this species occurs in limited populations along the California coast, deserts, Central Valley, and adjacent foothills through most of southwestern California (XSIC et al. 2018). The decline of the crotch bumble bees is attributed to the modification and destruction of habitat (especially in the Central Valley due to extensive agriculture), overexploitation, competition with managed honeybees, and disease.

Crotch bumble bees inhabit open grasslands and scrub habitats for both foraging and nesting habitat. They primarily nest underground in ground squirrel or other animal burrows. Crotch bumble bees visit a large variety of flowering plants to forage for nectar. Plant families most associated with this species include *Fabaceae*, *Apocynaceae*, *Asteraceae*, *Lamiaceae*, and *Boraginacea* (XSIC et al. 2018). These plant families are not particularly this species preference; however, they represent the majority of flowers in the landscapes where this species occurs. Very little is known about overwintering sites, but studies show that they overwinter in soft, disturbed soils or under leaf litter (XSIC et al. 2018).

Occurrence Records
There is one occurrence of crotch bumble bee in Santa Clara County from March 25, 2019 located at Stile Ranch Trail, Santa Teresa County Park, approximately 25 miles northwest of the study area (Bumble Bee Watch 2020).

Suitable Habitat Within the Study Area
Potential foraging and nesting habitat (i.e., grasslands and scrub habitats) for crotch bumble bee is present both upstream and downstream from North Fork Dam. Within the study area, there is approximately 1,912 acres of potential foraging and nesting habitat consisting of grassland and scrub vegetation communities; however, within the grassland habitats, minimal ground squirrel burrows were observed within the study area as discussed above under western

bumble bee. Although the study area may provide foraging and nesting habitat, current research indicates populations are restricted to the California coast, deserts, Central Valley, and adjacent foothills (CDFW 2019). In addition, the nearest documented occurrence of crotch bumble bee is over 20 miles away from the study area. Based on these results, this species has a low potential to occur within the Project study area.

3.2 Special-Status Amphibians

3.2.1 Foothill Yellow-legged Frog

Distribution, Biology, and Habitat Requirements
Foothill yellow-legged frog is not Federally listed and is State listed as endangered. The study area is located within the range of the foothill yellow-legged frog West/Central Coast clade. The historic range for this foothill yellow-legged frog included the western Cascades in Oregon, the coast ranges south to the San Gabriel Mountains, and western side of the Sierra Nevada Mountains south to the edge of the Tehachapi Mountains. Foothill yellow-legged frogs can vary in color from gray, brown, olive, or red. Adult frogs' range in size from approximately 1 to 3 inches long while tadpoles' typical range in size from approximately 1.5 to 2 inches. Foothill yellow-legged frogs occur in streams flowing through a variety of vegetation types, including valley-foothill hardwood, valley-foothill hardwood-conifer, valley-foothill riparian, ponderosa pine, mixed conifer, mixed chaparral, and wet meadows (Sawyer and Keeler-Wolf 2009). Frogs seem to favor channels with at least some shading (i.e., greater than 20 percent) cast by riparian vegetation. However, when canopy closure is too great (i.e., over 90 percent), foothill yellow-legged frogs are rarely found, potentially given the lack of suitable breeding and basking sites, and reduced levels of appropriate food (Moyle 1973). In a landscape-scale habitat analysis of frogs in Oregon, Olsen and Davis found that stream order, minimum temperatures, precipitation frequency, stream gradient, and elevation were important variables in predicting species presence (Olsen and Davis 2009).

Foothill yellow-legged frogs typically breed between late April and early July. Breeding site selection occurs at two scales; populations congregate at suitable breeding habitat sites along streams and rivers, and females select specific oviposition sites within these breeding habitats. Breeding and rearing habitat is generally located in gently flowing, low-gradient stream sections with variable substrates predominated by cobble and boulder. Foothill yellow-legged frogs breed at locations that provide suitable velocities and depths over a relatively broad range of discharge volumes, ranging from small tributaries to large rivers (Lind 1996). In larger channels, breeding sites are often at point bars or depositional environments near the tail-end of pools, and in proximity to tributary confluences. These sites have reduced chance of scour, seem to have some degree of spatial stability on a local scale, and are consequently used annually over many years. In smaller streams, egg masses are in depositional areas with cobble and boulder substrates such as runs, or the tails and outlets of pools (SCVHA 2020).

Occurrence Records
There is one documented CNDDB occurrence (#2074, observed March 4, 1950) within the study area for this species, located along Pacheco Creek near SR 152 and Kaiser-Aetna Road.

Suitable Habitat Within the Study Area
Based on the results from the reconnaissance-level habitat assessment surveys along with terrestrial vegetation mapping and the aquatic resources delineation, the study area contains approximately 86 acres of aquatic breeding habitat, 254 acres of aquatic non-breeding habitat, and 174 acres of dispersal habitat for foothill yellow-legged frog. The suitable aquatic breeding habitat occurs primarily on North Fork Pacheco Creek upstream from North Fork Dam and

along the South Fork Pacheco Creek.Suitable dispersal and foraging habitat for this species is also present in Pacheco Creek downstream from North Fork Dam in the form of cobble and sand bank, rock outcrops, and deeper pools; however, this portion of the creek lacks breeding habitat due to flow regimes that negatively affect breeding. In addition, no foothill yellow-legged frogs were observed during pedestrian surveys (SCVHA 2020). According to the Santa Clara Valley Habitat Agency's (SCVHA) report (2020) foothill-yellow legged frog are absent within Pacheco Creek below North Fork Dam based on regulated discharges and on SCVHA surveys conducted in April and July 2019 as part of a separate study. Based on this information and the presence of potentially suitable habitat within the study area, foothill yellow-legged frog has a moderate potential to occur in the portion of the study area above North Fork Dam and Pacheco Reservoir.

3.3 Special-Status Reptiles

3.3.1 Western Pond Turtle

Distribution, Biology, and Habitat Requirements
Western pond turtles are not Federally listed and is CDFW SSC. Western pond turtles are a small to medium size turtle usually dark brown or olive in color with an unkeeled carapace. Western pond turtles range extends from the Washington through western Oregon and California, south to Baja California. Western pond turtles are typically active from spring to early fall depending on temperature but may be active during warmer winter periods. During winter, the turtles go into hibernation and estivation which can be done either under water or burrows in sandy soils associated with woodlands. During their active period they occupy slow water aquatic habitats like ponds, lakes, streams, marshes, and irrigation ditches. They require platforms for basking including sun exposed rocks, logs, cattail matts, or stream banks. Hatchlings require shallow water with dense submergent or short emergent vegetation.

Western pond turtles' mate in spring and summer between late April and early August. Nesting sites occur in sandy soils in upland areas in the vicinity of their aquatic site. Hatchlings may emerge in late summer or fall, but some turtles may overwinter in the nest and emerge the following spring (Ernst et al. 2009).

Occurrence Records
Several western pond turtles were documented downstream from the North Fork and South Fork Pacheco Creek confluence in the study area during the 2019 and 2020 surveys. There are 23 CNDDB occurrences of this species either in or within 5 miles of the study area.

Suitable Habitat Within the Study Area
Based on the results from the reconnaissance-level habitat assessment surveys along with terrestrial vegetation mapping and the aquatic resources delineation, there is approximately 681 acres of aquatic habitat for western pond turtle within the upstream and downstream areas in the form of ponds, Pacheco Reservoir, and Pacheco Creek. This includes approximately 476 acres in the downstream area and approximately 206 acres in the upstream area. Numerous areas of basking habitat were also observed within the upstream and downstream areas, including rock outcrops, logs, gravel, and sandy banks. Approximately 804 acres of nesting habitat occurs in downstream area and 923 acres in the upstream area in the form of grassland. Western pond turtles have been documented in the study area during the surveys along downstream area of the study area.

3.3.2 Silvery Legless Lizard, San Joaquin Coachwhip, and Coast Horned Lizard

Distribution, Biology, and Habitat Requirements

The study area is within the range of silvery legless lizard, San Joaquin coachwhip, and coast horned lizard. All three species are not Federally listed but are CDFW SSC. Information on each of the species biology, life history, and habitat requirements are described below.

Silvery Legless Lizard. Silvery legless lizards are a small slender lizard with no legs, a blunt snout and tail, eyelids, and smooth shiny scales. They range in length from 11 to 18 inches long. They can be metallic silver, beige, brown, or black in color. This lizard occurs from the southern edge of the San Joaquin River in northern Contra Costa County south to Ventura County and intermittently in in the San Joaquin Valley, southern Sierra Nevada mountains, Tehachapi Mountains, and San Gabriel Mountains.

Silvery legless lizards occur in areas with sandy or loose loamy soils, often areas under sparse vegetation including beaches, chaparral, or pine-oak woodland and often near riparian vegetation along stream terraces. They do not bask in direct sunlight and can tolerate cool temperatures. This lizard feeds primarily on insect larvae under leaf litter. Silvery legless lizards are rarely found moving above ground, but sometimes can be found on the surface at dusk or in the evening (Stebbins 1985). There is little information about the breeding habits of this species. Gonadal examinations of captured specimens indicate that breeding occurs in the spring and continues until July (Goldberg and Miller 1985).

San Joaquin Coachwhip. Adult San Joaquin coachwhips are 36 to 66 inches long with smooth scales, a relatively large head and eyes, a thin neck, and a long thin tail. They can be tan, olive, brown, or yellowish in color. San Joaquin coachwhip, is endemic to California, ranging from Arbuckle in the Sacramento Valley at the norther potion of their range to the southern foothills in Kern County and in portions of the Southern Coast Range. San Joaquin coachwhip is a subspecies of the coachwhip (*Coluber flagellum)* which is common occurs across the southern half of the U.S. from southern California east to Florida, and into Mexico including northeast Baja California.

San Joaquin coachwhip snakes are active during the daytime and can tolerate high temperatures. They are found in grassland, dessert, scrub, chaparral, and pasture habitats. They prefer treeless areas and avoid dense vegetation. They make take refuge in rodent burrows, in areas shaded by vegetation, or under large objects. They are a constrictor species, crushing their prey prior to consuming it. This snake primarily preys upon small mammals. San Joaquin coachwhips suffer from habitat loss and fragmentation in its range due to conversion of habitat to agricultural use and urban development. These practices reduce or eliminate the snake's food and habitat sources.

Coast Horned Lizard. The coast horned lizard is a flat-bodied lizard with a wide oval-shaped body, enlarged pointed scales on the upper body and tail, and a large or spines on the head. These lizards can be reddish, brown, yellow, or grey in color on their dorsal side with cream, beige, or yellow bellies. Their historic range was along the Pacific coast of California from the Baja California to Bay area and in the Sacramento/ Joaquin Valley from Redding, California to the Kern Plateau east of Bakersfield, California. Found in a wide variety of habitats, most common in lowlands along sandy washes with scattered low bushes. Uses open areas for sunning, bushes for cover, patches of loose soil for burial, and feed on ants and other insects. Occurs in the Sierra Nevada foothills throughout the central and southern California coast. Coast horned lizards have been eliminated from much of their historic habitat due to habitat loss from land development and agriculture and reduction of food sources.

Occurrence Records
No CNDDB occurrences for silvery legless lizard and San Joaquin coachwhip have been documented within 5 miles of the study area. There are three documented CNDDB occurrences of coast horned lizards (#614 from March 25, 1994, #627 from April 28, 2002, and # 628 from May 5, 2002) within 5 miles of the study area.

Suitable Habitat Within the Study Area
The woodland, riparian, chaparral, and grassland vegetation communities present in the study area may provide up to 5,800 acres of potentially suitable habitat for silvery legless lizard and coast horned lizard in the study area. However, the potential for the study area to support the species is very low given loose soils for burrowing for silvery legless lizard and sandy washes to support coast horned lizard is absent from the study area (i.e., there is poor habitat quality in the study area for both species); and as such, there is a low potential for both species to occur within the study area.

Grasslands, scrub/chaparral, and pasture habitats are present in the study area and provide potential habitat for the San Joaquin coachwhip. Approximately 2,200 acres of grassland, scrub/chaparral, and pasture occurs within the study area. Although no CNDDB occurrences for this species have been documented within 5 miles of the study area, potentially suitable habitat for this species occurs within the study area; therefore, this species has a moderate potential to occur.

3.4 Special-Status and Other Protected Birds

Birds nest in a variety of places, including trees, shrubs, man-made structures, and the ground. This section describes the special-status and migratory birds protected under the Migratory Bird Treaty Act (MBTA)[1] and under Sections 3500-3516 of the California Fish and Game Code[2] (FGC) for game birds and birds of prey that have potential to occur in the study area. Several bird species including raptors, waterfowl, and passerines occur within the study area and were observed during the field surveys occurring during the 2019 and 2020 field seasons.

3.4.1 Least Bell's Vireo

Distribution, Biology, and Habitat Requirements
The Least Bell's vireo (LBV) was Federally listed as an endangered species on May 3, 1986, and it is the subject of a draft recovery plan published in 1998 (USFWS 1998b) with USFWS designated critical habitat occurring in southern California. This species is also listed by the State as endangered. LBV are small birds, approximately 1.5 to 12.5 centimeters long and have short, rounded wings and short, straight bills with a faint white eye ring. Their feathers are mostly gray above and pale below. The LBV's historical breeding range was widespread throughout California, including the Sacramento and San Joaquin Valleys. Santa Clara County's first record was a nest with eggs collected in 1932 in a dense willow thicket along the Pajaro River near Sargent.

LBV is known to nest in riparian woodlands dominated by willow and Fremont's cottonwood. Suitable willow woodlands are typically dense with well-defined vegetative strata or layers. The most critical structural component of nesting habitat in California is a dense shrub layer 2 to 10

[1] The MBTA of 1918 enacts the provisions of treaties between the U.S., Great Britain, Mexico, Japan, and the Soviet Union and authorizes the U.S. Secretary of the Interior to protect and regulate the taking of migratory birds. This treaty makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed under the act, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations.
[2] Section 3500-3516 give CDFW authority to protects game birds, birds of prey, migratory birds, and fully protected birds from take or possession, except as otherwise provided by the code (e.g., incidental take under CESA).

feet above the ground. Ideal LBV nesting habitat consist of a riparian corridor at least 800 feet wide. Individuals may forage in adjacent scrub or chaparral habitat and during winter they utilize scrub vegetation adjacent to watercourses or riparian gallery forests along the west coast of northern and central Mexico.

Occurrence Records
There are two CNDDB occurrences within 5 miles of the study area. The nearest extant and most recent CNDDB occurrence is approximately 20 years old (#198, observed 5/18/2001 and updated 1/23/2002) and was documented in a dense multi-story riparian area dominated by willows approximately 2 miles west of the southwestern portion of the study area along Llagas Creek. The second CNDDB occurrence (#504, observed 4/29/1932 and updated 2/18/2014) is located approximately 4.6 miles southwest of the study area along U.S. Highway 101 near Carnadero Creek and Tar Creek. Further focused surveys were performed nearly annually for this species from 1997 through at least 2010, following the observation of the species in 1997 and 2001; however, LBV has not been detected since 2001 (Santa Clara County 2012).

Suitable Habitat Within the Study Area
Based on the field surveys conducted in 2019 and 2020 only low-quality riparian foraging habitat for least Bell's vireo exists in downstream area. Potential nesting habitat for least Bell's vireo is absent in the study area given that the riparian woodlands lack the stratified structure, vegetative density, and width required by the species (riparian corridors are less than 400 feet wide [much less than species' 800-foot requirement). Based on the surveys conducted, approximately 33 acres of low-quality foraging habitat exists downstream from the existing North Fork Dam within the study area. Least Bell's vireo has a low potential to occur within the study area given the lack of suitable nesting habitat, the age of the last documented occurrence of the species in the region (i.e., 20 years old), and negative findings after more than 10 years of focused surveys following the 2001 sighting (SCVHA 2020).

3.4.2 Other Special-Status and Nesting Migratory Passerines

The following six other special-status passerine species that have potential to occur or are known to occur in the study area:

- Grasshopper sparrow: CDFW SSC
- Tricolored blackbird: CESA threatened
- Yellow warbler: CDFW SSC
- Yellow-breasted chat: CDFW SSC
- Loggerhead shrike: CDFW SSC
- Purple martin: CDFW SSC

In addition to these special-status passerine species, other migratory nesting birds protected under the MBTA and Sections 3500-3516 of the FGC also have potential to nest in many of the habitats and land cover types identified in the study area.

Distribution, Biology, and Habitat Requirements
The six special-status and the migratory passerines have been known to nest and forage in a variety of habitats and land cover types such as woodlands and shrublands, grasslands, open water, and anthropogenic structures such as bridges, structures, and roads. Nests can in occur

in multiple locations, including but not limited to, the branches of trees or shrubs, tree cavities, on the ground, or in burrows. Many of the passerines that nest in the area arrive in early spring (e.g., late February/early March) and nesting activities continue well into late summer (e.g., July/August). General descriptions of each of the six special-status passerine species habitat preferences and breeding/nesting season timing are provided below.

Tricolored blackbird are colonial nesters and prefer to nest in dense stands of fresh emergent vegetation, large Himalayan blackberry (*Rubus armeniacus*) thickets, and rice (*Oryza* sp.) fields. Typically, tricolored blackbirds will start colony formation and breeding starting in March and end in July. Fall migration can occur as late as October in some years and locations (Santa Clara County 2012).

Both yellow warbler and yellow breasted chat nest in dense woody riparian areas. The yellow warbler nest in areas that contain tree species such as willows (*Salix* sp.) and cottonwoods (*Populus* sp.). Yellow warblers construct their nests in upright forks of branches in shrubs, small trees, and briars from 2 to 60 feet above ground (CDFW 2014). Yellow warblers typically breed from mid-April into early August. The yellow breasted chat nest in low, dense vegetation such as raspberry, blackberry, grapevine, dogwood, hawthorn, cedar, multiflora rose, honeysuckle, and sumac. Their nests are typically 1 to 8 feet above the ground, supported by branches and often by masses of vegetation. The typical nesting season for yellow breasted chat is May through July (CDFW 2014).

Loggerhead shrike and grasshopper sparrow prefer to nest in grasslands and shrub habitats. Nesting occurs in the early spring for loggerhead shrikes with nests placed in dense (and often thorny) tree or shrub—usually 5 to 30 feet above the ground (CDFW 2014). The grasshopper sparrow nest on the ground, very well hidden at the base of weed, shrub, or clump of grass and typically occurs between May and August (CDFW 2014).

Purple martin nests in cavities, typically snags with woodpecker holes and sometimes cavities in nesting boxes and utility poles. They usually nest in colonies or as isolated pairs, which occurs in the spring (CDFW 2014).

Occurrence Records

Table 3-2 below shows the CNDDB occurrences within 5 miles of the study area for the special-status passerine species with a potential to occur.

Table 3-2. Special-Status Passerines CNDDB Occurrences Within 5 Miles of the Study Area

Species	Nearest CNDDB Occurrence Records to the Study Area
Grasshopper sparrow	No CNDDB occurrences within 5 miles of the study area.
Tricolored blackbird	There are four CNDDB occurrences within 5 miles of the study area. The nearest extant CNDDB occurrence (#856, observed 4/19/2014 and updated 10/5/2016) is known from within the southwest portion of the study area.
Yellow warbler	No CNDDB occurrences within 5 miles of the study area.
Yellow breasted chat	No CNDDB occurrences within 5 miles of the study area.
Loggerhead shrike	No CNDDB occurrences within 5 miles of the study area.
Purple martin	No CNDDB occurrences within 5 miles of the study area.

Key:
CNDDB = California Natural Diversity Database

Suitable Habitat Within the Study Area

A wide array of habitats in the study area provides potential nesting and foraging habitat for the six other special-status passerine species. Approximately 121 acres of fresh emergent vegetation and other suitable nesting substrates (e.g., large patches of Himalayan blackberry thickets) for tricolored blackbirds were generally identified along Pacheco Creek and San Felipe Lake in the downstream area. The SCVHA also identified an active tricolored blackbird breeding colony at Ciraulo pond in 2021, adjacent to Pacheco Creek, a recently acquired conservation property just upstream from the Pacheco Creek Preserve (Terry, Personal Communication, 2021). Ciraulo pond provides a small amount of suitable habitat for tricolored blackbird nesting given that the fresh emergent vegetation present in the pond is fragmented and small in size. The pond dries out frequently during dry and critical water years (i.e., during times of drought) as well as in summer and fall months when reservoir releases cease. Following cessation of reservoir releases in summer 2020, Ciraulo Pond was dry, groundwater levels declined (SCVHA 2020), and subsequent tricolored blackbird nesting in 2021 occurred during severe drought conditions. Vegetative structure comprising suitable nesting substrate for tricolored blackbird in expected to be present during a variety of conditions, from severe drought to wet years.

Suitable woody riparian habitats amounting to approximately 414 acres for yellow warbler and yellow breasted chat is also present along Pacheco Creek and San Felipe Lake in the downstream area. Grassland and shrubland habitats that could support grasshopper sparrow and loggerhead shrike nesting is present throughout the study area and amounts to approximately 1,465 acres. Approximately 3,482 acres of woodland habitats that may contain snags and cavities (e.g., oak woodlands) suitable for purple martin nesting is present within the study area.

The study area also provides a wide array of potential nesting and foraging habitat for a variety of migratory birds protected under the MBTA and species protected under Sections 3500-3516 of the FGC. These bird species may utilize habitats and land cover types such as the oak and riparian woodlands, shrubland and chaparral communities, annual grasslands, and the buildings, structures (e.g., bridges), and roads present in the study area for nesting.

Given the abundance of potential nesting and foraging habitat within the study area, grasshopper sparrow, yellow warbler, yellow-breasted chat, loggerhead shrike, and purple martin all have a moderate potential to occur within the study area. Based on the recent observation of a breeding colony along Pacheco Creek, tricolored blackbird is known to occur in the study area.

In addition to special-status passerine species, other migratory nesting birds protected under the MBTA and Sections 3500-3516 of the FGC also have potential to nest in many of the habitats and land cover types identified in the study area. Many migratory birds protected under the MBTA have been documented in the study area during surveys, including species such as California scrub jay (*Aphelocoma californica*), Canada goose (*Branta canadensis*), common merganser (*Mergus merganser*), acorn woodpecker (*Melanerpes formicivorus*), and California quail (*Callipepla californica*).

3.4.3 Special-Status and Protected Raptor Species

The following ten special-status and/or protected raptor species have potential to occur in the study area based on the results of the desktop/literature review and field surveys:

- Short-eared owl: CDFW SSC
- Long-eared owl: CDFW SSC

- Western burrowing owl: CDFW SSC
- Golden eagle (*Aquila chrysaetos*): CDFW FP, Bald and Golden Eagle Protection Act
- Swainson's hawk: CESA threatened
- Northern harrier: CDFW SSC
- White-tailed kite: CDFW FP
- California condor: CESA and ESA endangered and CDFW FP
- Bald eagle (*Haliaeetus leucocephalus*): CESA endangered and ESA delisted, Bald and Golden Eagle Protection Act, CDFW FP
- American peregrine falcon: CDFW FP

In addition to these special-status raptor species, other migratory nesting raptors protected under the MBTA and Sections 3500-3516 of the FGC also have potential to occur in many of the habitats and land cover types identified in the study area.

Distribution, Biology, and Habitat Requirements
The raptor species listed above have been known to nest and forage in a variety of habitats and land cover types such as woodlands and shrublands, and grasslands. Nests can occur in multiple locations, including but not limited to, the branches of trees or shrubs, tree cavities, on the ground, or in burrows. Many of these raptor species could nest in the area typically beginning their nesting activities as early as January/February and can continue well into late summer (e.g., July/August). General descriptions of each of these special-status raptor species habitat preferences and breeding/nesting season timing are provided below.

Short-eared owls and norther harrier nest on the ground in areas of dense vegetation. Short-eared owls prefer to nest in ungrazed areas of dry ground within extensive marshes or farmlands while northern harriers will nest along emergent wetland/marshes along rivers or lakes in either wet or dry areas. Short-eared owls typically nest between March and July, whereas northern harriers typically nest from April to September (CDFW 2014).

Long-eared owls prefer to nest in edge habitats of dense riparian stands and other thickets near the edges of meadows and other openings that can be used for foraging. The typical long-eared owl breeding season generally starts about early March and continues into late July (CDFW 2014).

Burrowing owls are a colonial nesting species that typically use rodent or other small mammal burrows (e.g., ground squirrel [*Otospermophilus beecheyi*]) for cover and nesting in grasslands or open shrublands. Burrowing owls are year-round residences, and their nesting season typically starts in March and continues through August (CDFW 2014).

Golden eagles and bald eagles typically nest in large trees and cliffs with foraging habitat in close vicinity. Foraging habitat for golden eagles includes open and semi open land in grassland, chapparal, shrubland, forest, and other vegetated habitats. Foraging habitat for bald eagles include forested areas adjacent to large bodies of water, such as reservoirs and small lakes. Nesting activities for both species typically begins in January/February and concludes as late as July/August, with peak activity from March to June (CDFW 2014).

Swainson's hawk and white-tailed kites typically nest in trees or large shrubs often surrounded by open areas such as grasslands or agricultural fields that are utilized for foraging. Nesting activities for both species typically begins in February/March and concludes with chicks fledging as late as September/October in some instances with a peak in nesting activities occurring about May (CDFW 2014).

American peregrine falcon and California condor prefer high cliffs for nesting habitat. American peregrine falcon prefers nesting sites over water whereas California condor will choose a cave or large crevice in a cliff. The nesting season for American peregrine falcon starts in early March and lasts until late August. California condor begin nesting as early as February with the young being capable of flight in 5-6 months after hatching. California condor chicks remain dependent upon their parents for more than 6 months after learning to fly (CDFW 2014).

Occurrence Records

Table 3-3 below shows the CNDDB occurrences within 5 miles of the study area for the special-status raptor species with a potential to occur.

Table 3-3. Special-Status Raptor CNDDB Occurrences Within 5 Miles of the Study Area

Species	Nearest CNDDB Occurrence Records to the Study Area
Long-eared owl	There are no CNDDB occurrences within 5 miles of the study area.
Western burrowing owl	There are eight CNDDB occurrences within 5 miles of the study area. The nearest extant CNDDB occurrence (#1223, observed 6/17/2009 and updated 9/8/2009) is known from within approximately 0.25 mile of the southwestern portion of the study area.
Golden eagle	There are two CNDDB occurrences within 5 miles of the study area. The nearest extant CNDDB occurrence (#335, observed 4/20/2011) is known within approximately 1.25 miles of the eastern limits of the study area.
Swainson's hawk	There are no CNDDB occurrences within 5 miles of the study area.
Northern harrier	There are no CNDDB occurrences within 5 miles of the study area; however, this species has been observed within the southern limits of the study area near San Felipe Lake.
White-tailed kite	There are no CNDDB occurrences within 5 miles of the study area; however, this species has been observed within the southern limits of the study area near San Felipe Lake.
California condor	There are no CNDDB occurrences within 5 miles of the study area.
Bald eagle	There are two CNDDB occurrences (#369, observed 8/31/2017 and #370, observed 4/30/2018) within the study area along Pacheco Creek. In addition, bald eagles were observed within the study area along Pacheco Creek and near San Felipe Lake.
American peregrine falcon	There are no CNDDB occurrences within 5 miles of the study area: however, this species has been observed in the northern extent of the study area in Henry Coe State Park as part of the 2020 surveys.

Key:
CNDDB = California Natural Diversity Database

Suitable Habitat Within the Study Area

The study area provides potentially suitable nesting and foraging habitat for all 10 special-status raptors species. Approximately 1,354 acres of grasslands or livestock pasture habitats within the upstream and downstream areas provide potential nesting habitat for burrowing owl, and foraging habitat for most of the special-status raptor species. Approximately 427 acres of marsh habitat provides suitable potential nesting and foraging habitat for short-eared owl and northern harrier. Approximately 4,000 acres of woodland and scrub habitats provide suitable nesting for

bald eagle, golden eagle, Swainson's hawk, and white-tailed kite. Approximately 3,400 acres of dense woodland habitats provide suitable nesting habitat for the long-eared-owl. Pacheco Reservoir, San Felipe Lake, and Pacheco Creek provide foraging habitat for bald eagle. No cliff habitats with potential to support American peregrine falcon or California condor nesting were observed in the Project study area; however, the area provides potential grassland foraging habitat, as described above for the species.

Based on the potential nesting and foraging habitat within the Project study area western burrowing owl, long-eared-owl, short-eared owl, and Swainson's hawk have a moderate potential to occur within the study area. The northern harrier, white-tailed kite, and American peregrine falcon have been observed within the Project study area and are present. Given the lack of nesting habitat for California condor and lack of documented occurrences in and near the study area, this species has a low potential to occur. Nesting bald eagles and golden eagles were documented in the study area during the ground and aerial based surveys conducted in 2020. Other common protected raptor species (e.g., species protected under the MBTA and/or species protected under FGC Sections 3500-3510) that have been documented in the study area during surveys include species such as red-tailed hawk (*Buteo jamaicensis*) and red-shoulder hawk (*Buteo lineatus*).

3.5 Special-Status Mammals

Mammal habitat assessments were conducted using the terrestrial vegetation mapping along with daytime pedestrian surveys and visual observations within the study area to identify suitable habitat for special-status mammals. Information collected during the habitat assessment and considered in the following discussions included data on the following characteristics: vegetation communities, aquatic features, surrounding land use, barriers to movement, slopes and presence of suitable breeding and dispersal habitats.

3.5.1 Mountain Lion

Distribution, Biology, and Habitat Requirements
The mountain lion Southern California/Central Coast Evolutionarily Significant Unit is a CESA candidate threatened species. Mountain lions are large, slender cats with short, muscular limbs and long tails that equal about one third of the lion's total length. Males are usually larger than females and range in length from approximately 7 to 7.5 feet, with females ranging from approximately 6.5 to 7 feet (Yap et al 2019). Historically, the mountain lion's range included all of North America, but has since been reduced to one third of its original range. In California, their habitat has been fragmented due to development and roadway construction, creating populations and subpopulations within their range. The Southern California/Central Coast Evolutionarily Significant Unit consist of the following subpopulations:

- Santa Ana Mountains
- Eastern Peninsular Range
- San Gabriel/San Bernardino Mountains
- Central Coast South
- Central Coast North
- Central Coast Central

Mountain lions occupy a variety of habitats including pine forests, oak woodlands and savannahs, riparian woodlands, chaparral, and grasslands. They require large amounts of undisturbed habitat for dispersal and foraging, and individuals are territorial and live a solitary life (except for breeding) (Yap et al 2019). Mountain lion prey consists of mainly deer (*Odocoileus hemionus*) Tule elk (*Cervus canadensis nannodes*), wild hogs (*Sus scrofa*) with other large and small mammals making up a smaller portion of prey, including livestock, wild horses and hogs, and coyotes. Mountain lions are polygamous breeders and may breed year-around, but timing may be dependent on prey abundance and climate. In North America, April through September is the most common time for kitten births (Yap et al 2019). Gestation can last 82 to 96 days and litter sizes range from one to six kittens, with two to four kittens per litter being the typical amount. Females care for their young for 1 to 2 years, then either abandon the cubs or become aggressive towards them to stop them from following her since males will kill cubs (Yap et al 2019).

Occurrence Records

This species is not tracked by any state database (i.e., CNDDB); therefore, there are no occurrence records for this species. However, suitable habitat for this species does occur within the study area and potential signs of mountain lion predation and tracks have been observed within the study area. In addition, other past unrelated studies have documented the species within the study area (Pathways for Wildlife 2020).

Suitable Habitat Within the Study Area

All terrestrial habitat adjacent to and upstream from the existing North Fork Dam is suitable habitat for mountain lions. Downstream from dam, habitat becomes fragmented due to SR 152 and developed areas, creating marginal foraging habitat. Within the study area there is approximately 5,700 acres of suitable foraging habitat consisting of woodlands, grasslands, aquatic features and scrub/shrublands. The study area also provides suitable habitat for mountain lion prey including mule deer and wild hogs (observed during habitat assessment surveys).

3.5.2 San Joaquin Kit Fox

Distribution, Biology, and Habitat Requirements

San Joaquin kit fox is Federally listed as an endangered species in 1967 and it is the subject of a recovery plan published in 1998 (USFWS 1998c). This species is also listed by the State as threatened. San Joaquin kit foxes are the smallest fox in North America, with an average body length of 20 inches and weight of about 5 pounds (USFWS 1998c). Currently, they occur in some areas of suitable habitat within the San Joaquin Valley and in the surrounding foothills of the Coast Ranges, Sierra Nevada, and Tehachapi Mountains from Kern County north to Contra Costa, Alameda, and San Joaquin Counties. Historically, San Joaquin kit fox were believed to range from Contra Costa and San Joaquin Counties in the north to Kern County in the south.

San Joaquin kit fox occur in a variety of habitats, including grasslands, scrublands, vernal pool areas, alkali meadows and playas, and an agricultural matrix of row crops, irrigated pastures, orchards, vineyards, and grazed annual grasslands. They prefer habitats with loose-textures soils that are suitable for digging, but they occur on virtually every soil type (USFWS 1998c). In addition, they primarily occur on flat or gently rolling terrain, usually with slopes less than five percent. This is due to an increase in predation risk as terrain becomes steeper and more rugged (Cypher et al. 2013) and there are no CNDDB occurrences documented within 5-miles of the study area. Dens are generally located in open areas with grass or grass and scattered brush, and seldom occur in areas with thick brush. They feed primarily on small mammals including California ground squirrels (*Otospermophilus beecheyi*), rabbits (*Sylvilagus* spp.), mice

(*Chaetodipus* and *Perognathus* spp.), kangaroo rats (*Dipodomys* spp.), and have been known to prey on ground-nesting birds, reptiles and insects.

Occurrence Records
The study area is located within the range of the San Joaquin kit fox; however, there are no CNDDB occurrences within the last 20 years documented within 5 miles of the study area. The last known CNDDB occurrences are historical records from 1975, one located approximately 2-miles southeast of the study area and one located approximately 4.5 miles west of the study area.

Suitable Habitat Within the Study Area
The study area provides suitable dispersal habitat (i.e., habitats for movement and foraging) for San Joaquin kit fox. Based on the vegetation mapping efforts and the reconnaissance-level habitat assessment surveys within the upstream and downstream areas there are approximately 520 acres of suitable dispersal habitat (i.e., grassland areas with slopes of less than five percent) and approximately 868 acres of low-quality dispersal habitat (i.e., grassland areas with slopes between five to 15 percent). Although habitat for this species does occur in the study area, this species typically inhabits burrows on slopes less than five percent and the potential habitat that is available exists as fragmented spatially disjunct areas. Habitat suitability declines as terrain ruggedness and average slope increase, primarily due to an associated increase in predation risk for San Joaquin kit foxes. Also, this species is optimally adapted to arid environments with sparse vegetation and a high proportion of bare ground, causing habitat suitability to decrease with an increase in vegetation density (Cypher et al. 2013). Therefore, San Joaquin kit fox has a low potential to occur within the study area.

3.5.3 American Badger

Distribution, Biology, and Habitat Requirements
The American badger is not Federally listed and is listed by CDFW as a SSC. Badgers measure approximately 18 to 22 inches long, with a tail measuring between 4 to 6 inches. They weigh 13 to 25 pounds with males being larger than the females. Badgers have a flattened body with short, stocky legs and the fur on their back and sides range from yellowish gray to reddish with a buffy colored belly. Their face is very distinct with a whitish throat and chin and a median white stripe from the nose over the top of the head. Their face has black patches with black spot in front of each ear. They have black feet with five toes and extremely long claws.

The American badger can be found throughout most of California excluding the northern extent of the north coast area. The American badger requires sufficient food, friable soils, and relatively open, uncultivated ground. Grasslands, savannas, and mountain meadows near timberline are preferred. Badgers prey primarily on burrowing rodents such as ground squirrels and pocket gophers but will prey on a variety of other animals.

Occurrence Records
There are six CNDDB occurrences within 5 miles of the study area, and the nearest extant CNDDB occurrence (#386, observed 4/23/2006 and updated 12/18/2006) is known from approximately 1 mile southeast of the study area in oak woodland/savannah habitat.

Suitable Habitat Within the Study Area
The study area is located within the range of the American badger, and suitable habitat for this species is primarily associated with the upstream area. Potentially suitable habitat downstream from North Fork Dam becomes fragmented due to agricultural land, residential development, and roadways. Within the upstream and downstream areas, there are approximately 130 acres of dispersal habitat (riparian forest and woodland) and approximately 6,000 acres of potential

denning habitat (i.e., grasslands) which could also be used for dispersal (primarily riparian forest, woodlands, scrub, orchard, vineyard, and pasture habitats). The upstream and downstream areas also provide suitable habitat for many prey species for the American badger. Based on the potential habitat within the study area, this species has a moderate potential to occur.

3.5.4 Ringtail

Distribution, Biology, and Habitat Requirements
Ringtails is not Federally listed and is State listed as FP. The ringtail is a cat-sized carnivore resembling a small fox with a long racoon-like tail. Its bushy tail is flattened and nearly as long as the head and body, with alternating black and white rings. They are almost wholly nocturnal and spend most of the day sleeping in their dens. They leave their dens at night to feed.

They are found throughout most of California, from below sea level to at least 8,000 feet in the Sierra Nevada mountains. They primarily occur in riparian habitats, but also utilize brush stands within forest and shrub habitats. Suitable denning habitat includes rock recesses, hollow trees, logs, snags, abandoned burrows and woodrat nests (CDFW 2014). Females give birth in May and June, averaging one to five kittens per litter. Ringtails feed on a variety of prey including birds, rodents, reptiles and amphibians.

Occurrence Records
This species is not tracked by any state database (i.e., CNDDB) so there are no known occurrence records for this species.

Suitable Habitat Within the Study Area
The study area is located within the range of ringtail, and the Project study area provides suitable habitat for this species, primarily upstream from North Fork Dam. Within the upstream and downstream areas there is approximately 3,700 acres of denning habitat associated with woodland, riparian forest, shrub vegetation communities. Based on the potential habitat within the Project study area, the species has a moderate potential to occur.

3.5.5 Pallid Bat, Townsend's Big-Eared Bat, Western Mastiff Bat, and Western Red Bat

Habitat Requirements
The study area is within the species range for several bat species that are considered CDFW SSC species. These bat species including pallid bat, Townsend's big-eared bat, western mastiff bat, and western red bat. These species roost and forage in a variety of vegetation communities including buildings, bridges, trees cavities, caves, mines, and cliff faces. Young for all four of these bat species are born typically between April and July with the young being volant by July and August (CDFW 2014).

Occurrence Records
There is a total of five CNDDB occurrence records for pallid bat, Townsend's big-eared bat, and western bat within 5 miles of the study area. No CNDDB occurrences of western mastiff bat were documented within 5 miles of the study area. Table 3-4 below provides the CNDDB occurrences for the special-status bat species.

Table 3-4. Special-Status Bat Species CNDDB Occurrences within 5 Miles of the Study Area

Species	CNDDB Occurrence
Pallid bat	One historical CNDDB occurrences (#250) in the Project footprint from 1937 and updated 10/3/2006 located near SR 152 and Kaiser-Aetna Road.

Townsend's big-eared bat	There are three CNDDB occurrences documented either in or within 5 miles of the study area. The nearest and most recent extant CNDDB occurrence (#648, observed 10/1/2017 and updated 7/11/2019) is known from a day roost present in culvert conveying seasonal stream under SR 152 approximately 2 miles northeast of Casa De Fruta in the study area.
Western red bat	One historical CNDDB occurrence for this species (#94, observed 4/14/1937 and updated 3/21/2007) was documented located approximately 2 miles north of the southern study area boundary near the Furguson Road and Canada Road intersection.

Suitable Habitat Within the Study Area

The study area is within the range for all four bat species and provides suitable habitat for these species. Within the study area there is approximately 3,700 acres of potential roosting habitat in the form of woodlands, riparian forest, scrub, and shrub vegetation communities. Based on suitable roosting and foraging habitat within the study area and documented CNDDB occurrences, the Pallid bat, and western red bat have a moderate potential to occur and the Townsend's big-eared bat has a high potential to occur within the study area. Due to limited and low-quality roosting and foraging habitat in the study area for western mastiff bat and no CNDDB occurrences within 5 miles, this species has a low potential to occur.

Chapter 4. Conclusions

Based on the results of the biological surveys and separate Project reports, Table 4-1 describes each species, suitable habitat within the study area, and the associated acreages.

Table 4-1. Summary of Special-Status Species Habitat and Acreages Within the Study Area

Species Name	Habitat Type	Acreages[1]
Insects		
Monarch butterfly	breeding and migration habitat	5,697
Bay checkerspot butterfly	marginal breeding habitat	1,297
Western bumble bee	marginal foraging and nesting habitat	1,297
Crotch bumble bee	marginal foraging and nesting habitat	1,912
Herpetofauna		
Foothill yellow-legged frog	1. Aquatic breeding habitat, 2. Aquatic non-breeding habitat, 3. Dispersal habitat	1. 86 2. 254 3. 174
Western pond turtle	1. Aquatic habitat, 2. Dispersal habitat, 3. Nesting habitat	1. 681 2. 4,141 3. 1,720
Silvery legless lizard	Breeding/foraging	3,944
San Joaquin coachwhip	None	5,800[2]
Coast horned lizard	None	5,800
Birds		
Grasshopper sparrow	Nesting and foraging	6,770
Tricolored blackbird	Nesting and foraging	6,770
Short-eared owl	Nesting and foraging	6,770
Long-eared owl	Nesting and foraging	6,770
Western burrowing owl	Nesting and foraging	6,770
Golden eagle	Nesting and foraging	6,770
Swainson's hawk	Nesting and foraging	6,770
Northern harrier	Nesting and foraging	6,770
Yellow warbler	Nesting and foraging	6,770
White-tailed kite	Nesting and foraging	6,770
California condor	Foraging	6,770
Bald eagle	Nesting and foraging	6,770
American peregrine falcon	Foraging	6,770
Yellow-breasted chat	Foraging	6,770
Loggerhead shrike	Nesting and foraging	6,770
Purple martin	Nesting and foraging	6,770
Least Bell’s vireo	Foraging	33

Table 4-1. Summary of Special-Status Species Habitat and Acreages Within the Study Area (contd.)

Species Name	Habitat Type	Acreages[1]
Mammals		
Mountain lion	Foraging	5,700
San Joaquin kit fox	1. Suitable dispersal 2. Low or unsuitable dispersal 3. Unsuitable dispersal	1. 520 2. 868 3. 832
American badger	1. Dispersal 2. Denning/dispersal	1. 130 2. 6,000
Ringtail	Denning	3,700
Bats	Roosting	3,700

Notes:
[1] There is significant overlap in habitat uses between species and the acreages should not be considered cumulatively across all species.
[2] The study area lacks the suitable soil types (i.e., sandy soils) to support the San Joaquin coachwhip and coast horned lizard even though suitable vegetation communities (e.g., grasslands and shrublands) are present.

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Draft Environmental Impact Report

Appendix

Biological Resources – Botanical/Wildlife

Attachment B

Terrestrial Vegetation Communities Mapping

Pacheco Reservoir Expansion Project

November 2021

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Appendices

Exhibit A. Vegetation Communities and Other Habitat Types Map Figures

Acronyms and Abbreviations

AC	absolute cover
CDFW	California Department of Fish and Wildlife
MCV	A Manual of California Vegetation
Project	Pacheco Reservoir Expansion Project
RC	relative cover
Report	Terrestrial Vegetation Communities Mapping Report

Chapter 1. Introduction

This Terrestrial Vegetation Communities Mapping Report (Report) was prepared in support of the Pacheco Reservoir Expansion Project (Project) and describes the terrestrial habitat types in the study area. For the purposes of this Report, broad habitat types have been further classified into fine-scale vegetation communities and other land cover types (e.g., urban, agriculture, water). This level of habitat mapping provides sufficient detail to support the development of Project environmental documents and permits. The results of the terrestrial habitat mapping are expected to inform the approach to special-status plant and wildlife surveys for the Project and are also intended to be used to develop the mitigation framework necessary to support Project implementation.

Chapter 2. Methods

2.1 Study Area

The study area for the purposes of this Report generally encompasses the existing Pacheco Reservoir and upstream areas (i.e., generally north of the existing North Fork Dam) surrounding the reservoir up to the expanded reservoir boundary plus an approximately 500-foot buffer. The study area encompasses approximately 6,765 acres and includes all currently proposed impact areas associated with the Project (e.g., dam footprint, inundation area, borrow sites).[1] The study area also encompasses approximately 17 miles of Pacheco Creek along the 100-year floodplain from the North Fork Dam downstream to San Felipe Lake (Figure 2-1) to account for potential changes in the creek's flow regime as a result of the Project.

2.2 Survey and Mapping Methodology

Botanists conducted pedestrian field surveys and desktop-level assessments to characterize the vegetation communities and other land cover types in the study area (Figure 2-1) on the days identified in Table 2-1 between February 2019 and August 2020.

Table 2-1. Pacheco Reservoir Expansion Project Terrestrial Vegetation Communities Mapping Field Survey Dates in 2019 and 2020

February 2019	May 2019	August 2019	September 2019	March 2020	April 2020	May 2020	July 2020	August 2020
4-8, 18-22	21-22	8-9, 19-23, 26-30	9-13, 16-18	16-20, 23-27, 30, 31	1-3, 6	4-8, 11-15, 18-22	20-24, 27-31	3-7, 10-14

Vegetation communities mapping followed the technical approach and vegetation alliance classification system described in *A Manual of California Vegetation, 2nd Edition* (MCV) (Sawyer et al. 2009) and updated in the current online edition (California Native Plant Society 2019). The MCV represents the most recent efforts to provide a common and accepted vegetation classification system for use by CDFW and other agencies throughout California and classifies vegetation into a set of plant alliances, associations, special stands, or semi-natural stands.

[1] In the event, the Project area expands, this Report would be updated consistent with the methods described in Chapter 2.

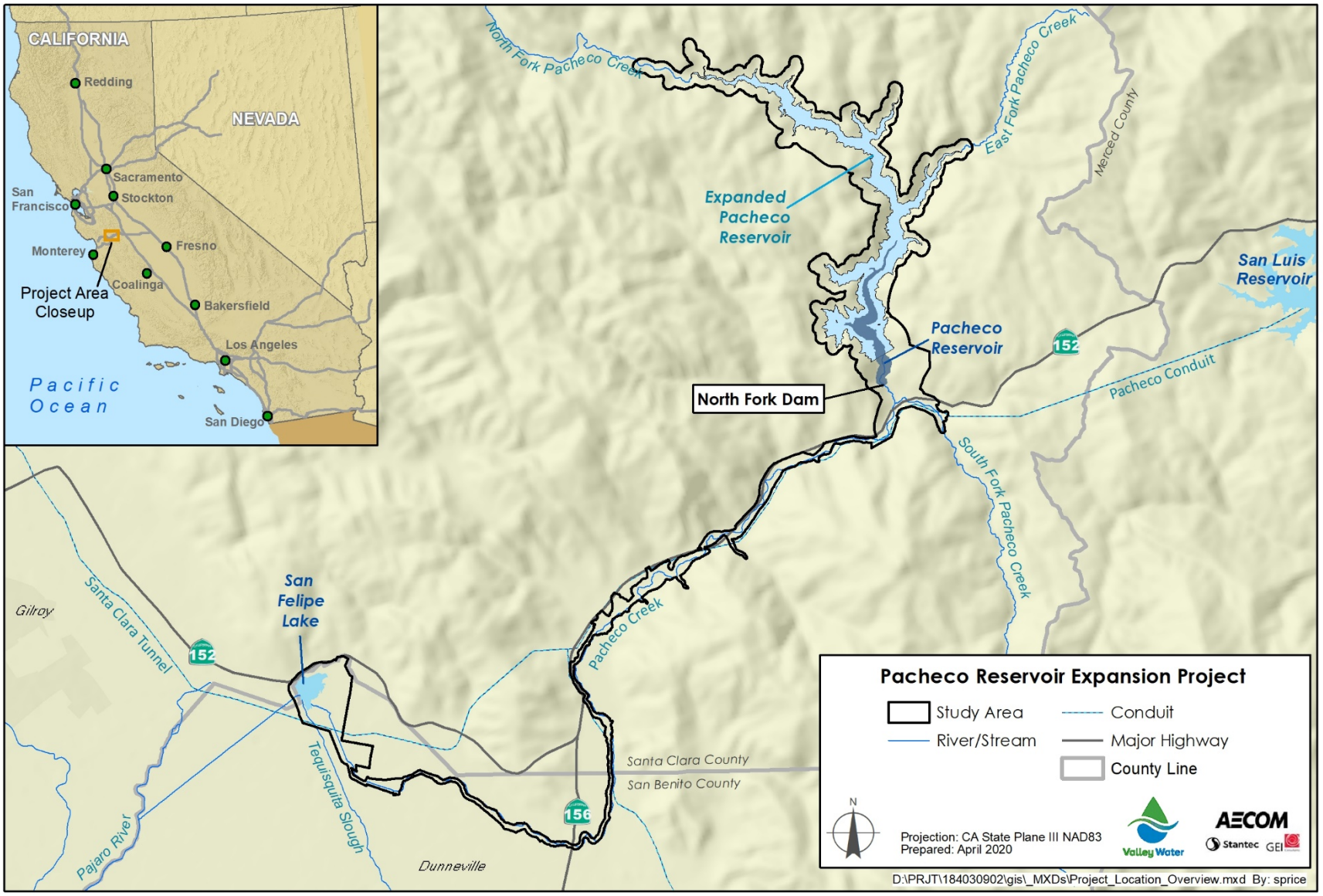

Figure 2-1. Pacheco Reservoir Expansion Project Vegetation Communities Mapping Study Area

A plant species' dominance or importance in the stratum (i.e., tree, woody shrub/subshrub, or non-woody herbaceous) with the greatest amount of relative cover (RC) generally determines the vegetation alliance classification. Associations represent a finer scale of classification than alliances and are often defined by a range of species which co-occur due to local ecological conditions. Stand is a generic term used to describe a unit of vegetation that grows together due to uniform environmental conditions. In the MCV, special stands are typically defined by the presence of special-status species and semi-natural stands are dominated by invasive or non-native plant species (California Native Plant Society 2019). Percent RC pertains to the dominant, co-dominant, or sub-dominant species in each stratum and not to the overall vegetation within a stand. This usage of % RC corresponds to the MCV guidelines and membership rules for classification. Percent absolute cover (AC) is referred to in limited situations to further describe the distribution of species across a stand.

The mapping effort included identifying and documenting all California Department of Fish and Wildlife (CDFW) California Sensitive Natural Communities in the study area. Sensitive natural communities as defined by CDFW are those with a state rarity ranking of S1 (critically imperiled), S2 (imperiled), or S3 (vulnerable). To identify sensitive natural communities within the study area, each vegetation community identified during field mapping was checked against the *California Natural Community List* dated November 8, 2019 (CDFW 2019). Plant taxonomy generally follows Baldwin et al. (2012), including applicable errata and supplements (Jepson Flora Project 2018). Differences between the taxonomy used in the MCV compared to the Baldwin et al. (2012) are noted where applicable.

Botanists mapped vegetation in the field by walking through accessible areas of the study area and assessing vegetative cover within stands. Stands were classified to the alliance level, or association level when an association was present. During field surveys, common assemblages of plant species were identified and recorded on field maps or global positioning system-enabled tablets with aerial background imagery. Botanists collected a combination of point and polygon data to document the field-verified vegetation classifications. Information documenting each mapped vegetation community included: plant species composition (i.e., percent RC of dominant and sub-dominant species within each stratum), stand structure, regional occurrence, and other notable characteristics.

The vegetation community boundaries were delineated in current ArcGIS software for display and data query purposes. Vegetation community polygons were generally delineated with a minimum mapping unit of 0.5 acre. Polygons less-than 0.5 acre were created in limited situations for sensitive natural communities, noteworthy habitats (e.g., ponds), or if the vegetation community continued outside of the study area boundary. Digital vegetation classification was conducted using National Agricultural Imagery Program imagery from 2016 and 2018, and other publicly available aerial imagery sources (e.g., Google, Santa Clara County).

A limited number of vegetation communities were encountered in the study area that are not currently described in the MCV. As a result, those vegetation communities have been described in this Report as new alliance or association types. These new alliances and associations have been described by classifying dominant and sub-dominant vegetation and by assessing repeated plant species composition across the study area. Botanists assessed the status of new vegetation communities as sensitive natural communities based on existing CDFW classifications when possible. Undescribed alliances dominated by non-native species are not considered sensitive natural communities. Per CDFW guidance, undescribed alliances and associations dominated by native species were classified to a corresponding vegetation type

and listing status provided in *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986) to the extent possible.

Vegetation communities and other land cover types in the study area were also assigned to the corresponding land cover types described in the Santa Clara County Habitat Plan (Santa Clara Valley Habitat Agency 2012). The Santa Clara County Habitat Plan used 10-acre minimum mapping unit to classify most land cover types compared to the 0.5-acre minimum mapping unit used for the vegetation classification described in this Report. As such, multiple vegetation communities (i.e., alliances or associations) described in this Report may be comparable to a single land cover type described in the Santa Clara County Habitat Plan.

Chapter 3. Results

Each of the vegetation communities and other land cover types mapped within the study area is listed in Table 3-1 and each of the identified alliances and other land cover types are described in detail following this table. The detailed descriptions of the vegetation communities are listed by stratum (i.e., tree, shrub, herb). Alliance descriptions are based on plant community characteristics observed in the study area and do not represent an exhaustive description of these alliances. The locations of all vegetation communities and other land cover types in the study area is shown in the Vegetation Communities and Other Land Cover Types Map Figure included as Exhibit A. The Map ID column in Table 3-1 identifies the label of each vegetation community and other land cover type. The first page of Exhibit A includes a table which serves as the legend for the vegetation communities shown in the figure.

Table 3-1. Vegetation Alliances and Associations and Other Land Cover Types in the Pacheco Reservoir Expansion Project Study Area

Alliance[1]	Association[1]	Sensitive Natural Community	Santa Clara Valley Habitat Plan Land Cover Type	Map ID	Area (Acres)
Forests and Woodlands					
box-elder forest	*Acer negundo*	Yes	mixed riparian forest and woodland	11	7.4
California buckeye groves	*Aesculus californica*	Yes	mixed evergreen forest	12	16.8
eucalyptus – tree of heaven – black locust groves	*Eucalyptus* (*globulus, camaldulensis*)	No	ornamental woodland	31	1.0
Hinds's walnut and related stands	*Juglans hindsii*	Yes	mixed riparian forest and woodland	34	3.4
foothill pine woodland	No Association	No	foothill pine—oak woodland	64	10.5
	Pinus sabiniana / Adenostoma fasciculatum	No	foothill pine—oak woodland	64.1	32.8
California sycamore woodlands	No Association	Yes	central California sycamore alluvial woodland (75.8 acres), mixed riparian forest and woodland (12.6 acres)	67	88.4
	Platanus racemosa – Quercus agrifolia	Yes	central California sycamore alluvial woodland (2.9 acres), mixed riparian forest and woodland (30.8 acres)	67.1	33.7
	Platanus racemosa – Salix laevigata	Yes	central California sycamore alluvial woodland (22.5 acres), mixed riparian forest and woodland (15.7 acres)	67.2	38.2
	Platanus racemosa / Baccharis salicifolia	Yes	central California sycamore alluvial woodland (2.0 acres), mixed riparian forest and woodland (3.3 acres)	67.3	5.3
	Platanus racemosa – Quercus lobata	Yes	central California sycamore alluvial woodland (2.8 acres), mixed riparian forest and woodland (4.8 acres)	67.4	7.6
black cottonwood forest	*Populus trichocarpa – Salix laevigata*	Yes	mixed riparian forest and woodland	70	3.5

Table 3-1. A Manual of California Vegetation Alliances and Associations and Other Land Cover Types in the Pacheco Reservoir Expansion Project Study Area (contd.)

Alliance[1]	Association[1]	Sensitive Natural Community	Santa Clara Valley Habitat Plan Land Cover Type	Map ID	Area (Acres)
coast live oak woodland	*Quercus agrifolia*	No	coast live oak forest and woodland	78	94.9
	Quercus agrifolia – Aesculus californica	No	coast live oak forest and woodland	78.1	29.0
	Quercus agrifolia / Adenostoma fasciculatum – (*Salvia mellifera*)	Yes	coast live oak forest and woodland	78.2	40.0
	Quercus agrifolia / Artemisia californica	No	coast live oak forest and woodland	78.3	69.7
	Quercus agrifolia / grass	No	coast live oak forest and woodland	78.4	59.1
	Quercus agrifolia / Toxicodendron diversilobum	No	coast live oak forest and woodland	78.5	44.1
	Quercus agrifolia – Quercus douglasii	No	coast live oak forest and woodland	78.6	182.5
	Quercus agrifolia – Umbellularia californica / Toxicodendron diversilobum	No	coast live oak forest and woodland	78.7	223.6
blue oak woodland	*Quercus douglasii* / grass	No	blue oak woodland	80	1,445.2
	[2]*Quercus douglasii / Artemisia californica*	Not listed, insufficient data to assess sensitivity[2]	blue oak woodland	80.1	138.6
	Quercus douglasii – Aesculus californica / grass	No	blue oak woodland	80.2	98.0
	Quercus douglasii – Pinus sabiniana	No	blue oak woodland	80.3	370.0
	Quercus douglasii – Quercus agrifolia	No	blue oak woodland	80.4	120.6
	Quercus douglasii – Pinus sabiniana / Ceanothus cuneatus – Cercocarpus montanus	No	blue oak woodland	80.5	11.0
valley oak woodland	*Quercus lobata* / grass	Yes	valley oak woodland	84	85.1
	Quercus lobata – Quercus agrifolia / grass	Yes	valley oak woodland	84.1	45.8
	Quercus lobata – Quercus agrifolia / Toxicodendron diversilobum	Yes	valley oak woodland	84.2	27.3
	Quercus lobata – Quercus douglasii	Yes	valley oak woodland	84.3	3.5

Table 3-1. A Manual of California Vegetation Alliances and Associations and Other Land Cover Types in the Pacheco Reservoir Expansion Project Study Area (contd.)

Alliance[1]	Association[1]	Sensitive Natural Community	Santa Clara Valley Habitat Plan Land Cover Type	Map ID	Area (Acres)
Goodding's willow – red willow riparian woodlands	*Salix laevigata*	Yes	willow riparian forest and scrub	520	130.4
	Salix laevigata – Salix lasiolepis	Yes	willow riparian forest and scrub	520.1	123.5
California bay forest	*Umbellularia californica*	Yes	mixed evergreen forest	97	5.4
	Umbellularia californica / Toxicodendron diversilobum	Yes	mixed evergreen forest	97.1	21.7
	Umbellularia californica – Quercus agrifolia	Yes	mixed evergreen forest	97.2	66.1
Shrublands					
chamise chaparral	*Adenostoma fasciculatum*	No	northern mixed chaparral/chamise chaparral	102	130.5
chamise – black sage chaparral	*Adenostoma fasciculatum – Salvia mellifera – Artemisia californica*	No	northern mixed chaparral/chamise chaparral	104	6.7
California sagebrush scrub	*Artemisia californica*	No	northern coastal scrub/Diablan sage scrub	136	162.0
	Artemisia californica – Diplacus aurantiacus	Yes	northern coastal scrub/Diablan sage scrub	136.1	1.6
California sagebrush – black sage scrub	No Association	No	northern coastal scrub/Diablan sage scrub	138	49.6
coyote brush scrub	*Baccharis pilularis – Artemisia californica*	No	northern coastal scrub/Diablan sage scrub	151	9.9
	Baccharis pilularis / Annual grass – herb	No	northern coastal scrub/Diablan sage scrub	151.1	3.8
mulefat thickets	*Baccharis salicifolia*	No	willow riparian forest and scrub	152	56.1
wedge leaf ceanothus chaparral, buck brush chaparral	*Ceanothus cuneatus*	No	northern mixed chaparral/chamise chaparral	161	1.0
birch leaf mountain mahogany chaparral	*Cercocarpus montanus* var. *glaber*	No	northern mixed chaparral/chamise chaparral	175	2.5
	Cercocarpus montanus – Adenostoma fasciculatum	No	northern mixed chaparral/chamise chaparral	175.1	0.8
hairy rockrose scrub[3]	*Cistus incanus*[3]	Not listed, presumed not sensitive[3]	urban-suburban	908	0.9
California buckwheat scrub	*Eriogonum fasciculatum*	No	northern coastal scrub/Diablan sage scrub	203	33.6

Table 3-1. A Manual of California Vegetation Alliances and Associations and Other Land Cover Types in the Pacheco Reservoir Expansion Project Study Area (contd.)

Alliance[1]	Association[1]	Sensitive Natural Community	Santa Clara Valley Habitat Plan Land Cover Type	Map ID	Area (Acres)
holly leaf cherry – toyon – greenbark ceanothus chaparral	*Prunus ilicifolia* ssp. *ilicifolia*	Yes	northern mixed chaparral/chamise chaparral	525	114.6
	Prunus ilicifolia ssp. *ilicifolia – Fraxinus dipetala*	Yes	northern mixed chaparral/chamise chaparral	525.1	67.2
scrub oak chaparral	*Quercus berberidifolia*	No	northern mixed chaparral/chamise chaparral	251	1.7
	Quercus berberidifolia / Aesculus californica	No	northern mixed chaparral/chamise chaparral	251.1	5.9
	Quercus berberidifolia – Fraxinus dipetala – Heteromeles arbutifolia	No	northern mixed chaparral/chamise chaparral	251.2	11.7
sandbar willow thickets	*Salix exigua*	No	willow riparian forest and scrub	278	0.8
arroyo willow thickets	*Salix lasiolepis*	Yes	willow riparian forest and scrub	282	6.2
black sage scrub	*Salvia mellifera*	No	northern coastal scrub/Diablan sage scrub	293	25.3
blue elderberry stands	*Sambucus nigra*	Yes	mixed riparian forest and woodland	297	3.1
poison oak scrub	*Toxicodendron diversilobum*	No	northern mixed chaparral/chamise chaparral	301	3.6
Herbaceous					
common and giant reed marshes	*Arundo donax*	No	willow riparian forest and scrub	521	5.7
wild oats and annual brome grasslands	No Association	No	California annual grassland	535	923.6
	Avena barbata	No	California annual grassland	535.1	96.0
yellow star-thistle fields	*Centaurea solstitialis*	No	California annual grassland	368	16.2
poison hemlock or fennel patches	*Conium maculatum*	No	California annual grassland	373	11.7
alkali weed – salt grass playas and sinks	*Cressa truxillensis*	Yes	seasonal wetland	375	1.8
salt grass flats	*Distichlis spicata*	No	seasonal wetland	383	1.9
pale spike rush marshes	*Eleocharis macrostachya*	No	seasonal wetland	386	0.5
alkali heath marsh	*Frankenia salina*	Yes	seasonal wetland	396	46.3
goldenaster patches	*Heterotheca oregona*	Yes	willow riparian forest and scrub	498	6.2
Baltic and Mexican rush marshes	*Juncus arcticus* var. *balticus*	No	seasonal wetland	405	57.8

Table 3-1. A Manual of California Vegetation Alliances and Associations and Other Land Cover Types in the Pacheco Reservoir Expansion Project Study Area (contd.)

Alliance[1]	Association[1]	Sensitive Natural Community	Santa Clara Valley Habitat Plan Land Cover Type	Map ID	Area (Acres)
iris-leaf rush seeps	*Juncus xiphioides*	Yes	seasonal wetland	410	30.5
perennial pepper weed patches	*Lepidium latifolium*	No	California annual grassland	420	16.1
ashy ryegrass – creeping ryegrass turfs	*Leymus triticoides – Lolium perenne*	Yes	non-serpentine native grassland	543	32.0
perennial rye grass fields	*Lolium perenne*	No	California annual grassland	425	50.2
	Lolium perenne – Leymus triticoides	No	California annual grassland	425.1	14.3
needle grass – melic grass grassland	No Association	Yes	non-serpentine native grassland	536	4.3
	Nassella pulchra – Avena spp. – *Bromus* spp.	Yes	non-serpentine native grassland	536.1	76.9
	Nassella pulchra – Corethrogyne filaginifolia	Yes	non-serpentine native grassland	536.2	1.7
	Nassella pulchra – Melica californica	Yes	non-serpentine native grassland	536.3	1.8
smartweed – cocklebur patches	*Polygonum* (*amphibium, lapathifolium*)	No	coastal and valley freshwater marsh	445	3.8
	Xanthium strumarium	No	seasonal wetland	445.1	76.2
pickleweed mats	*Sarcocornia pacifica – Crypsis schoenoides*	Yes	seasonal wetland	458	7.4
	Sarcocornia pacifica / annual grasses (*Polypogon, Hordeum, Lolium*)	Yes	seasonal wetland	458.1	26.4
hardstem and California bulrush marshes	*Schoenoplectus acutus*	Yes	coastal and valley freshwater marsh	561	7.6
American bulrush marsh	*Schoenoplectus americanus*	Yes	coastal and valley freshwater marsh	462	3.1
bushy spikemoss mats	No association	Yes	rock outcrop	466	6.3
alkali meadow[4]	No association	Yes[4]	seasonal wetland	907	204.7
upland mustards and other ruderal forbs	No association	No	California annual grassland	330	52.6

Table 3-1. A Manual of California Vegetation Alliances and Associations and Other Land Cover Types in the Pacheco Reservoir Expansion Project Study Area (contd.)

Alliance[1]	Association[1]	Sensitive Natural Community	Santa Clara Valley Habitat Plan Land Cover Type	Map ID	Area (Acres)
Other Land Cover Types					
agriculture[3]	Orchard	Not listed, presumed not sensitive[3]	orchard	900	28.3
	Vineyard	Not listed, presumed not sensitive[3]	vineyard	900.1	15.0
	Field crop / Row crop	Not listed, presumed not sensitive[3]	grain, row-crop, hay and pasture, disked/short-term fallowed	900.2	58.4
non-vegetated areas[3]	Barren (Dry Streambed)	Not listed, presumed not sensitive[3]	riverine	905	42.6
	Water (Reservoir)	Not listed, presumed not sensitive[3]	reservoir	902	267.9
	Water (Pond)	Not listed, presumed not sensitive[3]	pond	902.1	22.2
	Water (Riverine)	Not listed, presumed not sensitive[3]	riverine	902.2	35.0
urban[3]	Urban (Barren)	Not listed, presumed not sensitive[3]	barren	901	41.5
	Urban (Rural residential)	Not listed, presumed not sensitive[3]	rural residential	901.1	40.5
	Urban (Ornamental woodland)	Not listed, presumed not sensitive[3]	ornamental woodland	901.2	45.6
	Urban (Urban-Suburban)	Not listed, presumed not sensitive[3]	urban-suburban	901.3	1.1

Notes:
[1] A Manual of California Vegetation, 2nd Edition (Sawyer et al. 2009).
[2] Not described in A Manual of California Vegetation or in Holland (1986). Insufficient data to determine sensitivity.
[3] Not described in A Manual of California Vegetation and dominated by non-native species, or agriculture, non-vegetated, or urban areas.
[4] Not described in A Manual of California Vegetation, corresponds to a vegetation type in *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986).

3.1 Forests and Woodlands

3.1.1 Box-Elder Forest

Box-elder forest alliance occurs in the study area in a limited number of stands along the upper banks of Pacheco Creek between the North Fork Dam and San Felipe Lake. These forest stands are heavily dominated by box-elder (*Acer negundo*) (60–80% RC) with lower cover of red willow (*Salix laevigata*) (10–30% RC). Shrubs such as blue elderberry (*Sambucus nigra* ssp. *caerulea*) and giant reed (*Arundo donax*) occur in the understory of some stands in relatively low abundance. One association was identified in the study area: *Acer negundo*. CDFW considers box-elder forest to be a sensitive natural community.

3.1.2 California Buckeye Groves

California buckeye groves alliance occur in the study area in relatively mesic areas in drainages and on north-facing slopes around Pacheco Reservoir and North Fork Pacheco Creek. The tree canopy in these groves is heavily dominated by California buckeye (*Aesculus californica*) (70–90% RC) with low cover of California bay (*Umbellularia californica*), coast live oak (*Quercus agrifolia*), or foothill pine (*Pinus sabiniana*) in some stands. The understory is relatively sparse with low cover of shrubs such as poison oak (*Toxicodendron diversilobum*) or scrub oak (*Quercus berberidifolia*). The understory is generally dominated by non-native annual grasses. One California buckeye groves association is present in the study area: *Aesculus californica*. CDFW considers California buckeye groves to be a sensitive natural community.

3.1.3 Eucalyptus – Tree of Heaven – Black Locust Groves

Eucalyptus – tree of heaven – black locust groves semi-natural alliance occurs in a single area of the study area, associated with agricultural areas along Pacheco Creek downstream from the North Fork Dam near the Santa Clara/San Benito county line. This stand is dominated by mature eucalyptus (*Eucalyptus* sp.) with coyote brush (*Baccharis pilularis* ssp. *consanguinea*) (5% AC) and ruderal forbs in the understory. One eucalyptus – tree of heaven – black locust groves association is present in the study area: *Eucalyptus* (*globulus*, *camaldulensis*). CDFW does not consider eucalyptus – tree of heaven – black locust groves to be a sensitive natural community.

3.1.4 Hinds's Walnut and Related Stands

Hinds's walnut and related stands semi-natural alliance occurs in two locations in the study area associated with agricultural areas along Pacheco Creek downstream from the North Fork Dam. Hind's walnut (*Juglans hindsii*) (60–80% RC) is dominant with low cover of other trees such as Fremont cottonwood (*Populus fremontii*) or valley oak (*Quercus lobata*). The understory of theses stands is dominated by ruderal forbs such as poison hemlock (*Conium maculatum*) and non-native annual grasses. Although the natural distribution of Hind's walnut is not well understood, the study area is outside of the region of confirmed natural walnut stands in Contra Costa and Solano counties. The stands in the study area are associated with areas of historical agricultural and are considered semi-natural stands. One association has been documented in the study area: *Juglans hindsii*. CDFW considers semi-natural stands of Hinds's walnut to be a sensitive natural community.

3.1.5 Foothill Pine Woodland

Foothill pine woodland alliance occurs in the study area on dry slopes north of Pacheco Reservoir. Foothill pine (10–40% AC) is the dominant tree species in these stands with blue oak

(*Quercus douglasii*) or coast live oak sometimes present in very low cover. The understory of the foothill pine woodland alliance is often dominated by shrubs such as California sagebrush (*Artemisia californica*) or chamise (*Adenostoma fasciculatum*) with non-native annual grasses. Foothill pine woodland was mapped to the alliance level and one association was identified: *Pinus sabiniana / Adenostoma fasciculatum*. CDFW does not consider the foothill pine woodland alliance or the *Pinus sabiniana / Adenostoma fasciculatum* association to be sensitive natural communities.

3.1.6 California Sycamore Woodlands

California sycamore woodlands alliance is associated with seasonal drainages and floodplains in the study area, both upstream and downstream from Pacheco Reservoir. California sycamore woodlands occurring as narrow stringers along intermittent channels of North Fork Pacheco Creek and associated drainages include California sycamore (*Platanus racemosa*) (30–50% RC) that is often mixed and co-dominant with other trees such as coast live oak, red willow, or valley oak. Isolated patches of California sycamore woodlands also occur in downstream portions of Pacheco Creek. California sycamore woodlands in the lower portions of Pacheco Creek occur as mixed woodlands with other trees such as coast live oak and red willow. These woodlands occur on the upper banks of Pacheco Creek. The deep, fine textured soils in these areas naturally support diverse mixed riparian woodlands as opposed to the California sycamore woodlands that occur on coarse alluvial soils.

California sycamore alluvial woodlands occur on the floodplains and wider portions of Pacheco Creek and the North and South forks of Pacheco Creek. In contrast to the California sycamore woodlands (described above) that occur in the narrow intermittent stream channels, the sycamore woodlands that occur in the wider alluvial channels and floodplains are generally dominated by widely spaced California sycamores (5–20% AC) with barren alluvial substrates, mulefat (*Baccharis salicifolia*), or non-native annual grasses dominating the understory. Some stands of California sycamore alluvial woodland downstream from Pacheco Reservoir have relatively high cover of red willow (40–60% RC).

California sycamore woodland were characterized to the alliance level and four associations: Platanus racemosa – Quercus agrifolia, Platanus racemosa – Salix laevigata, Platanus racemosa / Baccharis salicifolia, and Platanus racemosa – Quercus lobata. CDFW considers the California sycamore woodlands alliance and all associations to be sensitive natural communities.

3.1.7 Black Cottonwood Forest

Black cottonwood forest alliance was mapped in three locations in the study area along the downstream portion of Pacheco Creek. These stands are dominated by black cottonwood (*Populus trichocarpa*) (30–60% RC) with box-elder, red willow, and occasional Fremont cottonwood. The understory includes moderate cover of shrubs such as arroyo willow (*Salix lasiolepis*) and coyote brush. *Populus trichocarpa – Salix laevigata* is the only association of the black cottonwood forest alliance present in the study area. CDFW considers black cottonwood forest to be a sensitive natural community.

3.1.8 Coast Live Oak Woodland

Coast live oak woodland alliance is one of the most abundant vegetation communities in the study area. Coast live oak woodlands are most common on the slopes around Pacheco Reservoir and in the northern portion of the study area and occur in moderate abundance along the downstream sections of Pacheco Creek. Coast live oak woodland stands are dominated by

coast live oak (> 50% RC) and occur both on xeric slopes and in mesic areas on north-slopes and in riparian corridors. Mixed stands commonly occur with trees such as blue oak or California bay. The understory of these woodlands may be dominated by non-native annual grasses or by shrubs such as California sagebrush, chamise, or poison oak. Eight associations of coast live oak woodland are present in the study area: *Quercus agrifolia*, *Quercus agrifolia – Aesculus californica*, *Quercus agrifolia* / *Adenostoma fasciculatum* – (*Salvia mellifera*), *Quercus agrifolia* / *Artemisia californica*, *Quercus agrifolia* / grass, *Quercus agrifolia* / *Toxicodendron diversilobum*, *Quercus agrifolia – Quercus douglasii*, and *Quercus agrifolia – Umbellularia californica* / *Toxicodendron diversilobum*. Of the associations mapped in the study area, CDFW only considers *Quercus agrifolia* / *Adenostoma fasciculatum* – (*Salvia mellifera*) to be a sensitive natural community.

3.1.9 Blue Oak Woodland

Blue oak woodland is the most abundant vegetation community in the study area. Blue oak woodland is the dominant vegetation community on xeric slopes in the vicinity of Pacheco Reservoir and is generally absent from the floodplains and riparian corridors of Pacheco Creek in the downstream portion of the study area. In the study area, blue oak woodland most often occurs as open savannas with an understory heavily dominated by non-native annual grasses such as slim oat (*Avena barbata*) or soft brome (*Bromus hordeaceus*) with little to no shrub cover. Stands of blue oak woodland also occur with sub-dominant California buckeye, coast live oak, or foothill pine. Some stands with relatively low cover of blue oak (15–40% AC) also occur in the study area with an understory dominated by California sagebrush (20–40% AC). Six association of blue oak woodland are present in the study area*: Quercus douglasii / grass, Quercus douglasii / Artemisia californica, Quercus douglasii – Aesculus californica* / grass, *Quercus douglasii – Pinus sabiniana*, *Quercus douglasii – Quercus agrifolia*, and *Quercus douglasii – Pinus sabiniana* / *Ceanothus cuneatus – Cercocarpus montanus*. The *Quercus douglasii / Artemisia californica* association was described during the vegetation classification efforts for this Project. This association is not currently described in the MCV and CDFW has not assessed its status as a sensitive natural community. CDFW does not consider the remaining blue oak woodland associations mapped in the study area to be sensitive natural communities.

3.1.10 Valley Oak Woodland

Valley oak woodland alliance occurs in the study area on terraces and lower slopes around Pacheco Reservoir and downstream along Pacheco Creek. Valley oak woodlands are heavily dominated by valley oak (40–100% RC) with lower cover of other trees such as blue oak or coast live oak in some stands. Trees in stands of valley oak woodland are often widely spaced with an understory dominated by non-native annual grasses. Valley oaks in stands associated with riparian habitat along Pacheco Creek are often co-dominant with coast live oak and have an understory dominated by shrubs such as poison oak. Botanists mapped four associations of valley oak woodland in the study area: *Quercus lobata* / grass, *Quercus lobata – Quercus agrifolia* / grass, *Quercus lobata – Quercus agrifolia* / *Toxicodendron diversilobum*, *Quercus lobata – Quercus douglasii*. CDFW considers all associations in valley oak woodland to be sensitive natural communities.

3.1.11 Goodding's Willow – Red Willow Riparian Woodlands

Goodding’s willow – red willow riparian woodlands alliance is one of the most abundant vegetation communities in the study area along Pacheco Creek from the North Fork Dam downstream to San Felipe Lake. Stands of Goodding’s willow – red willow riparian woodlands in the study area are heavily dominated by red willow (50–90% RC) with low to moderate cover of

other riparian trees such as black cottonwood, box-elder, Fremont cottonwood, or California sycamore. The understory is often dominated by arroyo willow. Two associations in the Goodding's willow – red willow riparian woodlands alliance are present in the study area: *Salix laevigata* and *Salix laevigata – Salix lasiolepis*. CDFW considers both associations of Goodding's willow – red willow riparian woodlands mapped in the study area to be sensitive natural communities.

3.1.12 California Bay Forest

California bay forest occurs in the study area primarily around Pacheco Reservoir, on north-facing slopes and in drainages. California bay (30–75% RC) dominates these stands, often with lesser cover of coast live oak (10–30% RC). Shrubs are often absent from the understory, although some stands have moderate cover of poison oak (10–30% RC). Three associations of California bay forest are present in the study area: *Umbellularia californica*, *Umbellularia californica* / *Toxicodendron diversilobum*, and *Umbellularia californica – Quercus agrifolia*. CDFW considers all associations of California bay forest mapped in the study area to be sensitive natural communities.

3.2 Shrublands

3.2.1 Chamise Chaparral

Chamise chaparral occurs on dry slopes around Pacheco Reservoir and in the northern portion of the study area. Chamise heavily dominates (>60% RC) these shrub stands with lower cover of other shrubs such as buck brush (*Ceanothus cuneatus*) or California sagebrush. Chamise often provides a very dense canopy cover and the understory generally consists of a sparse layer of non-native annual grasses. One association of chamise chaparral has been identified in the study area: *Adenostoma fasciculatum*. CDFW does not consider the association of chamise chaparral mapped in the study area to be a sensitive natural community.

3.2.2 Chamise – Black Sage Chaparral

Chamise – black sage chaparral was mapped in one location on steep slopes north of North Fork Pacheco Creek in the study area. Black sage (*Salvia mellifera*) and chamise are co-dominant in these areas (40–60% RC) with a relatively sparse understory. One association of chamise – black sage chaparral has been identified in the study area: *Adenostoma fasciculatum – Salvia mellifera – Artemisia californica*. CDFW does not consider the association of chamise – black sage chaparral mapped in the study area to be a sensitive natural community.

3.2.3 California Sagebrush Scrub

California sagebrush scrub is one of the most abundant shrub dominated vegetation communities in the study area. This alliance occurs on xeric slopes around Pacheco Reservoir and the upstream portions of the study area. California sagebrush generally dominates these stands (>70% RC). A single stand was mapped where California sagebrush was co-dominant with sticky monkeyflower (*Diplacus aurantiacus*). Other shrubs such as holly leaf cherry (*Prunus ilicifolia* ssp. *ilicifolia*) or poison oak sometimes occur in low abundance, as do emergent trees such as blue oak or coast live oak. Two associations of California sagebrush scrub are present in the study area: *Artemisia californica* and *Artemisia californica – Diplacus aurantiacus*. CDFW considers the *Artemisia californica – Diplacus aurantiacus* association to be a sensitive natural community.

3.2.4 California Sagebrush – Black Sage Scrub

California sagebrush – black sage scrub occurs in the study area on steep slopes, primarily east of the existing Pacheco Reservoir. Black sage and California sagebrush each occur at 30–60% RC in these stands. Emergent trees such as coast live oak or blue oak are sometimes present in low cover. California sagebrush – black sage scrub was mapped to the alliance level in the study area. CDFW does not consider the California sagebrush – black sage scrub alliance to be a sensitive natural community.

3.2.5 Coyote Brush Scrub

Coyote brush scrub occurs in limited portions of the study area near the North Fork Dam and State Route 152, and near the Pacheco Pumping Plant. Coyote brush is dominant or co-dominant in these stands with California sagebrush. Two association of coyote brush scrub are present in the study area: *Baccharis pilularis – Artemisia californica* and *Baccharis pilularis* / annual grass – herb. CDFW does not consider the associations of coyote brush scrub mapped in the study area to be sensitive natural communities.

3.2.6 Mulefat Thickets

Mulefat thickets occur in the study area primarily in the alluvial, intermittently flooded channel of Pacheco Creek downstream from the North Fork Dam. One stand was also mapped in an alluvial section of North Fork Pacheco Creek upstream from Pacheco Reservoir. Mulefat is dominant in these stands (>50% RC) with occasional riparian trees such as red willow and California sycamore. One association of mulefat thickets was identified in the study area: *Baccharis salicifolia*. CDFW does not consider the *Baccharis salicifolia* association to be a sensitive natural community.

3.2.7 Wedge Leaf Ceanothus Chaparral, Buck Brush Chaparral

Wedge leaf ceanothus chaparral, buck brush chaparral was only mapped in one small stand in the study area north of Pacheco Reservoir. Buck brush dominates this stand with lower cover of poison oak and emergent California bay and foothill pine. *Ceanothus cuneatus* is the only association of wedge leaf ceanothus chaparral, buck brush chaparral identified in the study area. CDFW does not consider the *Ceanothus cuneatus* association to be a sensitive natural community.

3.2.8 Birch Leaf Mountain Mahogany Chaparral

Birch leaf mountain mahogany chaparral forms limited stands on slopes in the northern portion of the study area. Stands are dominated by birch leaf mountain mahogany (*Cercocarpus betuloides*, a synonym of *Cercocarpus montanus* var. *glaber*) or include chamise as a co-dominant species in the shrub layer. Two associations of birch leaf mountain mahogany chaparral are present in the study area: *Cercocarpus montanus* var. *glaber* and *Cercocarpus montanus – Adenostoma fasciculatum*. CDFW does not consider the two associations of birch leaf mountain mahogany chaparral mapped in the study area to be sensitive natural communities.

3.2.9 Hairy Rockrose Scrub

A single stand of hairy rockrose scrub occurs in the study area on a cut slope associated with State Route 152 southeast of the North Fork Dam. This shrub stand is dominated by hairy rockrose (*Cistus incanus*) that was likely planted in association with the construction of State Route 152. This alliance was developed during the vegetation classification efforts for this

Project (i.e., the alliance is not described in the MCV). CDFW has not assessed the status of hairy rockrose scrub as a sensitive natural community. For this assessment, botanists presumed that CDFW would not consider hairy rockrose scrub a sensitive natural community because it is dominated by non-native species.

3.2.10 California Buckwheat Scrub

California buckwheat scrub forms stands in the study area on disturbed cut and fill slopes along State Route 152. These stands are dominated by California buckwheat (*Eriogonum fasciculatum*) (>60% RC) with lower cover of coyote brush in some stands. The understory is dominated by non-native annual grasses and ruderal forbs. One association of California buckwheat scrub is present in the study area: *Eriogonum fasciculatum*. CDFW does not consider the *Eriogonum fasciculatum* association to be a sensitive natural community.

3.2.11 Holly Leaf Cherry – Toyon – Greenbark Ceanothus Chaparral

Holly leaf cherry – toyon – greenbark ceanothus chaparral is the most abundant shrub dominated vegetation community in the study area. Stands of this chaparral community most commonly occur on north-facing and other slightly mesic slopes around Pacheco Reservoir and in the northern portions of the study area. Some stands also occur on more xeric, exposed slopes. All stands in the study area are dominated by holly leaf cherry (>50% RC) with some stands having co-dominant two petaled ash (*Fraxinus dipetala*). Shrubs such as redberry (*Rhamnus crocea*) or toyon (*Heteromeles arbutifolia*) are sometimes present in low cover. Stands on more xeric slopes have more widely spaced holly leaf cherry with sub-dominant shrubs such as California sagebrush or chamise. Two associations of holly leaf cherry – toyon – greenbark ceanothus chaparral are present in the study area: *Prunus ilicifolia* ssp. *ilicifolia* and *Prunus ilicifolia* ssp. *ilicifolia* – *Fraxinus dipetala*. CDFW considers both associations of holly leaf cherry – toyon – greenbark ceanothus chaparral mapped in the study area to be sensitive natural communities.

3.2.12 Scrub Oak Chaparral

Scrub oak chaparral occurs in relatively low abundance in the northern portion of the study area, generally on north-facing slopes. Stands are dominated by scrub oak (40–60% RC) and generally have several other sub-dominant shrubs such as birch leaf mountain mahogany, toyon, or two petaled ash. Emergent trees such as California buckeye or foothill pine are often present in low cover. Three associations of scrub oak chaparral have been identified in the study area: *Quercus berberidifolia*, *Quercus berberidifolia* / *Aesculus californica*, and *Quercus berberidifolia – Fraxinus dipetala – Heteromeles arbutifolia*. CDFW does not consider any of the associations of scrub oak chaparral mapped in the study area to be sensitive natural communities.

3.2.13 Sandbar Willow Thickets

Sandbar willow thickets were mapped in one location in the Pacheco Creek streambed in the downstream portion of the study area. The stand is dominated by sandbar willow (*Salix exigua*) with sub-dominant arroyo willow. One association of sandbar willow thickets is present in the study area: *Salix exigua*. CDFW does not consider the *Salix exigua* association to be a sensitive natural community.

3.2.14 Arroyo Willow Thickets

Arroyo willow thickets occur in relatively low abundance in the downstream portions of the study area along Pacheco Creek. Stands are dominated by arroyo willow (>50% RC) with other

riparian trees and shrubs such as giant reed, mulefat, and red willow occurring in lower abundance. *Salix lasiolepis* is the only association of arroyo willow thickets present in the study area. CDFW considers the *Salix lasiolepis* association to be a sensitive natural community.

3.2.15 Black Sage Scrub

Black sage scrub occurs in moderate abundance in the study area on dry slopes, generally east of Pacheco Reservoir. These stands are dominated by black sage (70–100% RC) and sometimes have lower cover of shrubs such as California sagebrush or holly leaf cherry. Other stands of black sage that are co-dominant with California sagebrush are mapped in the California sagebrush – black sage scrub alliance. One association of black sage scrub has been documented in the study area: *Salvia mellifera*. CDFW does not consider the *Salvia mellifera* association to be a sensitive natural community.

3.2.16 Blue Elderberry Stands

Blue elderberry stands occur in relatively low abundance in the downstream portion of the study area, generally growing on dry stream terraces adjacent to Pacheco Creek. These stands are dominated by blue elderberry (>70% RC) with a low abundance of other shrubs such as coyote brush. The understory of these stands is generally dominated by non-native annual grasses and ruderal forbs. One association of blue elderberry stands was identified in the study area: *Sambucus nigra*. CDFW considers the *Sambucus nigra* association to be a sensitive natural community.

3.2.17 Poison Oak Scrub

Poison oak scrub occurs in low abundance in the study area on north-facing and other mesic slopes around Pacheco Reservoir. These stands are dominated by poison oak (60–80% RC) with lower cover of other shrubs such as holly-leaf cherry or sticky monkey flower. One association of poison oak scrub is present in the study area: *Toxicodendron diversilobum*. CDFW does not consider the *Toxicodendron diversilobum* association to be a sensitive natural community.

3.3 Herbaceous

3.3.1 Common and Giant Reed Marshes

Common and giant reed marshes occur in relatively low abundance along Pacheco Creek in the downstream portion of the study area. These stands are dominated by giant reed (>60% RC) with low cover of shrubs such as coyote brush or mulefat. The understory of these stands is generally dominated by ruderal forbs or open gravel. *Arundo donax* is the only association of common and giant reed marshes present in the study area. CDFW does not consider the *Arundo donax* association to be a sensitive natural community.

3.3.2 Wild Oats and Annual Brome Grasslands

Wild oats and annual brome grasslands is one of the most abundant vegetation communities in the study area. This alliance is the dominant vegetation community of all upland herbaceous vegetation in the study area. Wild oats and annual brome grasslands in the study area are dominated by upland grasses such as ripgut brome (*Bromus diandrus*), slim oat, and soft brome. The wild oats and annual brome grasslands were generally mapped to the alliance level, with a limited number of stands mapped to the *Avena barbata* association. Areas mapped as wild oats and annual brome grasslands will be reassessed during comprehensive botanical surveys in 2020 to determine if native species occur in high enough abundance to be mapped

as other vegetation communities. CDFW does not consider the wild oats and annual brome grasslands alliance, or any associations, to be sensitive natural communities.

3.3.3 Yellow Star-Thistle Fields

Yellow star-thistle fields were mapped in two relatively small polygons in the study area near Pacheco Creek, downstream from the North Fork Dam. These herbaceous stands are dominated by yellow star-thistle (*Centaurea solstitialis*) (>50% RC) with sub-dominant non-native annual grasses and low cover of ruderal, native forbs such as gumweed (*Grindelia camporum*) (<10% RC). *Centaurea solstitialis* is the only association of yellow star-thistle fields identified in the study area. CDFW does not consider the *Centaurea solstitialis* association to be a sensitive natural community.

3.3.4 Poison Hemlock or Fennel Patches

Poison hemlock or fennel patches occur in relatively low abundance near Pacheco Creek in the southern portion of the study area between the North Fork Dam and San Felipe Lake. These stands are generally associated with disturbed, agricultural areas and are heavily dominated by poison hemlock (>50% RC) with lower cover of other non-native forbs or grasses. *Conium maculatum* is the only association of poison hemlock or fennel patches identified in the study area. CDFW does not consider the *Conium maculatum* association to be a sensitive natural community.

3.3.5 Alkali Weed – Salt Grass Playas and Sinks

Alkali weed – salt grass playas and sinks occur in low abundance in the study area growing in hydric soils within seasonally inundated areas near San Felipe Lake. These herbaceous vegetation stands are dominated by swamp grass (*Crypsis schoenoides*) (70–80% RC) with evenly distributed alkali weed (*Cressa truxillensis*) (10–30% RC) and low cover of other native forbs such as alkali mallow (*Malvella leprosa*) (5–15% RC). *Cressa truxillensis* is the only association of alkali weed – salt grass playas and sinks present in the study area. CDFW considers the *Cressa truxillensis* association to be a sensitive natural community.

3.3.6 Salt Grass Flats

Salt grass flats occur in low abundance in the study area along the shoreline of San Felipe Lake. These herbaceous stands are heavily dominated by salt grass (*Distichlis spicata*) (60–80% RC) with lower cover of alkali heath (*Frankenia salina*) (<20% RC) and perennial rye grass (*Festuca perennis*). *Distichlis spicata* is the only association of salt grass flats present in the study area. CDFW does not consider the *Distichlis spicata* association to be a sensitive natural community.

3.3.7 Pale Spike Rush Marshes

Pale spike rush marshes are present in a single stand in the study area adjacent to Pacheco Creek, downstream from the North Fork Dam. This stand is heavily dominated by spike rush (*Eleocharis macrostachya*) (>80% RC), with minimal cover of other vegetation. One association of pale spike rush marshes is present in the study area: *Eleocharis macrostachya*. CDFW does not consider the *Eleocharis macrostachya* association to be a sensitive natural community.

3.3.8 Alkali Heath Marsh

Alkali heath marsh occurs in relatively low abundance in the study area where it grows in seasonally saturated soils near San Felipe Lake. These herbaceous stands are characterized

by abundant alkali heath (30–50% RC) with lower cover of alkali mallow (5–20% RC). Perennial rye grass is usually present in moderate to high cover (40–60% RC). *Frankenia salina* is the only association of alkali heath marsh present in the study area. CDFW considers the *Frankenia salina* association to be a sensitive natural community.

3.3.9 Goldenaster Patches

Goldenaster patches occur in low abundance in the study area on gravel bars and terraces in and adjacent to Pacheco Creek downstream from the North Fork Dam. These stands occur on relatively barren gravel substrates with an herbaceous layer dominated by red Oregon goldenaster (*Heterotheca oregona* var. *rudis*) (50–80% RC) and low cover of non-native annual grasses. *Heterotheca oregona* is the only association of goldenaster patches present in the study area. CDFW considers the *Heterotheca oregona* association to be a sensitive natural community.

3.3.10 Baltic and Mexican Rush Marshes

Baltic and Mexican rush marshes occur in limited portions of the study area in seasonally saturated soils near San Felipe Lake. These stands are dominated by a *Juncus* species preliminarily identified as Baltic rush (*Juncus balticus* ssp. *ater*, a synonym of *Juncus arcticus* var. *balticus*) (>50% RC) during field surveys conducted outside of the optimal period of species identification. Sub-dominant species include alkali mallow, cocklebur (*Xanthium strumarium*), or Hoover's button celery (*Eryngium aristulatum* var. *hooveri*). The preliminary identification of Baltic rush will be verified during comprehensive botanical surveys conducted for the Project in 2020. One association of Baltic and Mexican rush marshes was identified in the study area: *Juncus arcticus* var. *balticus*. CDFW does not consider the *Juncus arcticus* var. *balticus* association to be a sensitive natural community.

3.3.11 Iris-Leaf Rush Seeps

Iris-leaf rush seeps are present in the study area in one large stand southeast of San Felipe Lake. This stand is heavily dominated by iris-leaf rush (*Juncus xiphioides*) (60–90% RC) with scattered patches of Pacific rush (*Juncus effusus* ssp. *pacificus*), hardstem bulrush (*Schoenoplectus acutus* var. *occidentalis*), and western goldenrod (*Euthamia occidentalis*). *Juncus xiphioides* is the only association of iris-leaf rush seeps present in the study area. CDFW considers the *Juncus xiphioides* association to be a sensitive natural community.

3.3.12 Perennial Pepper Weed Patches

Perennial pepper weed patches are present in limited portions of the study area adjacent to Pacheco Creek, near San Felipe Lake. These herbaceous stands are dominated by perennial pepper weed (*Lepidium latifolium*) (50–70% RC) with curly dock (*Rumex crispus*) and perennial rye grass. Native species such as alkali mallow are sometimes present in low cover (<10% RC). *Lepidium latifolium* is the only association of perennial pepper weed patches present in the study area. CDFW does not consider the *Lepidium latifolium* association to be a sensitive natural community.

3.3.13 Ashy Ryegrass – Creeping Ryegrass Turfs

Ashy ryegrass – creeping ryegrass turfs are present in the study area on mesic soils south east of San Felipe Lake. These dense, herbaceous stands are dominated by creeping ryegrass (*Elymus triticoides*, a synonym of *Leymus triticoides*) (50–80% RC) with sub-dominant perennial ryegrass (20–40% RC). Other species such as alkali mallow or perennial pepper weed are sometimes present in lower cover. One association of ashy ryegrass – creeping ryegrass turfs is

present in the study area: *Leymus triticoides – Lolium perenne*. CDFW considers the *Leymus triticoides – Lolium perenne* association to be a sensitive natural community.

3.3.14 Perennial Rye Grass Fields

Perennial rye grass fields occur around San Felipe Lake in the downstream portion of the study area. These stands are dominated by perennial rye grass (>60% RC) with other non-native species such as barley (*Hordeum marinum* ssp. *gussoneanum*), curly dock, or perennial pepper weed present at 10–30% RC. Native species such as alkali heath, alkali mallow, or creeping ryegrass are sometimes present at <10% RC. Two associations of perennial rye grass fields are present in the study area: *Lolium perenne* and *Lolium perenne – Leymus triticoides*. CDFW does not consider either of the associations of perennial rye grass fields mapped in the study area to be sensitive natural communities.

3.3.15 Needle Grass – Melic Grass Grassland

Needle grass – melic grass grassland occurs in the study area in relatively low abundance on upland slopes in the vicinity of Pacheco Reservoir. Stands are generally dominated by non-native annual grasses such as slim oat or soft brome (40–70% RC) with *Stipa* (a synonym of *Nassella*) species characteristically present at 20–40% RC. Botanists were only able to positively identify the needle grasses to genus in a limited number of stands due to the timing of field surveys conducted in 2019. The species composition of all needle grass – melic grass grassland stands were then verified during comprehensive botanical surveys conducted for the Project in 2020. Needle grass – melic grass grassland has been mapped to the alliance level and three associations: *Nassella pulchra – Avena* spp. – *Bromus* spp., *Nassella pulchra – Corethrogyne filaginifolia,* and *Nassella pulchra – Melica californica.* CDFW considers all associations of needle grass – melic grass grassland to be sensitive natural communities.

3.3.16 Smartweed – Cocklebur Patches

Smartweed – cocklebur patches occur in the study area on seasonally saturated or flooded soils near San Felipe Lake. These stands are heavily dominated by cocklebur or water smartweed (*Persicaria amphibia*, a synonym of *Polygonum amphibium*) (>70% RC), other species such as alkali mallow, curly dock, hairy leaved sunflower (*Helianthus annuus*), perennial pepper weed, or swamp grass are sometimes present in lower cover (5–20% RC). Two associations of smartweed – cocklebur patches are present in the study area: *Polygonum* (*amphibium, lapathifolium*) and *Xanthium strumarium*. CDFW does not consider the associations of smartweed – cocklebur patches mapped in the study area to be sensitive natural communities.

3.3.17 Pickleweed Mats

Pickleweed mats occur in relatively low abundance in the study area in alkaline flats near San Felipe Lake. These stands are dominated by pickleweed (*Salicornia pacifica*, a synonym of *Sarcocornia pacifica*) (>50% RC) with low to moderate cover of alkali heath, alkali mallow, alkali weed, perennial rye grass, salt grass, or swamp grass (10–30% RC). Two associations of pickleweed mats are present in the study area: *Sarcocornia pacifica – Crypsis schoenoides* and *Sarcocornia pacifica* / annual grasses (*Polypogon, Hordeum, Lolium*). CDFW considers both associations of pickleweed mats mapped in the study area to be sensitive natural communities.

3.3.18 Hardstem and California Bulrush Marshes

Hardstem and California bulrush marshes occur in the study area in saturated or flooded soils in and around San Felipe Lake. These stands are heavily dominated by hardstem bulrush (70–90% RC) with lower cover of other hydrophytic species such as broadfruit bur reed (*Sparganium*

eurycarpum), cattail (*Typha* sp.), or water smartweed. *Schoenoplectus acutus* is the only association of hardstem and California bulrush marshes present in the study area. CDFW considers the association of hardstem and California bulrush marshes found in the study area to be a sensitive natural community.

3.3.19 American Bulrush Marsh

American bulrush marsh occurs as one stand in the study area southeast of San Felipe Lake. This stand occurs on inundated, alkaline soils and is dominated by American bulrush (*Schoenoplectus americanus*) (60% RC), with lower cover of broadleaf cattail (*Typha latifolia*), hardstem bulrush, and water smartweed. *Schoenoplectus americanus* is the only association of American bulrush marsh present in the study area. CDFW considers the association of American bulrush marsh found in the study area to be a sensitive natural community.

3.3.20 Bushy Spikemoss Mats

Bushy spikemoss mats occur in relatively low abundance in the study area on rock outcrops, both around Pacheco Reservoir and in the northern portion of the study area. These stands are characterized by intermittent vegetative cover, with bushy spikemoss (*Selaginella bigelovii*) (50–80% RC) dominating the herbaceous layer and other herbaceous species such as California plantain (*Plantago erecta*), Diablo Range dudleya (*Dudleya cymosa* ssp. *paniculata*), foxtail brome (*Bromus madritensis* ssp. *rubens*), or slim oat occurring in low cover. Shrubs such as black sage, holly leaf cherry, or Wright's buckwheat (*Eriogonum wrightii* var. *trachygonum*) occur in some stands in low abundance (<20% AC). Bushy spikemoss mats have been mapped to the alliance level in the study area. CDFW considers the bush spikemoss mats alliance to be a sensitive natural community.

3.3.21 Alkali Meadow

Alkali meadow is one of the dominant vegetation communities around San Felipe Lake in the study area. Large stands of alkali meadow occur on the seasonally inundated, alkaline soils surrounding much of the lake. These stands are dominated by perennial rye grass (50–80% RC) with other non-native species such as barley, curly dock, and swamp grass present in low to moderate cover (5–20% RC). Although these stands are dominated by non-native species, native species characteristic of alkaline soils such as alkali heath, alkali mallow, and alkali weed are present in moderate abundance (combined 15–30% RC). Alkali mallow (10–20% RC) is the most evenly distributed native species in these stands. The vegetation community in these stands is not currently described in the MCV. For the purposes of this Project it has been classified as the alkali meadow vegetation type included in Holland (1986). CDFW considers the alkali meadow Holland type to be sensitive natural community.

3.3.22 Upland Mustards and Other Ruderal Forbs

The upland mustards and other ruderal forbs alliance occur in moderate abundance around San Felipe Lake and in the downstream portion of the study area. These herbaceous stands are dominated by upland, ruderal forbs such as charlock (*Sinapis arvensis*), milk thistle (*Silybum marianum*), or mustard (*Hirschfeldia incana*) and are commonly associated with agricultural borders, levee banks, or other disturbed areas. Stands of upland mustards and other ruderal forbs were mapped to the alliance level in the study area. CDFW does not consider the upland mustards and other ruderal forbs alliance to be a sensitive natural community.

3.4 Other Land Cover Types

3.4.1 Agriculture

Agricultural lands occur in the downstream portion of the study area adjacent to Pacheco Creek. Three different types of agriculture are present in the study area: orchard, vineyard, and field crop / row crop. CDFW does not consider agricultural lands to be sensitive natural communities.

3.4.2 Non-Vegetated Areas

Naturally barren and aquatic habitats were mapped as non-vegetated areas when they did not have enough plant cover to meet the definition of a vegetation type. Non-vegetated areas occur throughout the study area. Four different types of non-vegetated areas are present in the study area: barren (dry streambed), water (reservoir), water (pond), and water (riverine). CDFW does not consider non-vegetated areas to be sensitive natural communities, although these areas may fall under the jurisdiction of other state and federal regulations.

3.4.3 Urban

Urban areas occur in relatively low abundance, primarily in the downstream portion of the study area near Pacheco Creek. Four different types of urban areas are present in the study area: urban (barren), urban (rural residential), urban (ornamental woodland), and urban (urban-suburban). The urban (barren) classification includes paved road surfaces and other non-vegetated areas associated with urban development. CDFW does not consider urban areas to be sensitive natural communities.

Chapter 4. Discussion

To date, 87 vegetation communities have been characterized to the alliance or association level, and 11 other land cover types have been identified in the 6,765-acre study area (Table 2 and Exhibit A). Thirty-eight of the vegetation communities, which account for approximately 1,400 acres of the study area, are categorized as sensitive natural communities. Fifty-nine of the vegetation communities or other land cover types, which account for approximately 5,365 acres of the study area, are not considered sensitive.

Fourteen vegetation communities or other land cover types not currently described in the MCV were documented in the study area. Of these 14 vegetation communities or other land cover types, 12 are not considered to be sensitive natural communities because they are dominated by non-native/invasive species or are agricultural, non-vegetated, or urban areas (Table 3-1, footnote [3]).

The remaining undescribed communities (alkali meadow and *Quercus douglasii* / *Artemisia californica* association) are characterized by native species but not currently described in the MCV (Table 3-1, footnotes [2] and [4]). To the extent possible, these two undescribed habitats were assessed based upon the status of a corresponding vegetation type in Holland (1986) per CDFW guidance. The vegetation community and environmental conditions in areas classified as alkali meadow generally match those described for the alkali meadow vegetation type included in Holland (1986). CDFW considers the alkali meadow Holland type to be sensitive natural community. The *Quercus douglasii* / *Artemisia californica* association is not currently described in the MCV and a corresponding vegetation type is not included in Holland (1986). CDFW has not assessed the status of *Quercus douglasii* / *Artemisia californica* as a sensitive natural community.

Chapter 5. References

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Draft Environmental Impact Report

Appendix

Biological Resources – Botanical/Wildlife

Attachment B

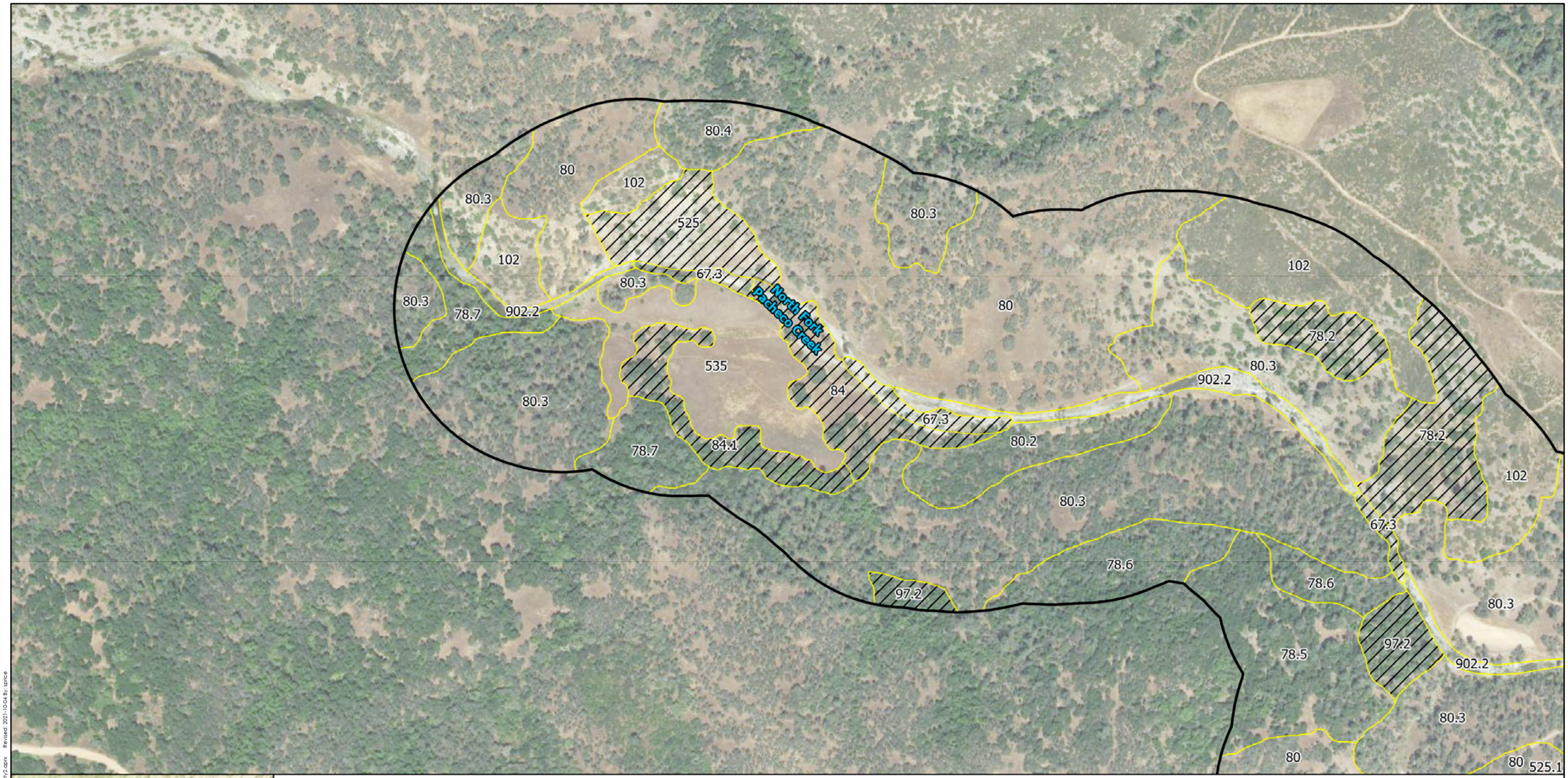
Terrestrial Vegetation Communities Mapping

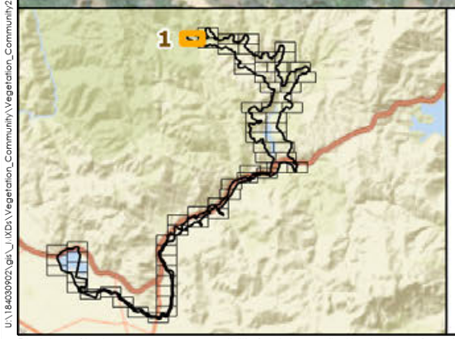
Exhibit A

Vegetation Communities and Other Habitat Types Map Figures

Pacheco Reservoir Expansion Project

November 2021





Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Vegetation Communities and Other Land Cover Types (Page 1 of 68)

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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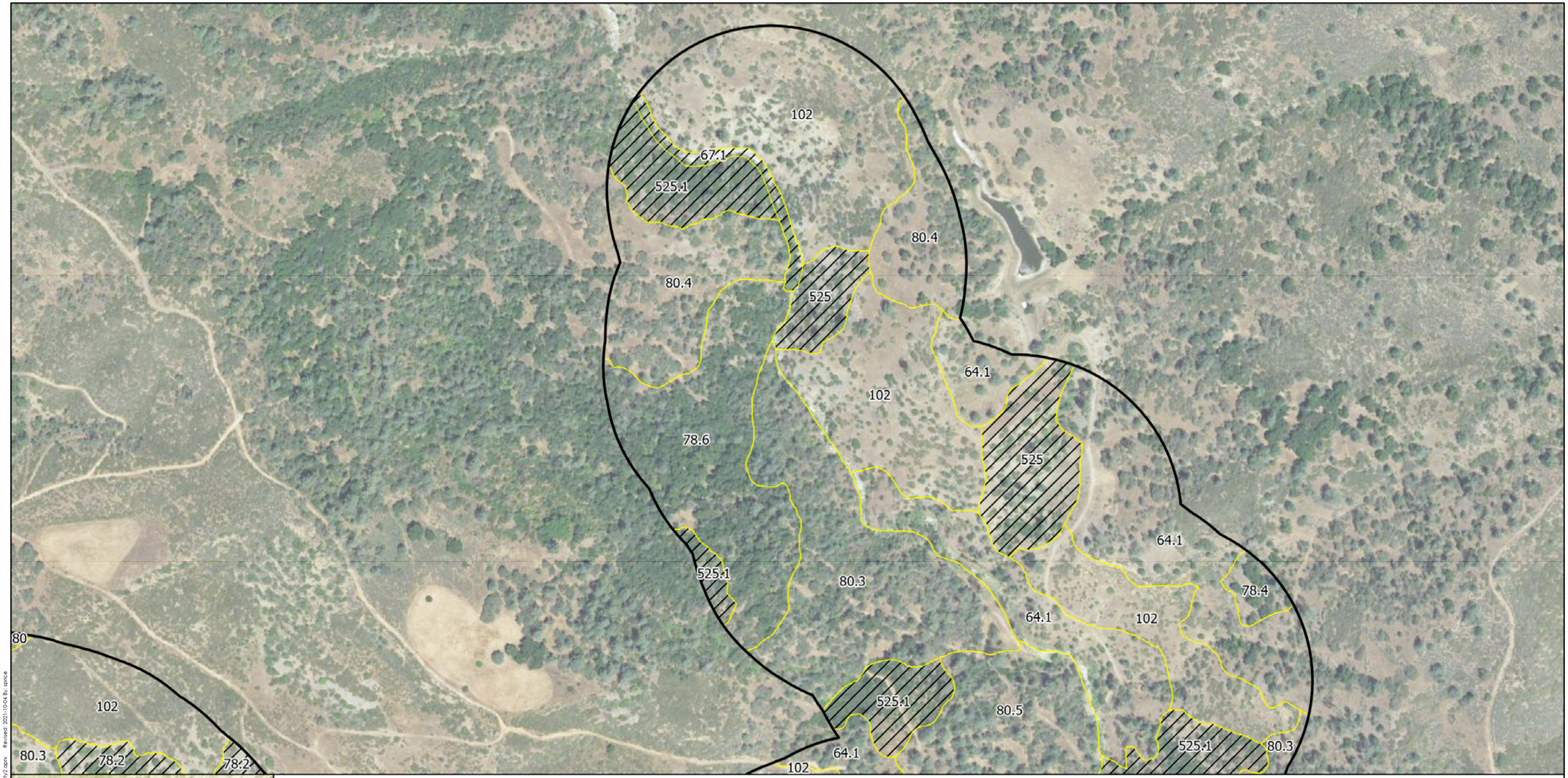

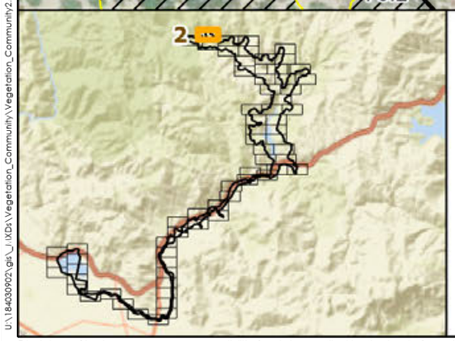

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Valley Water

AECOM

Stantec GEI

N

Appendix A : Vegetation Communities and Other Land Cover Types (Page 2 of 68)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

U:\18439925.gis_i\MDs\Vegetation_Community\Vegetation_Community2.aprx Revised: 2021-10-04 By: jprice

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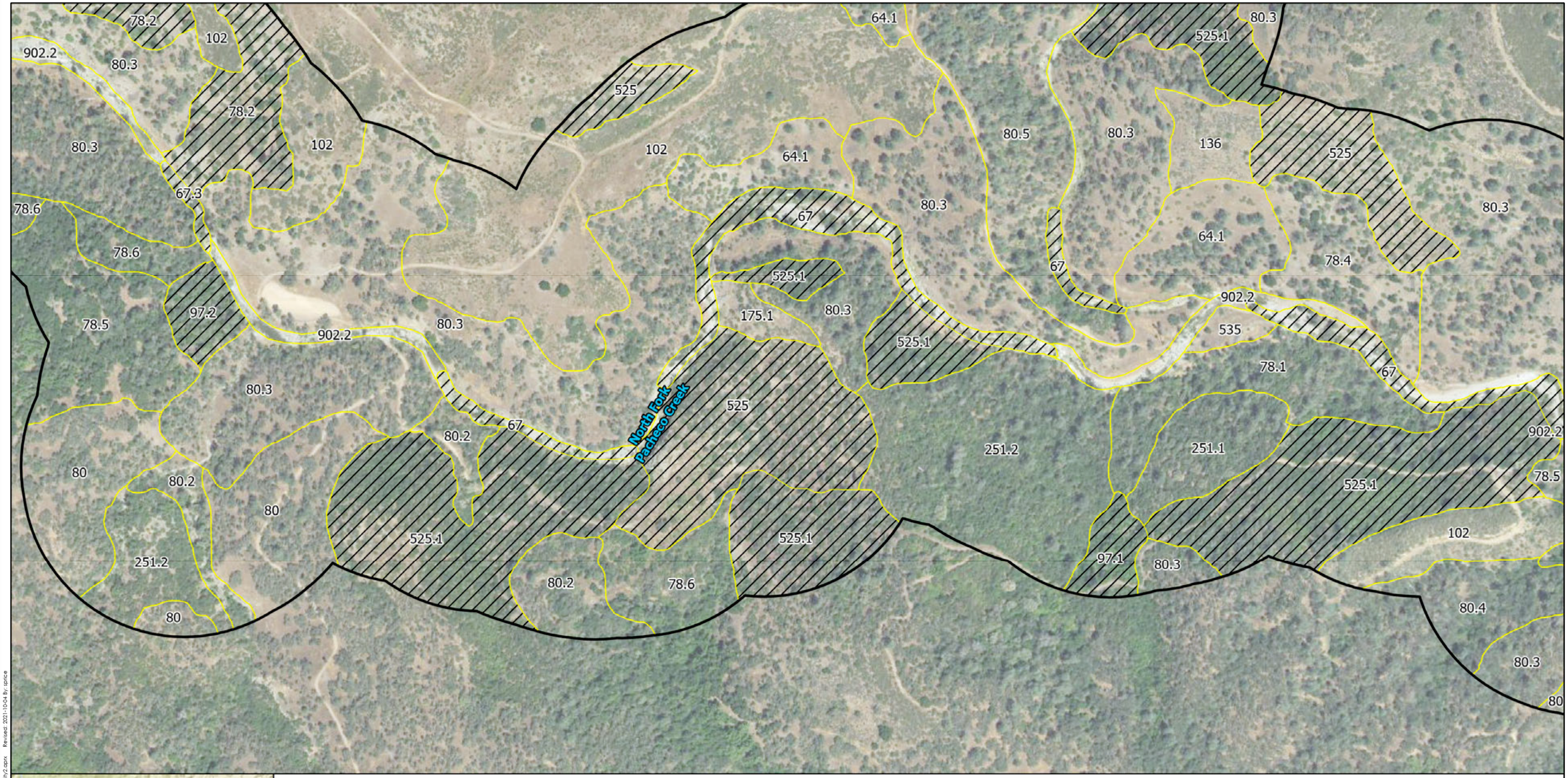

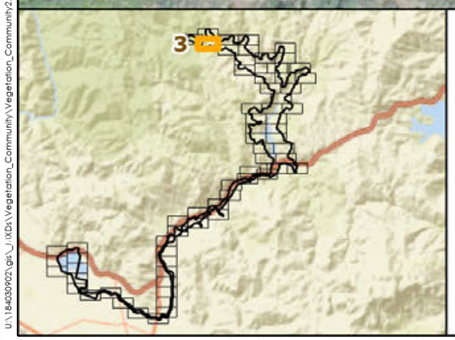

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Vegetation Communities and Other Land Cover Types (Page 3 of 68)

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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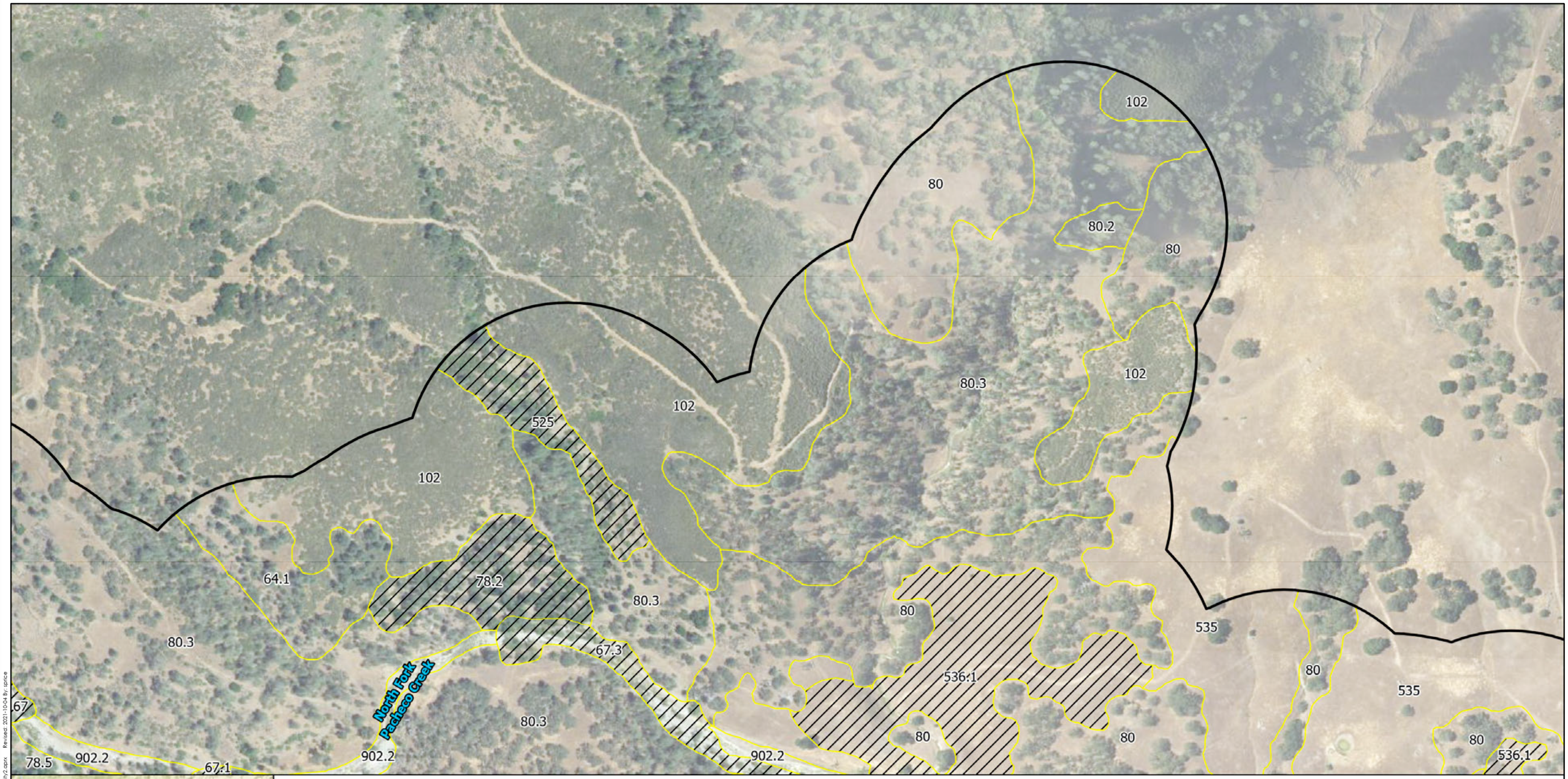

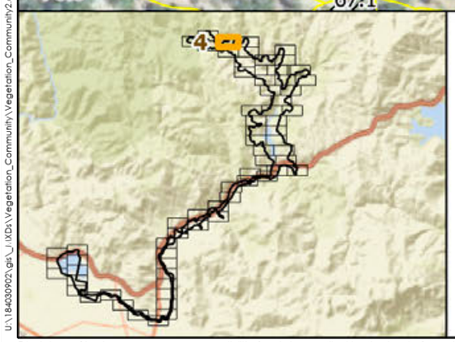

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Vegetation Communities and Other Land Cover Types (Page 4 of 68)

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

U:\185403902\gis_MXDs\Vegetation_Community\Vegetation_Community2.mxd Revised: 2021-10-04 By: spruce

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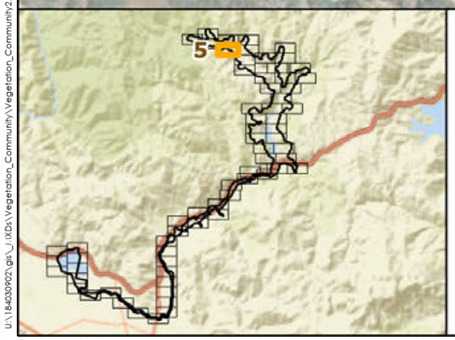

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Valley Water

AECOM

Stantec GEI

N

Appendix A : Vegetation Communities and Other Land Cover Types (Page 5 of 68)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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78.6
67.1
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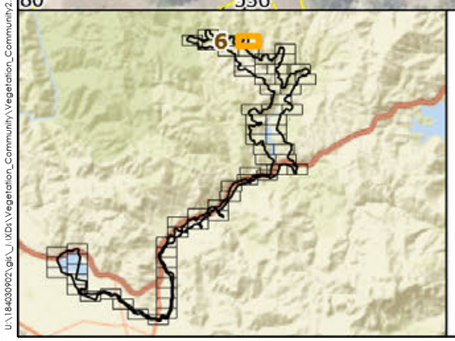

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Valley Water

AECOM

Stantec GEI

N

Appendix A : Vegetation Communities and Other Land Cover Types (Page 6 of 68)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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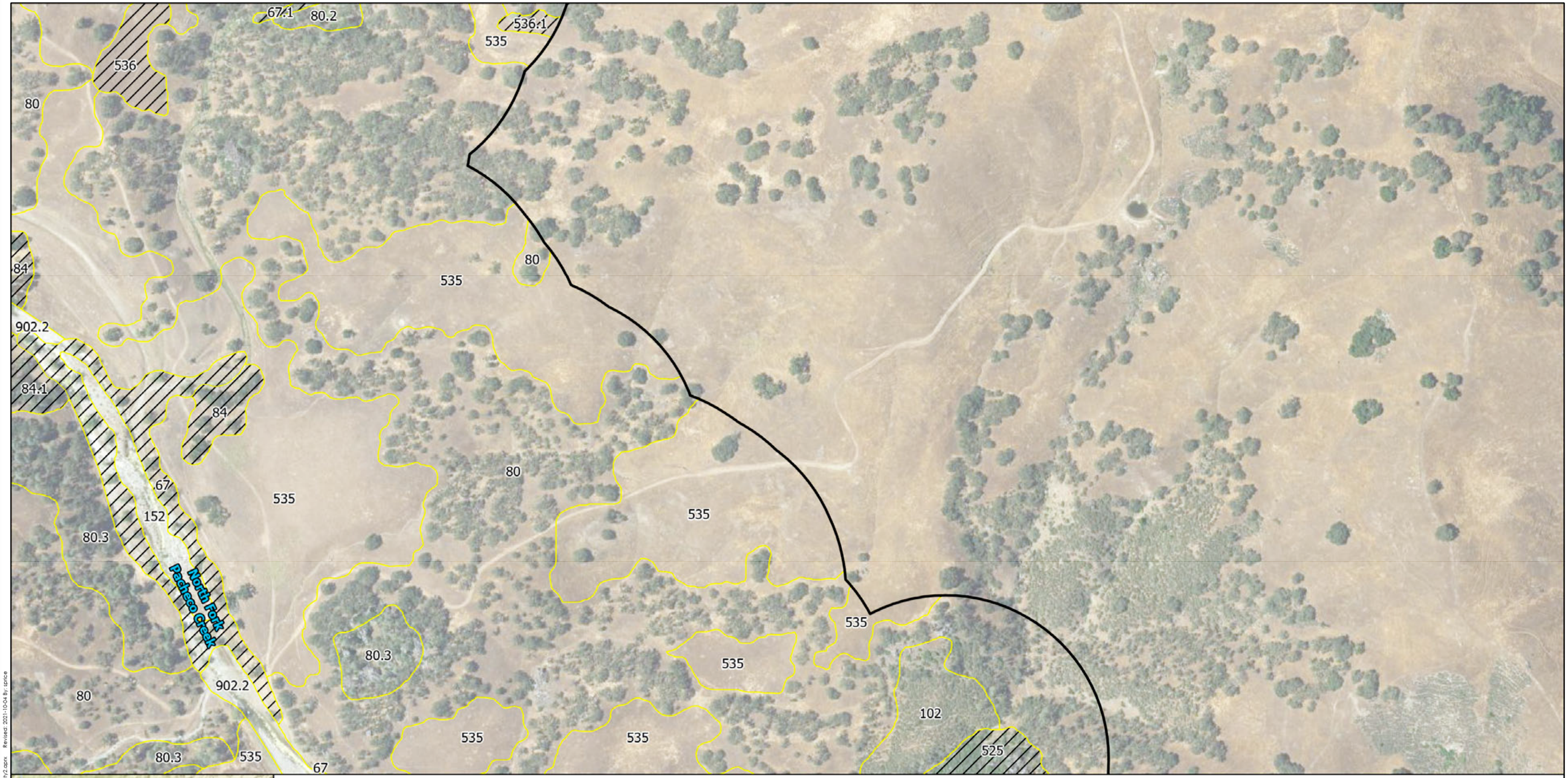

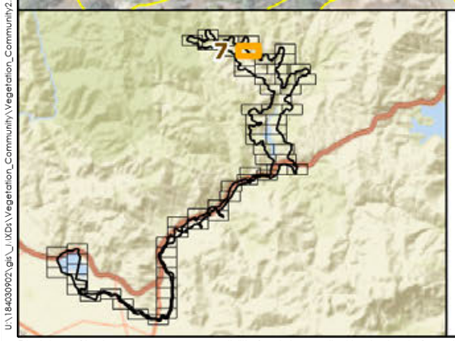

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Valley Water

AECOM

Stantec GEI

N

Appendix A : Vegetation Communities and Other Land Cover Types (Page 7 of 68)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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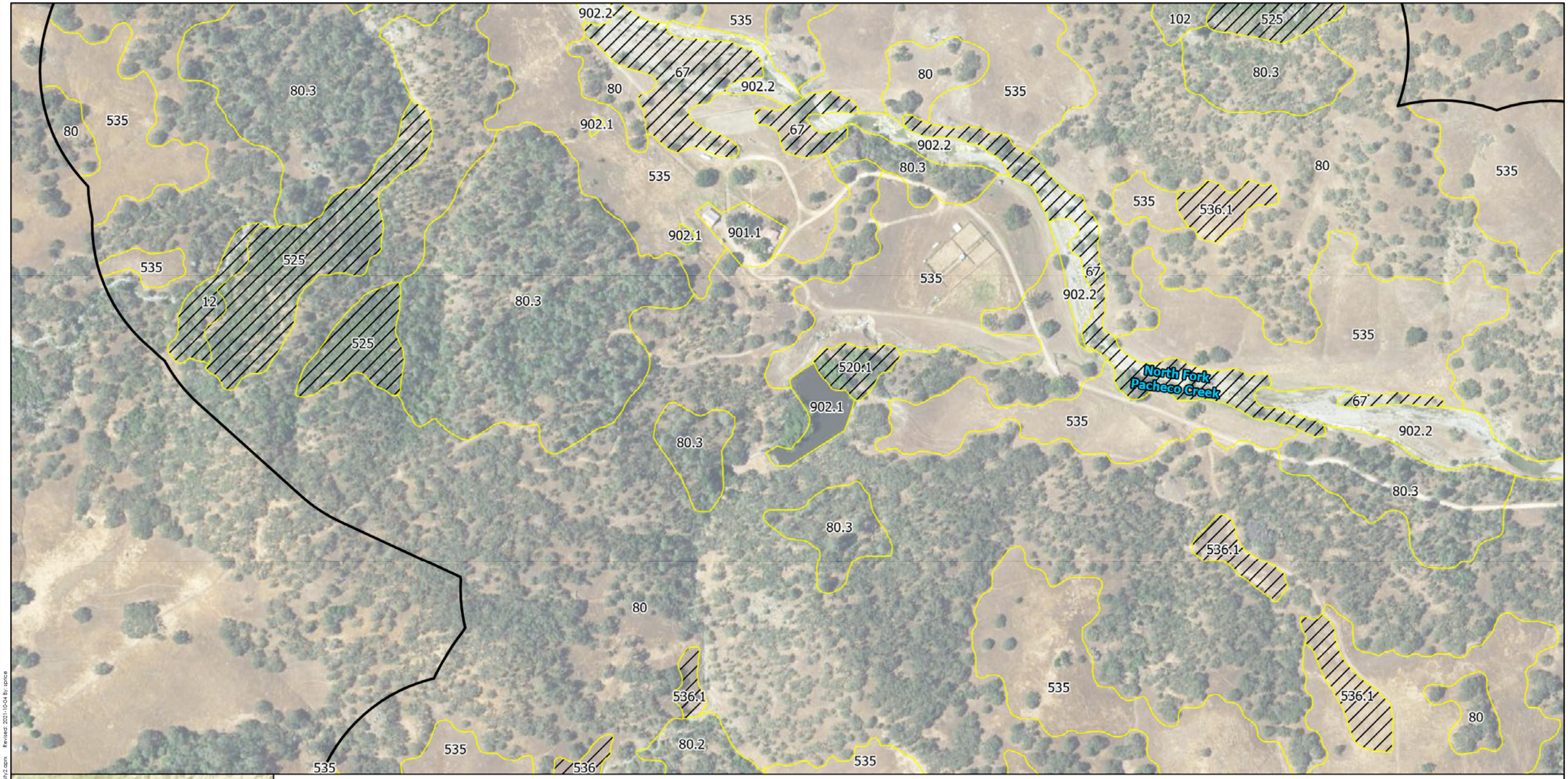

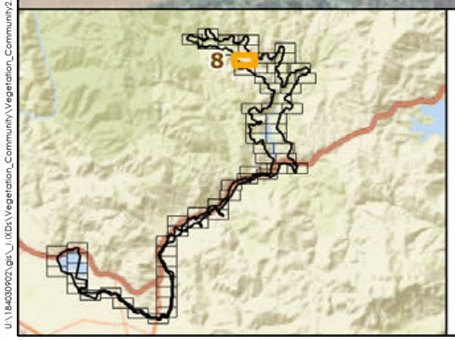

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Vegetation Communities and Other Land Cover Types (Page 8 of 68)

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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535
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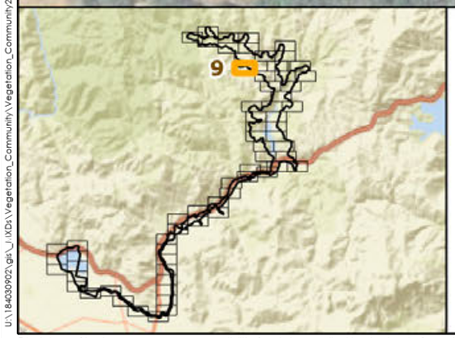

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Valley Water

AECOM

Stantec GEI

N

Appendix A : Vegetation Communities and Other Land Cover Types (Page 9 of 68)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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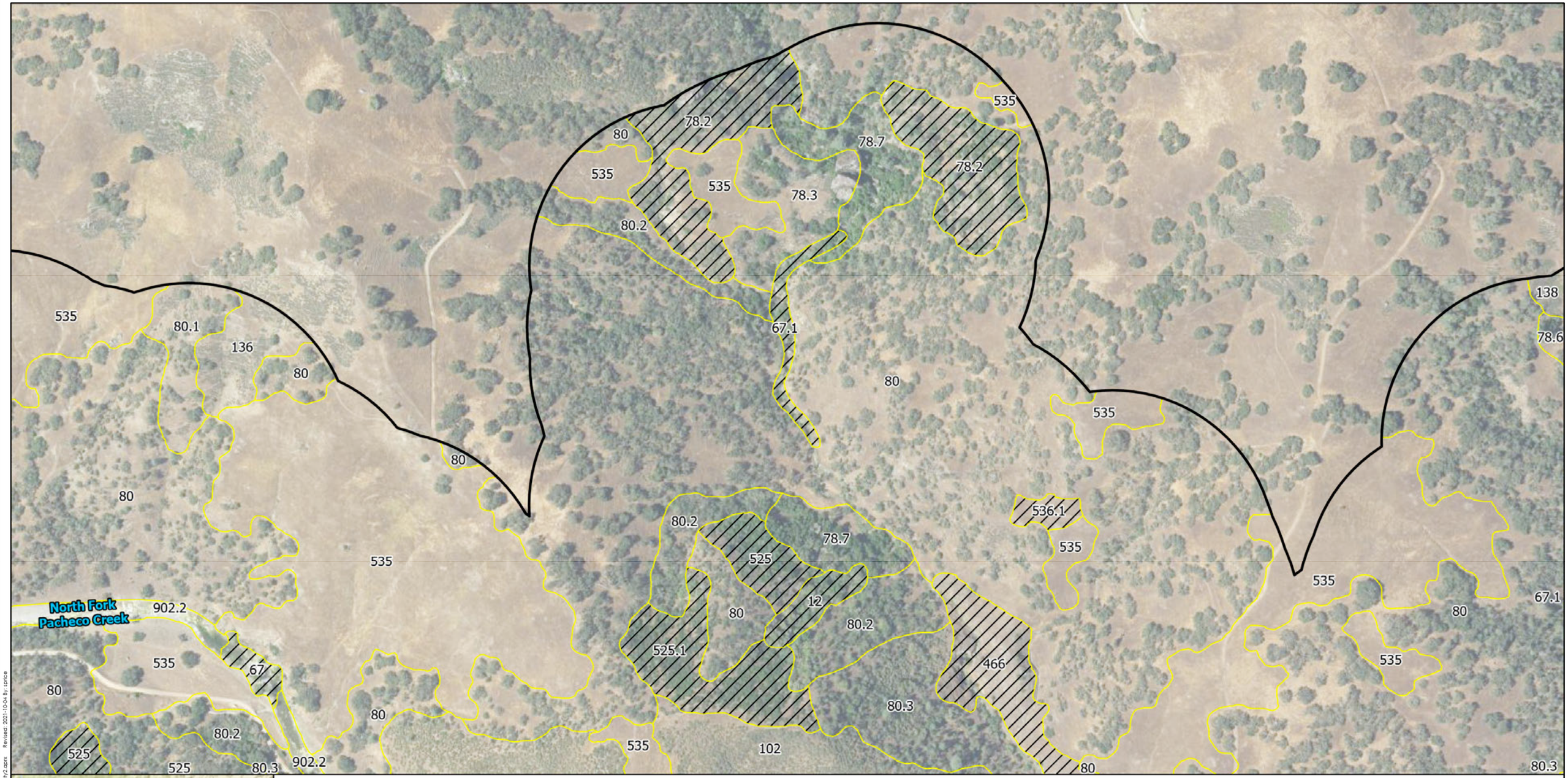

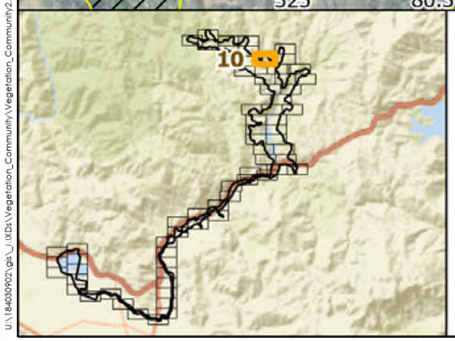

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Vegetation Communities and Other Land Cover Types (Page 10 of 68)

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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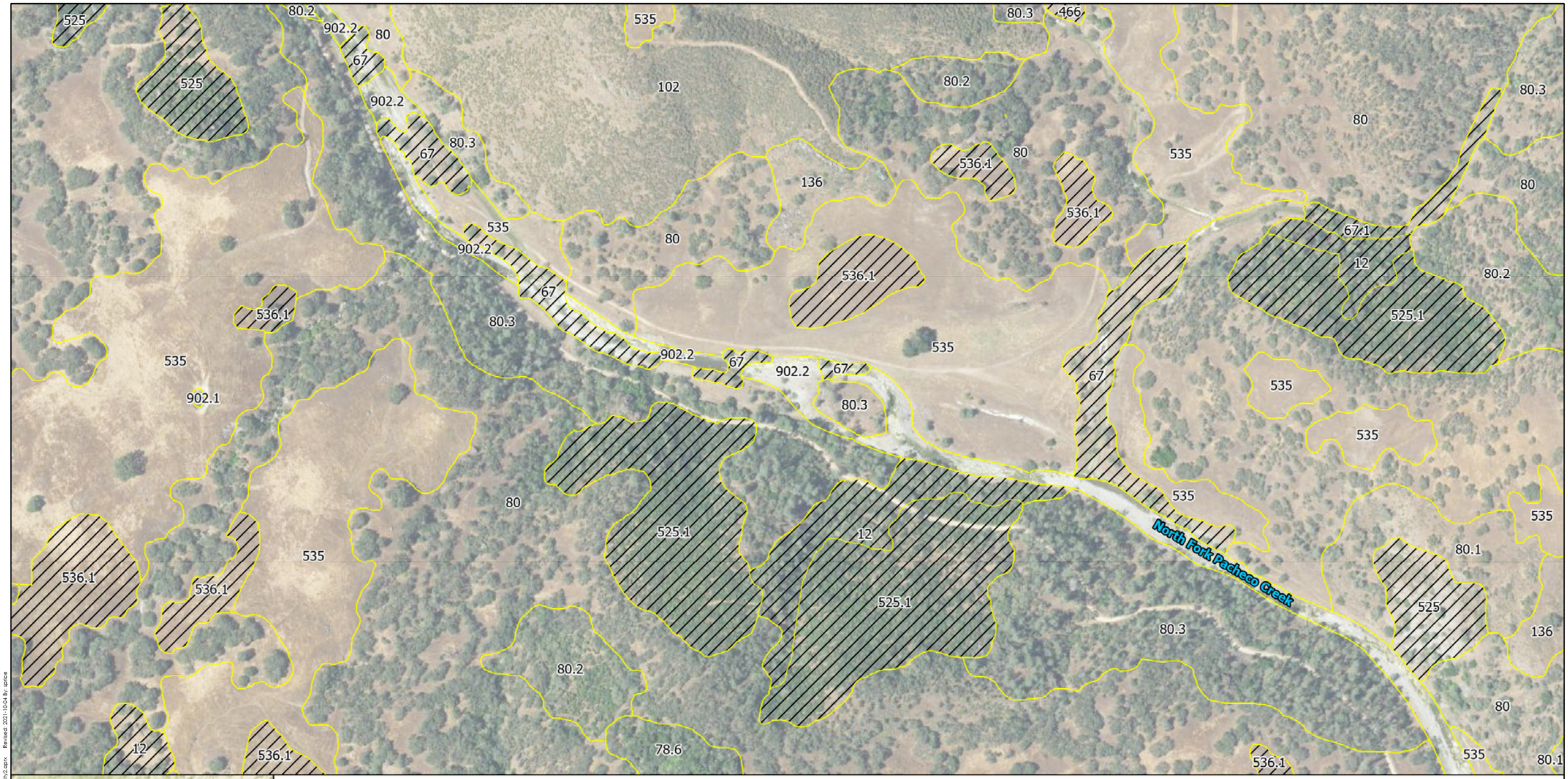

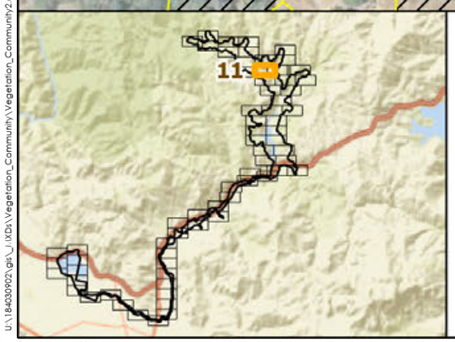

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Valley Water

AECOM

Stantec GEI

N

Appendix A : Vegetation Communities and Other Land Cover Types (Page 11 of 68)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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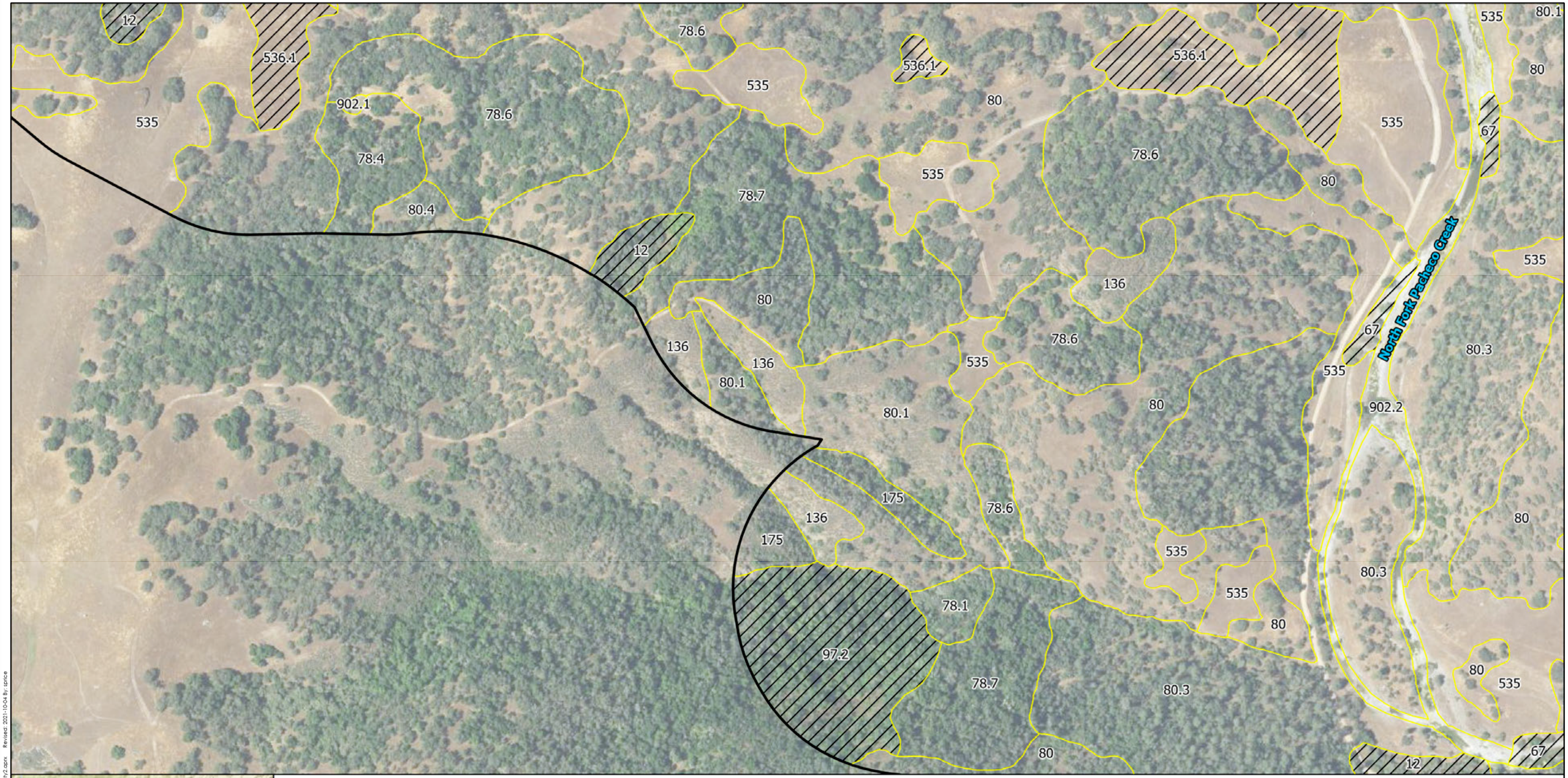

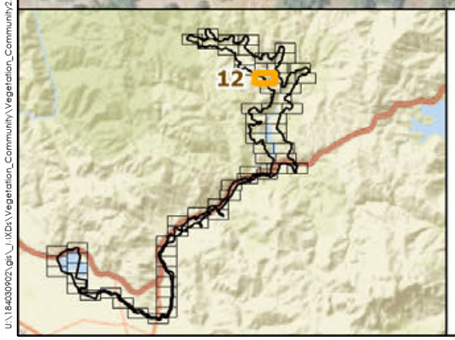

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Valley Water

AECOM

Stantec GEI

N

Appendix A : Vegetation Communities and Other Land Cover Types (Page 12 of 68)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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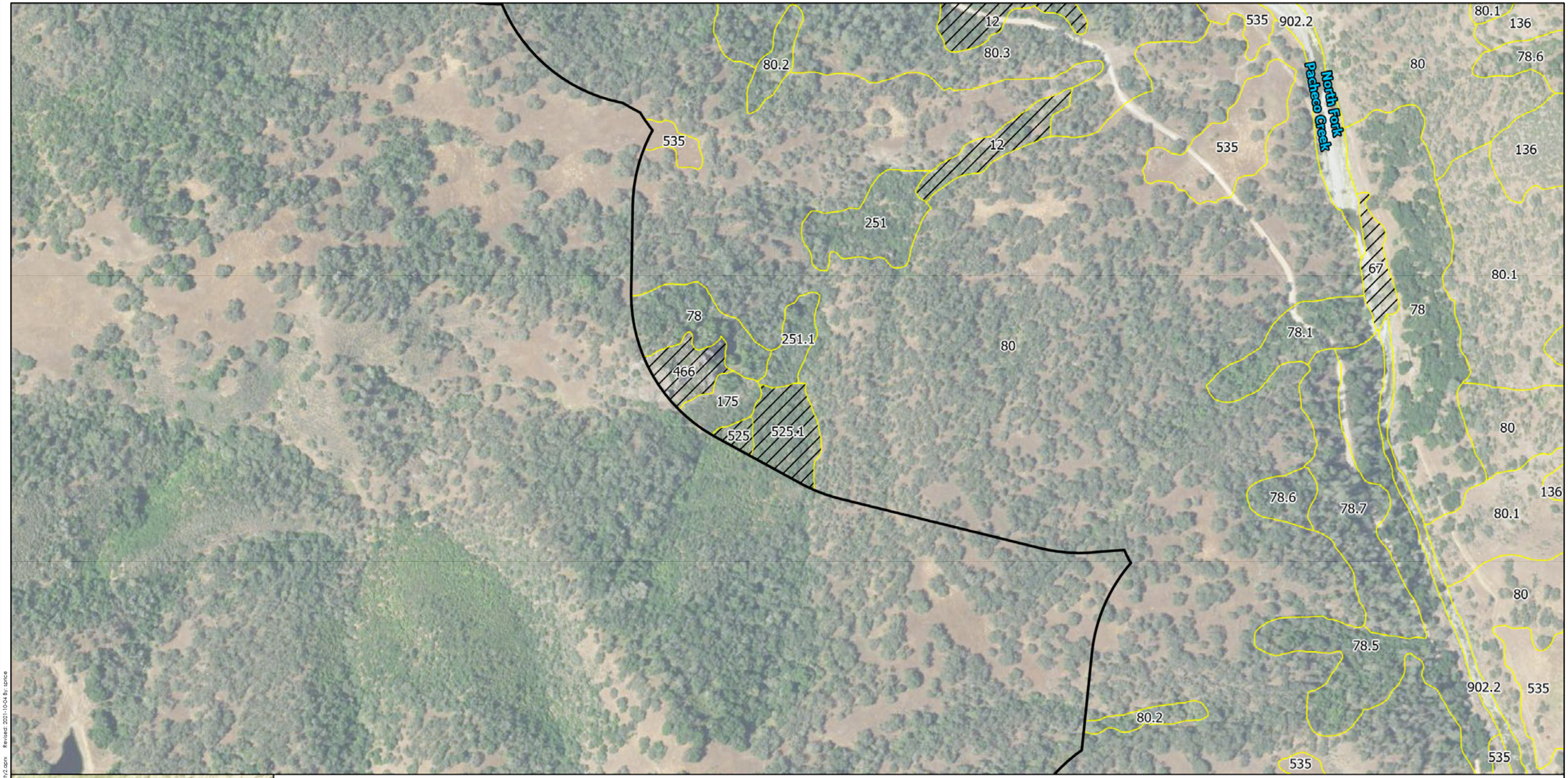

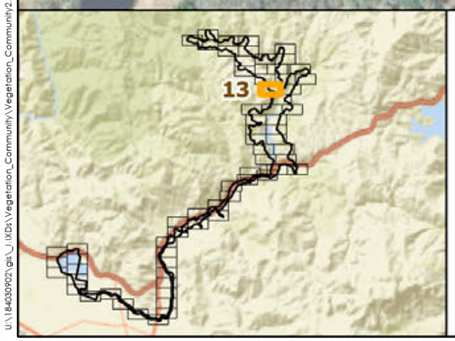

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Valley Water

AECOM

Stantec GEI

N

Appendix A : Vegetation Communities and Other Land Cover Types (Page 13 of 68)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
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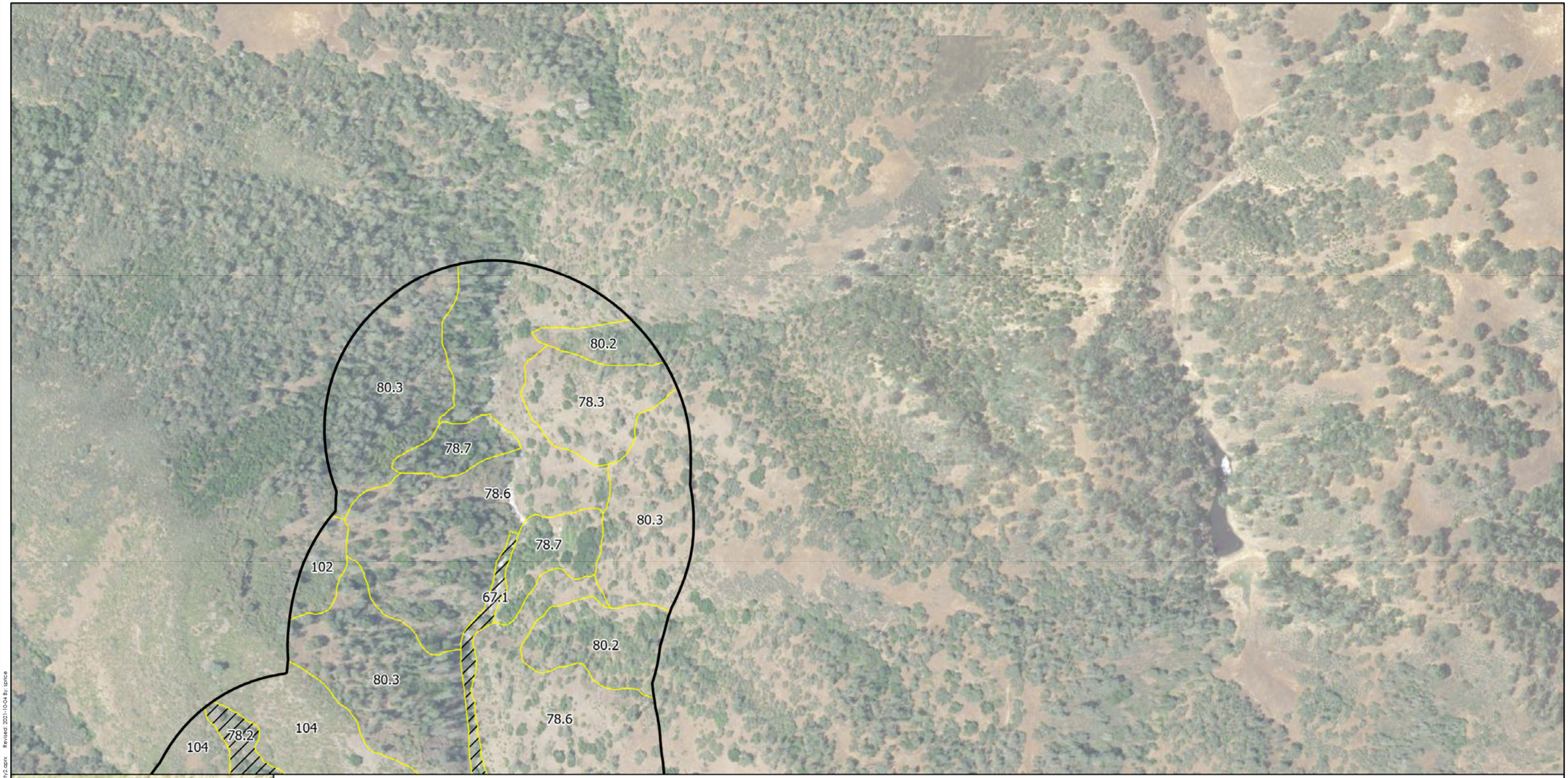

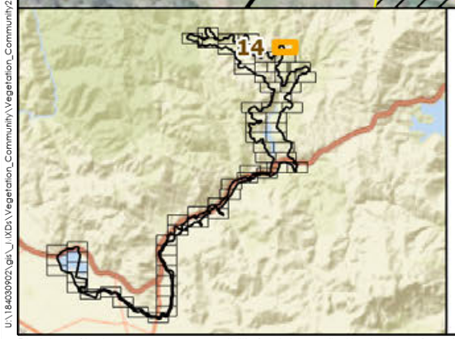

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Vegetation Communities and Other Land Cover Types (Page 14 of 68)

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
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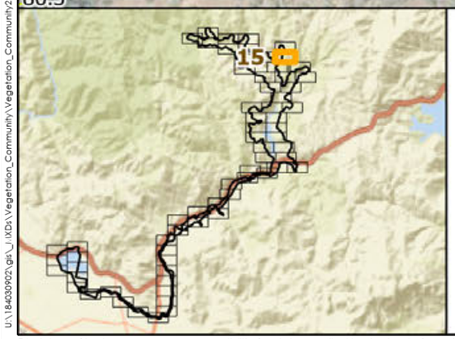

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Valley Water

AECOM

Stantec GEI

N

Appendix A : Vegetation Communities and Other Land Cover Types (Page 15 of 68)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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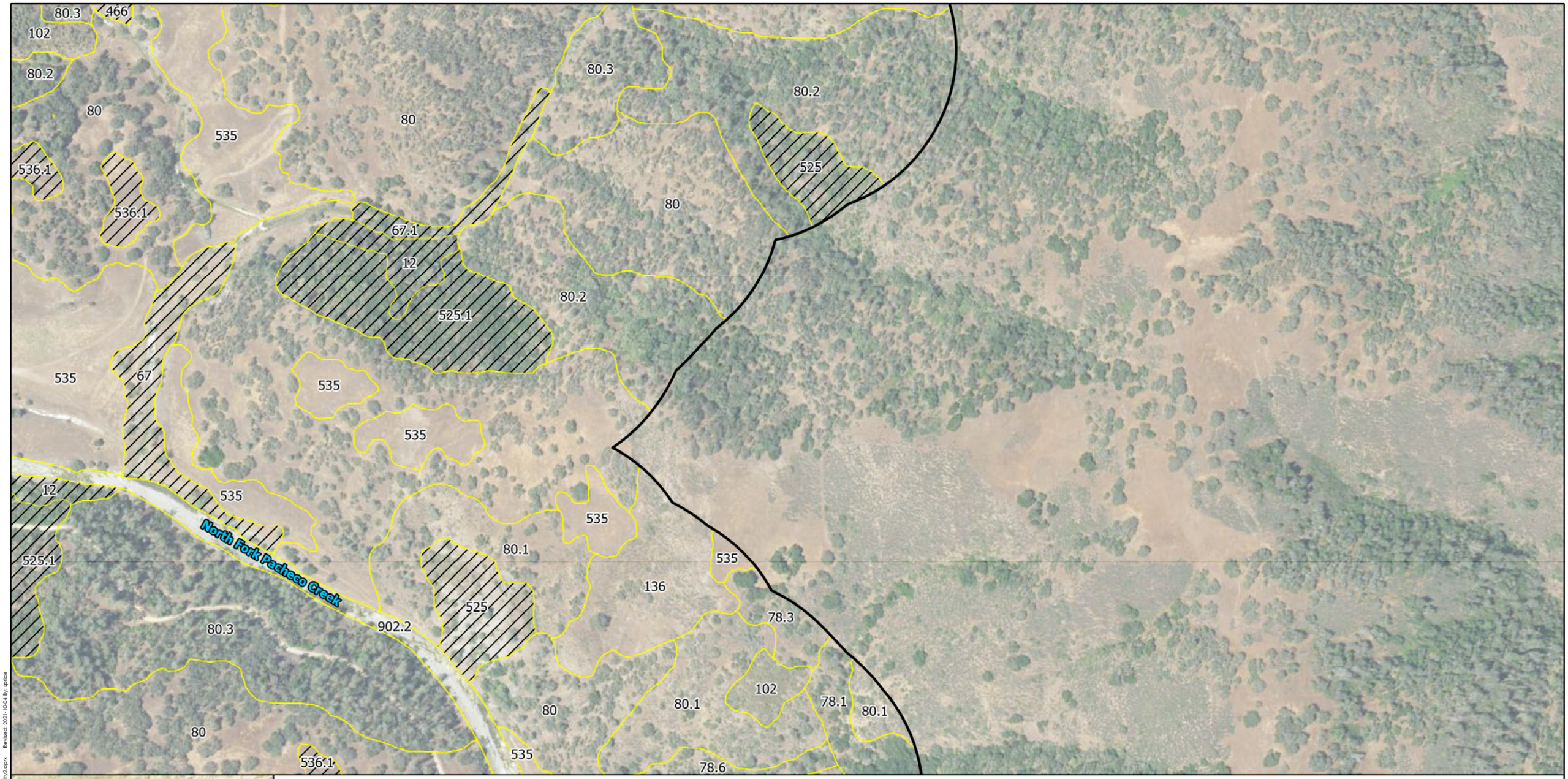

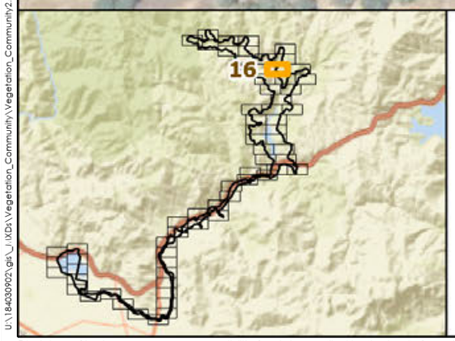

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Vegetation Communities and Other Land Cover Types (Page 16 of 68)

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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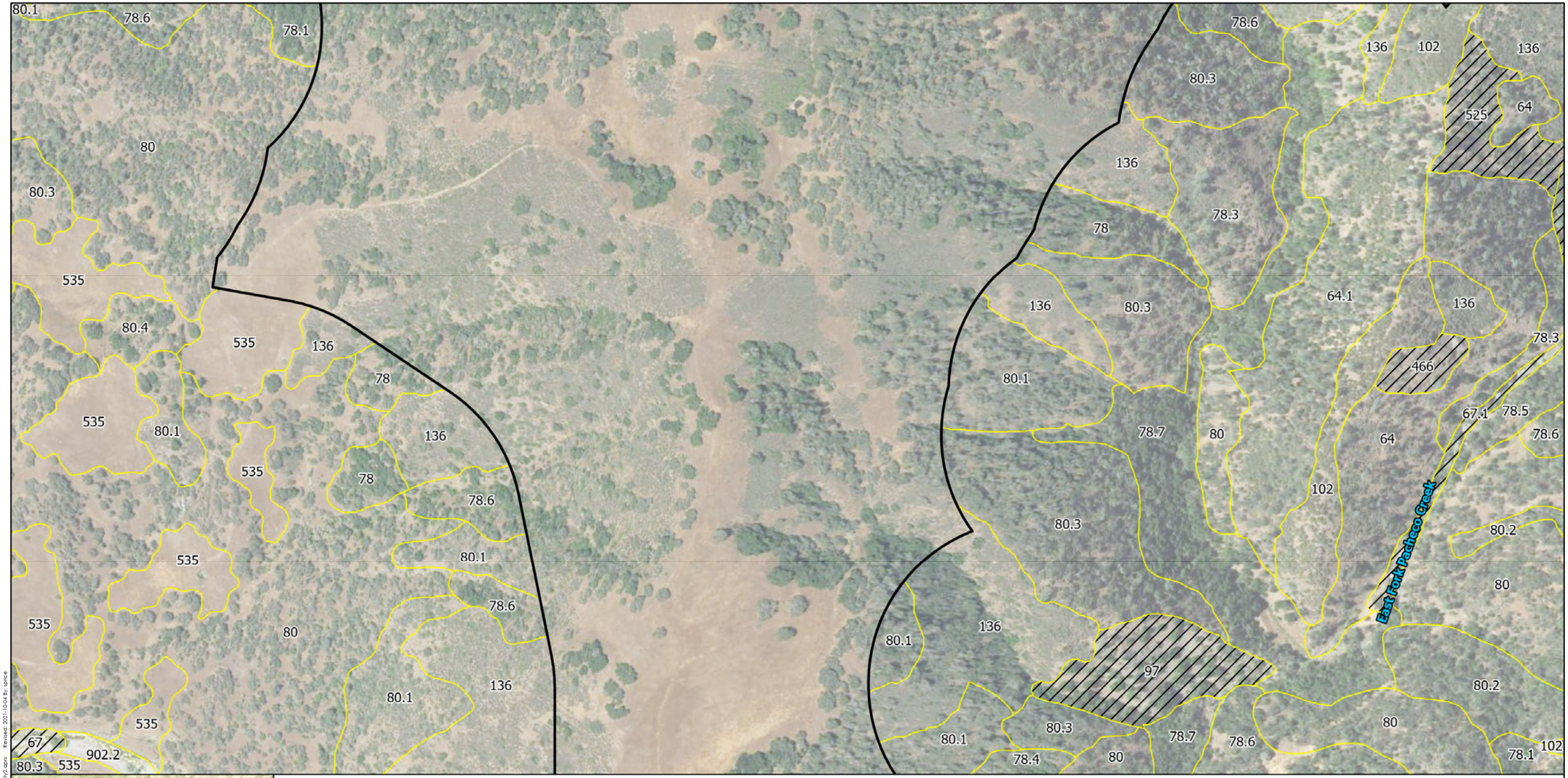

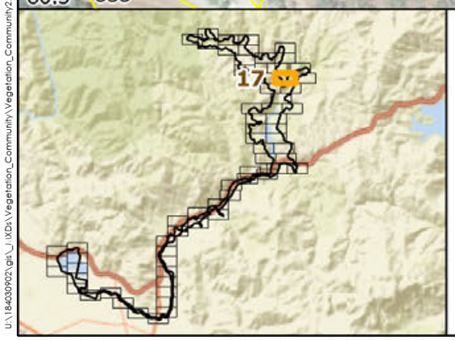

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Vegetation Communities and Other Land Cover Types (Page 17 of 68)

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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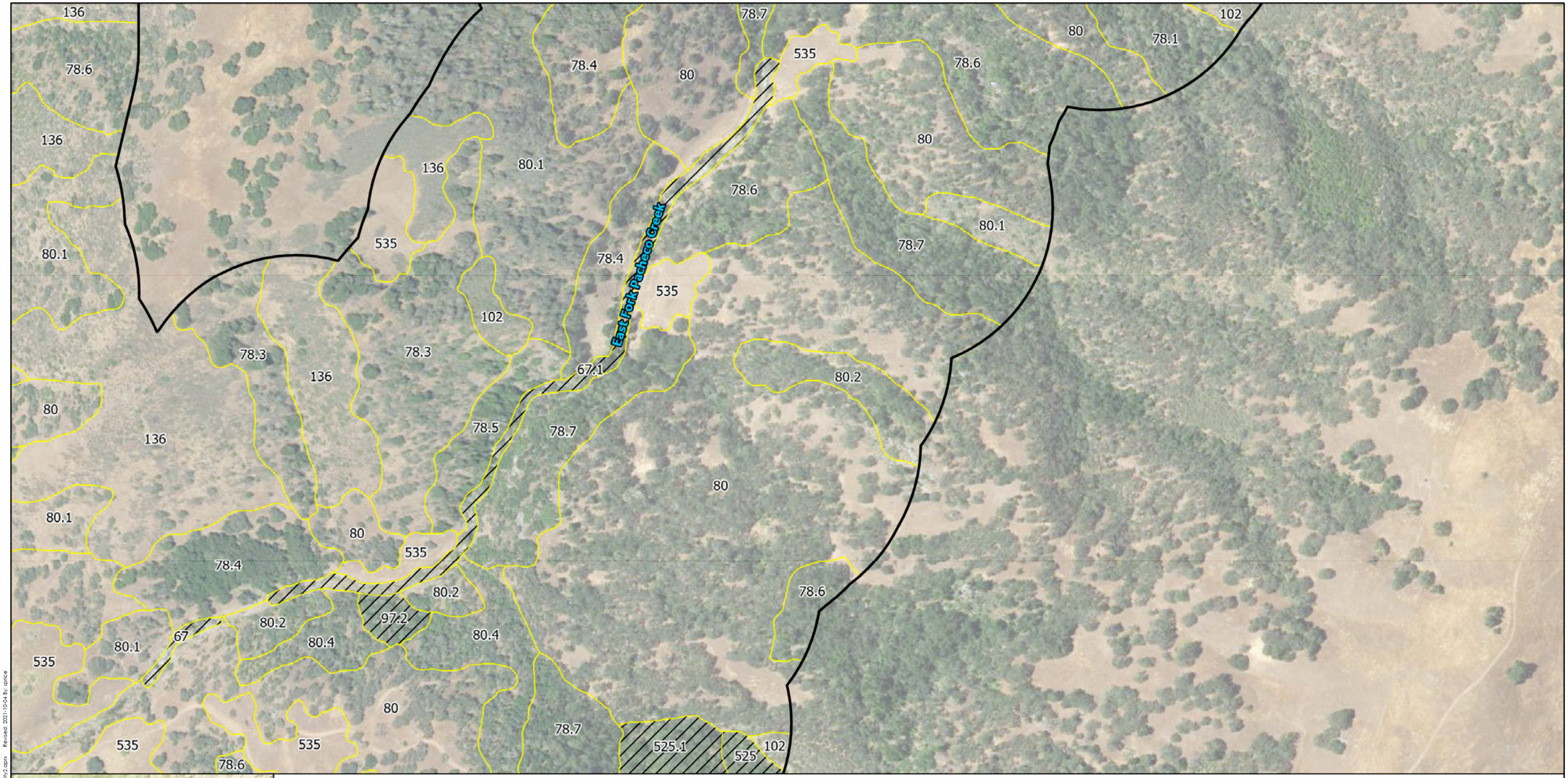

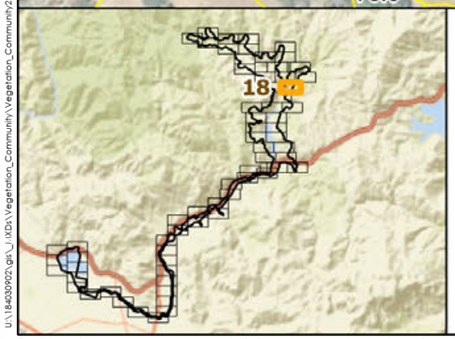

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Valley Water

AECOM

Stantec GEI

N

Appendix A : Vegetation Communities and Other Land Cover Types (Page 18 of 68)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
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Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

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Valley Water

AECOM

Stantec GEI

N

Appendix A : Vegetation Communities and Other Land Cover Types (Page 19 of 68)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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64
67.1
136
78.7
80.4
78.3
80.2
80.3
80
80.4
251.1
525.1
525
East Fork Pacheco Creek
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80.2
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80.2
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80.2
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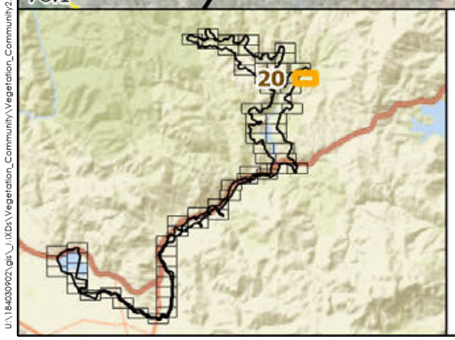
102
78.1



Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Vegetation Communities and Other Land Cover Types (Page 20 of 68)

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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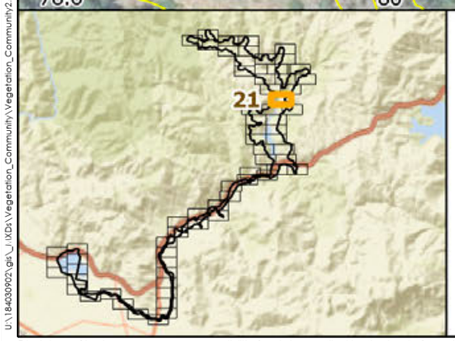

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Valley Water

AECOM

Stantec GEI

N

Appendix A : Vegetation Communities and Other Land Cover Types (Page 21 of 68)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
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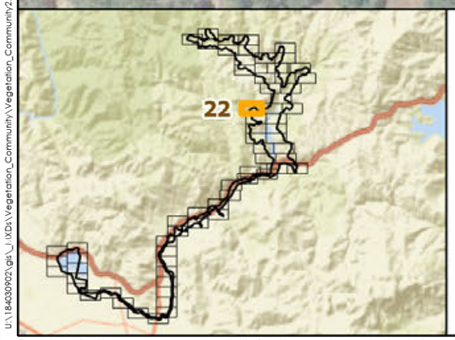

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Valley Water

AECOM

Stantec GEI

N

Appendix A : Vegetation Communities and Other Land Cover Types (Page 22 of 68)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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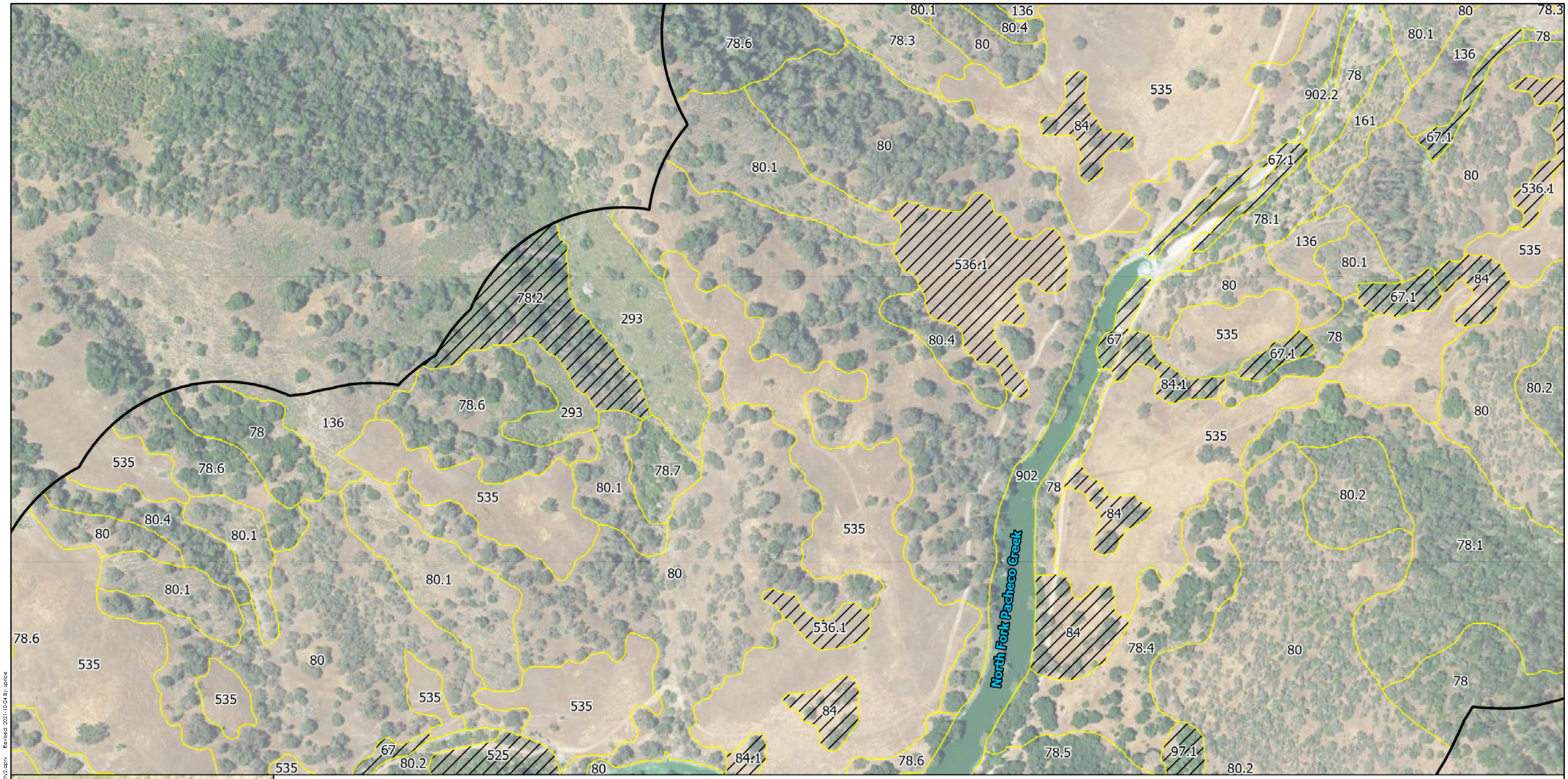

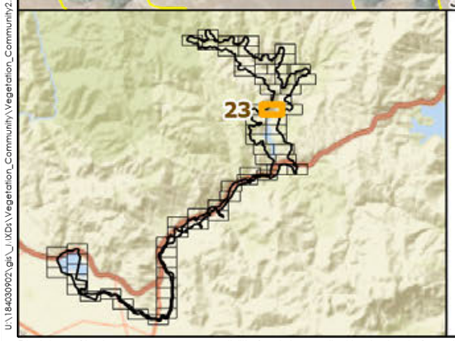

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Valley Water

AECOM

Stantec GEI

N

Appendix A : Vegetation Communities and Other Land Cover Types (Page 23 of 68)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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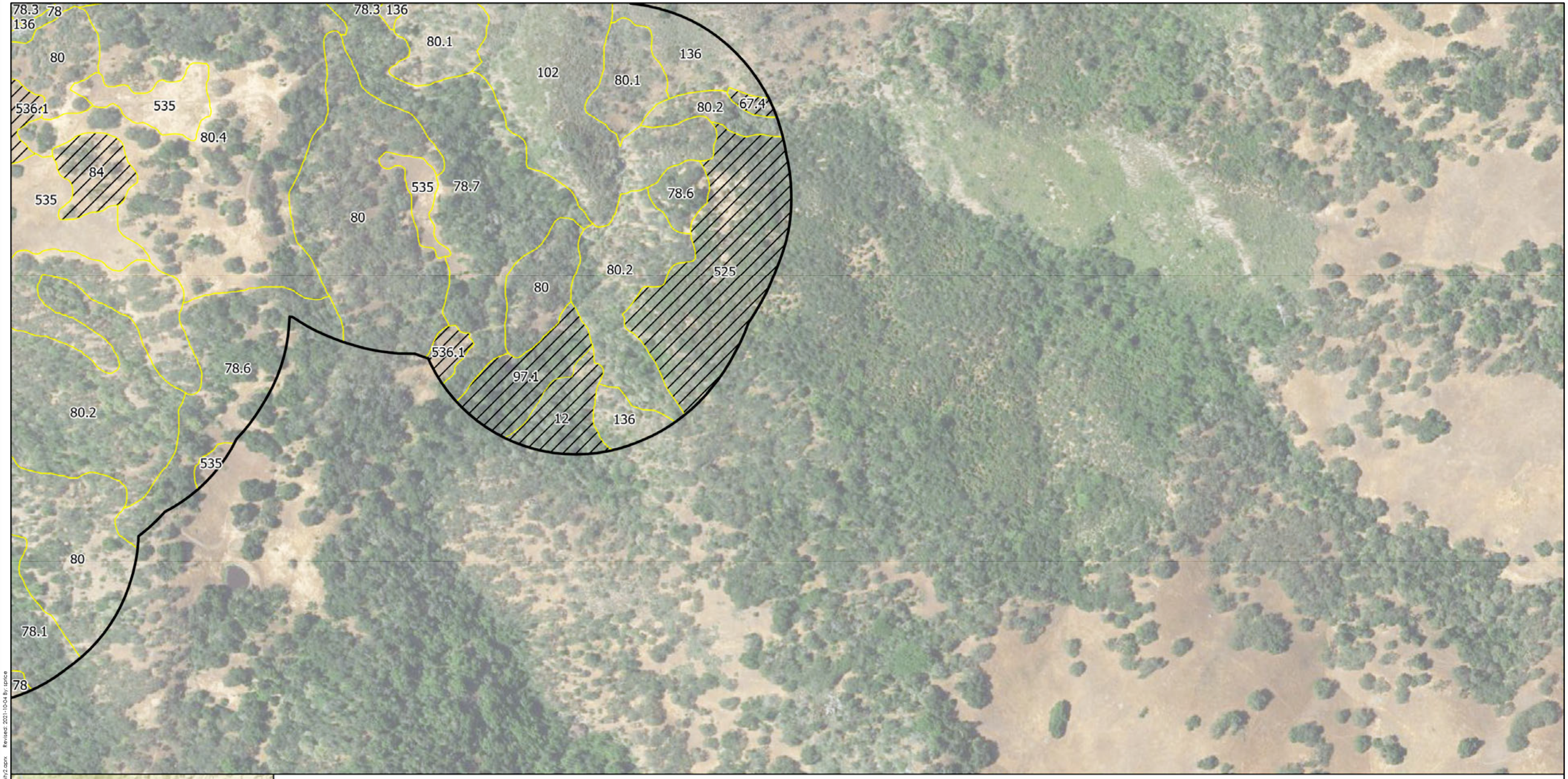

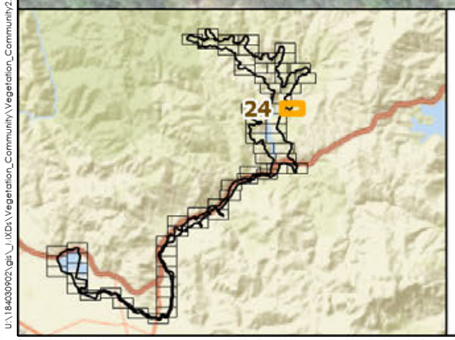

Pacheco Reservoir Expansion Project

- Study Area

Vegetation Communities

- 80 Not Sensitive or Not Listed
- 525 Sensitive
- County Line

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Vegetation Communities and Other Land Cover Types (Page 24 of 68)

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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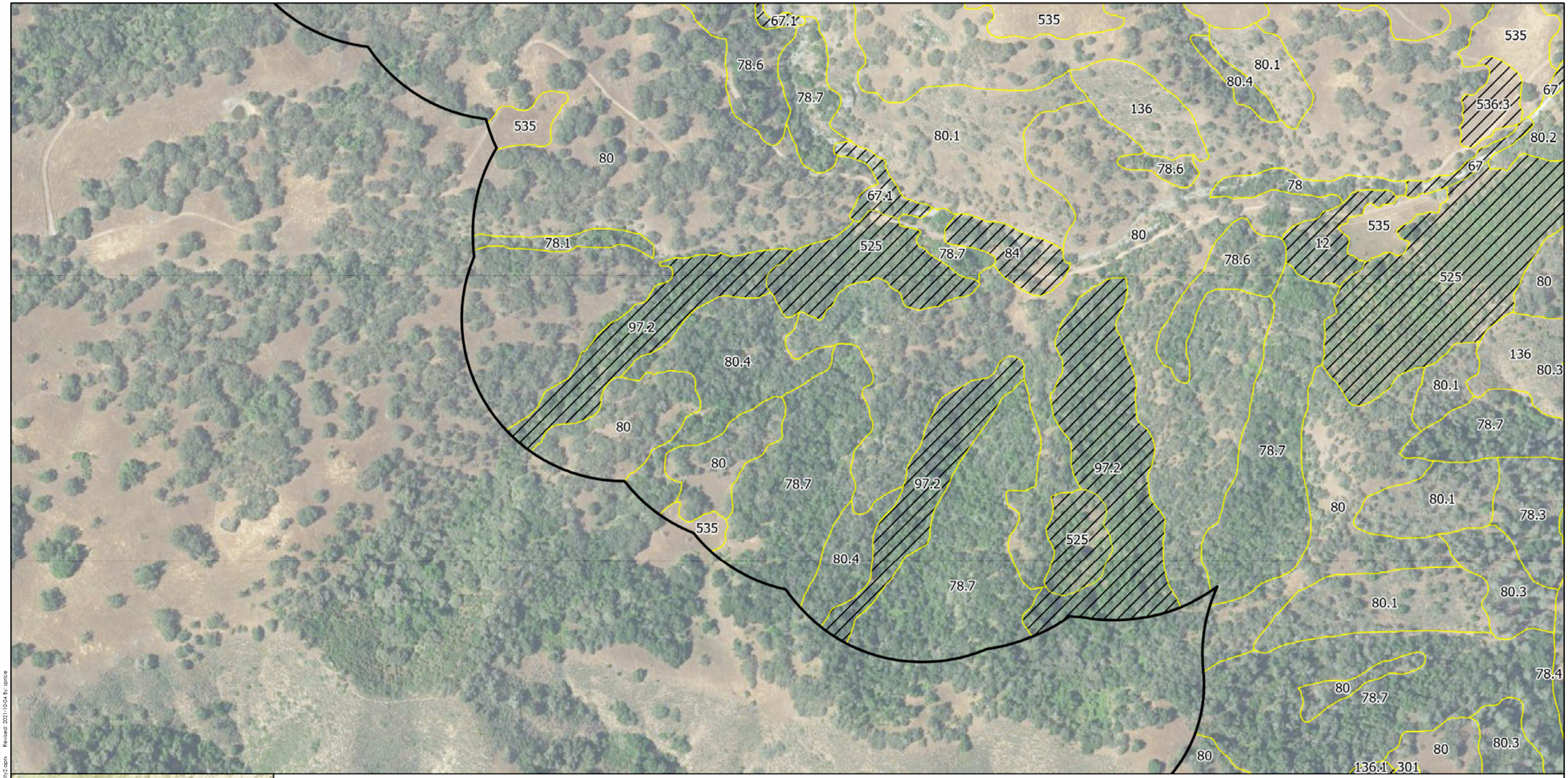

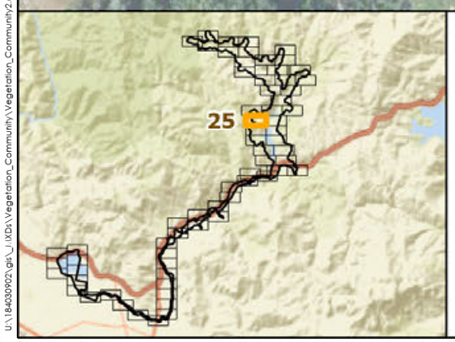

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Valley Water

AECOM

Stantec GEI

N

Appendix A : Vegetation Communities and Other Land Cover Types (Page 25 of 68)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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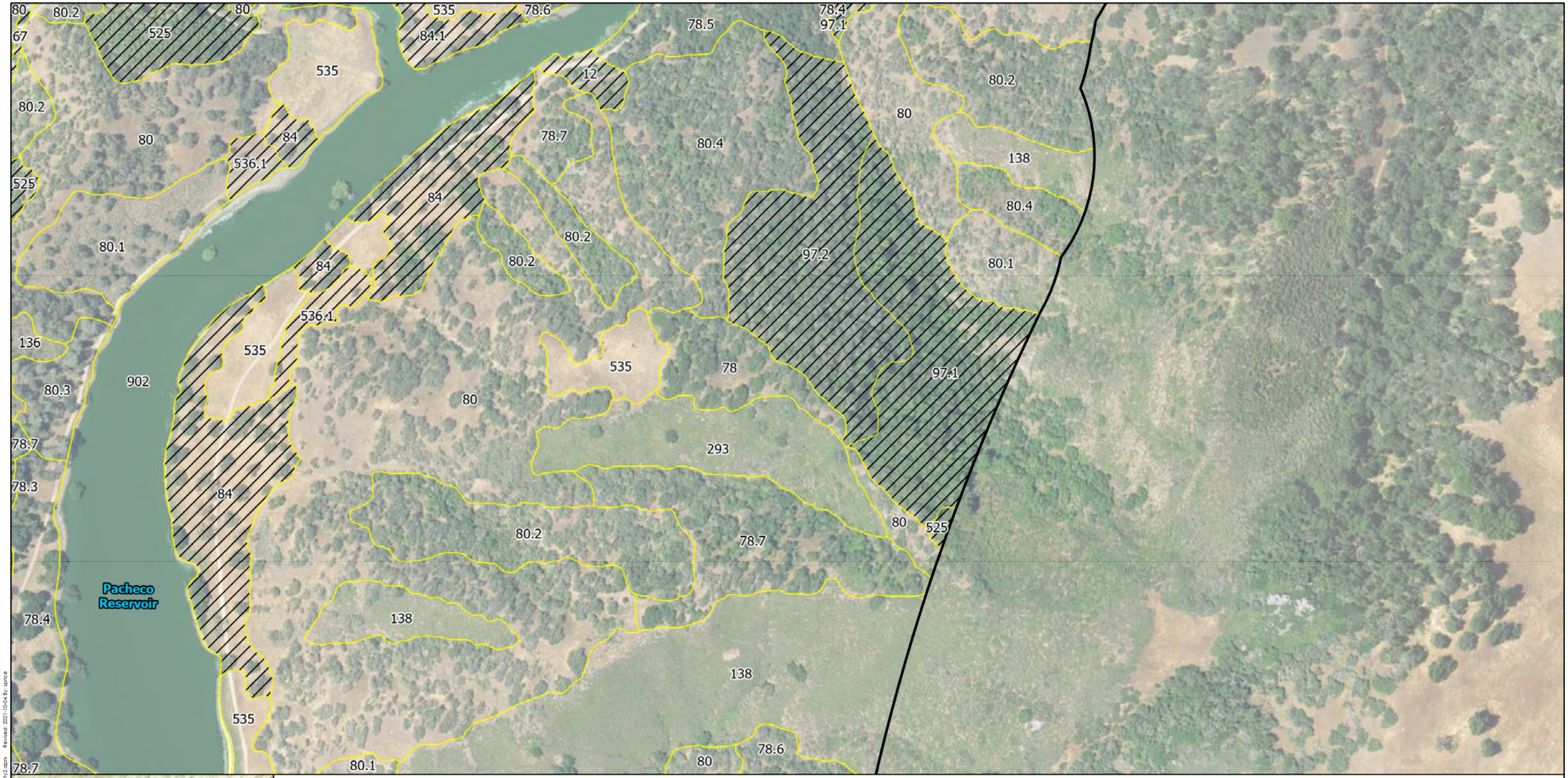

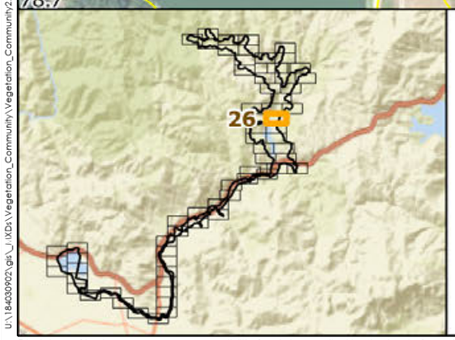

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Valley Water

AECOM

Stantec GEI

N

Appendix A : Vegetation Communities and Other Land Cover Types (Page 26 of 68)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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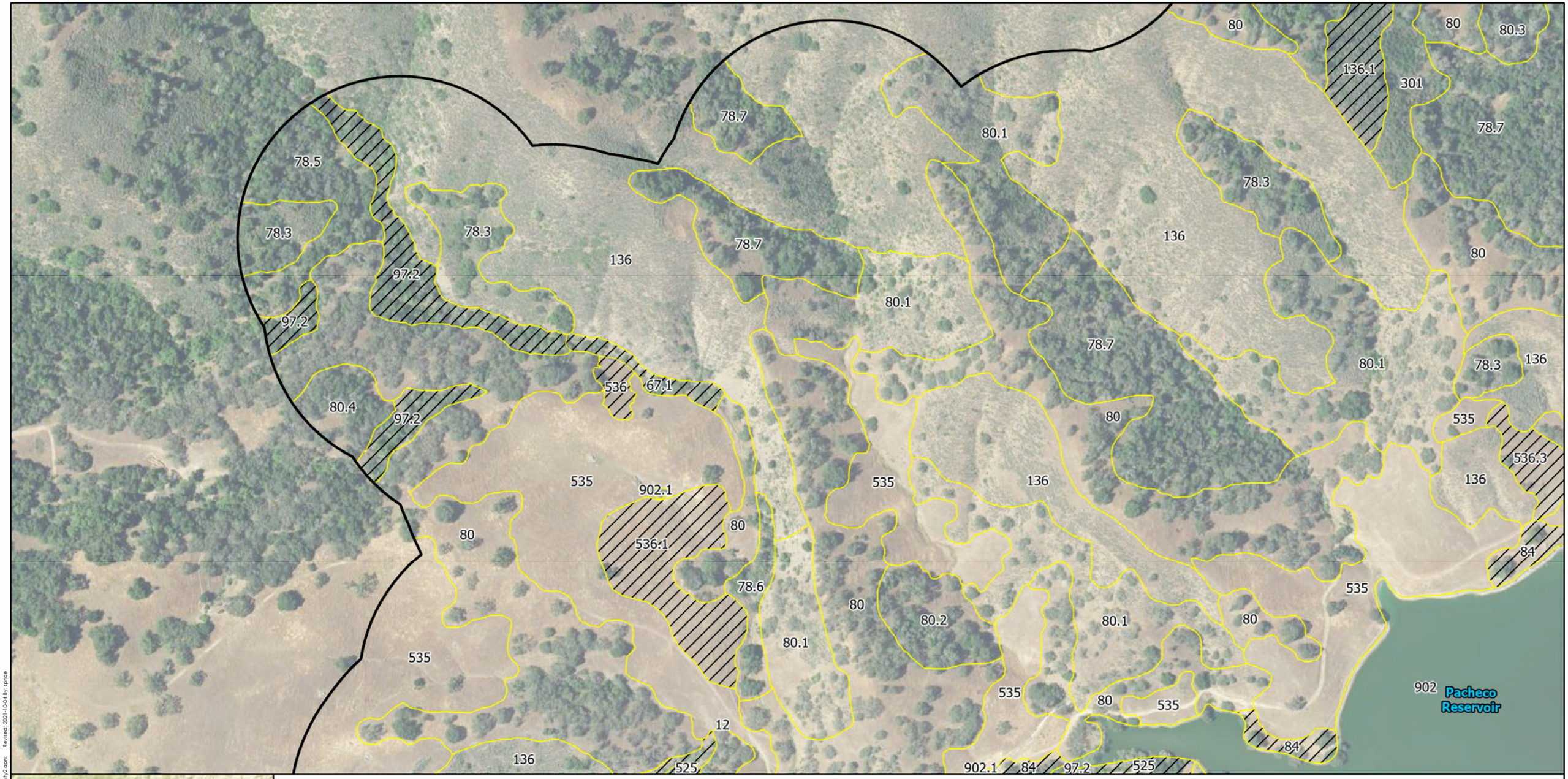

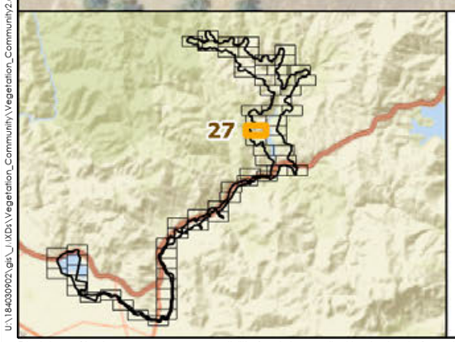

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Valley Water

AECOM

Stantec GEI

N

Appendix A : Vegetation Communities and Other Land Cover Types (Page 27 of 68)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
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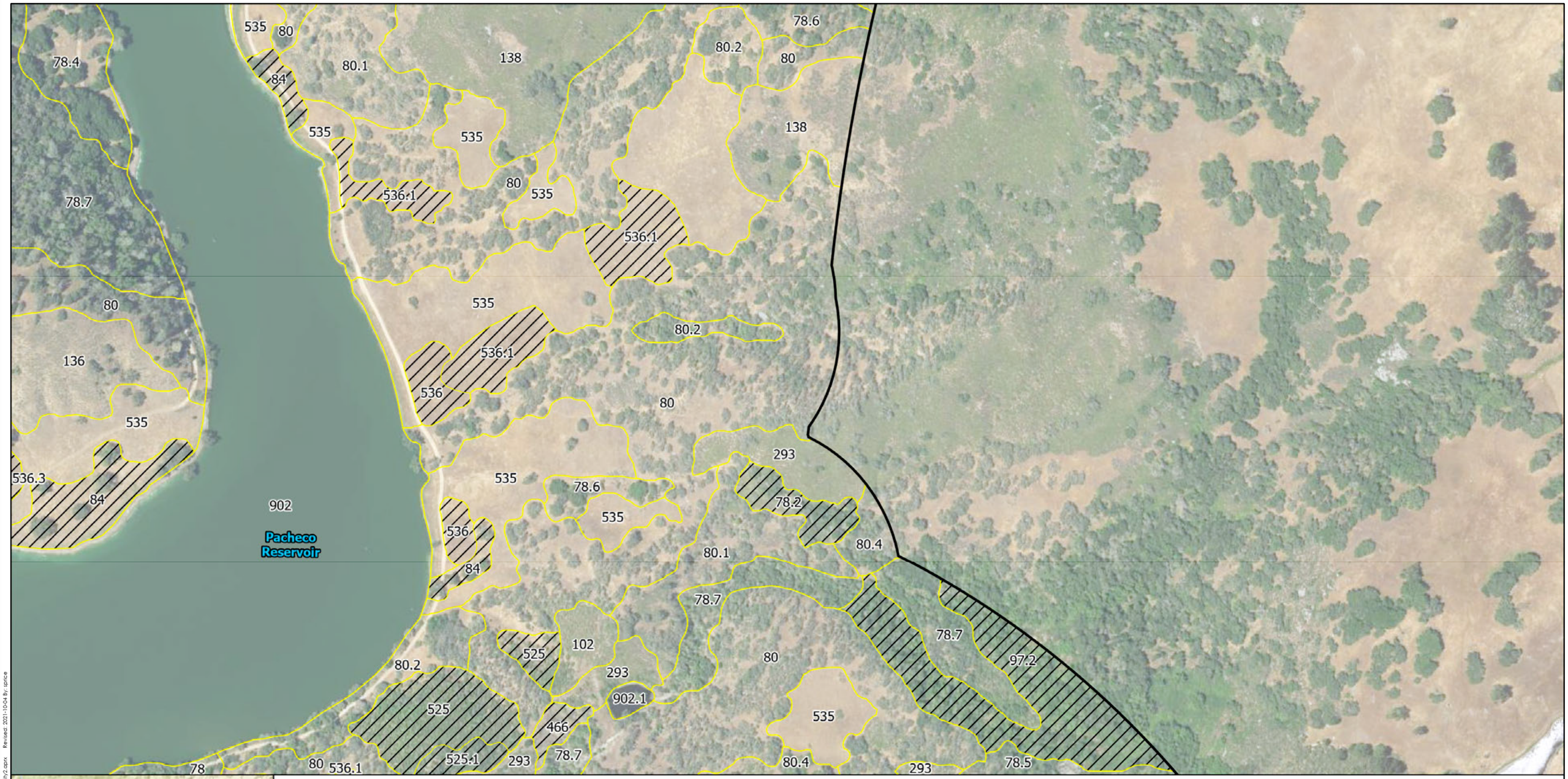

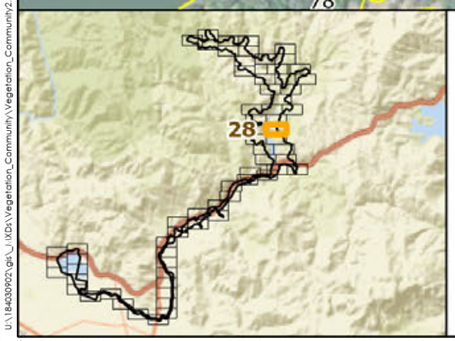

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Valley Water

AECOM

Stantec GEI

N

Appendix A : Vegetation Communities and Other Land Cover Types (Page 28 of 68)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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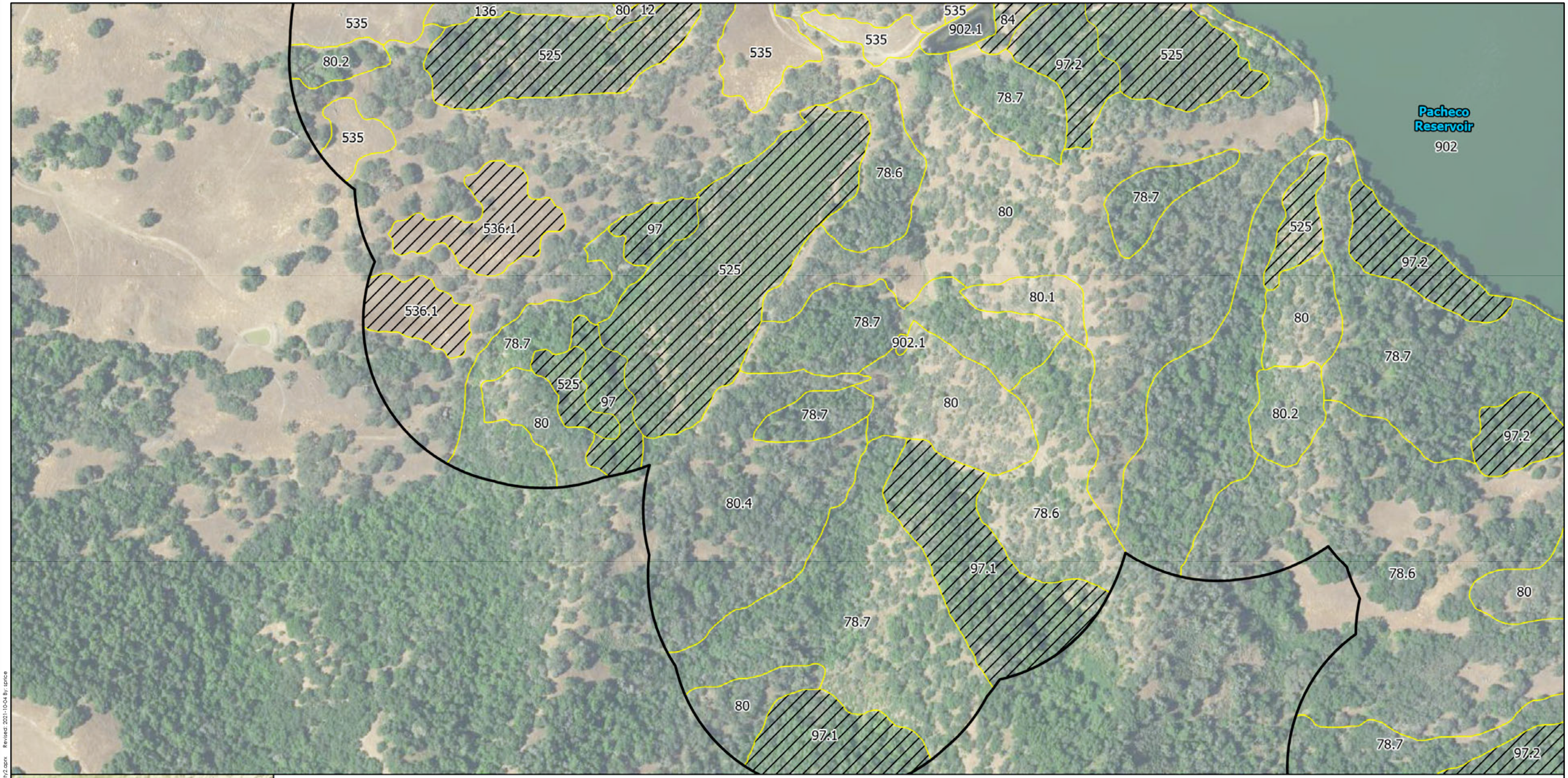

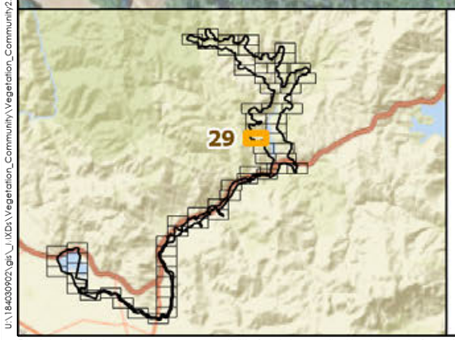

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Valley Water

AECOM

Stantec GEI

N

Appendix A : Vegetation Communities and Other Land Cover Types (Page 29 of 68)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
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Background: USGS/NAIP (2016)
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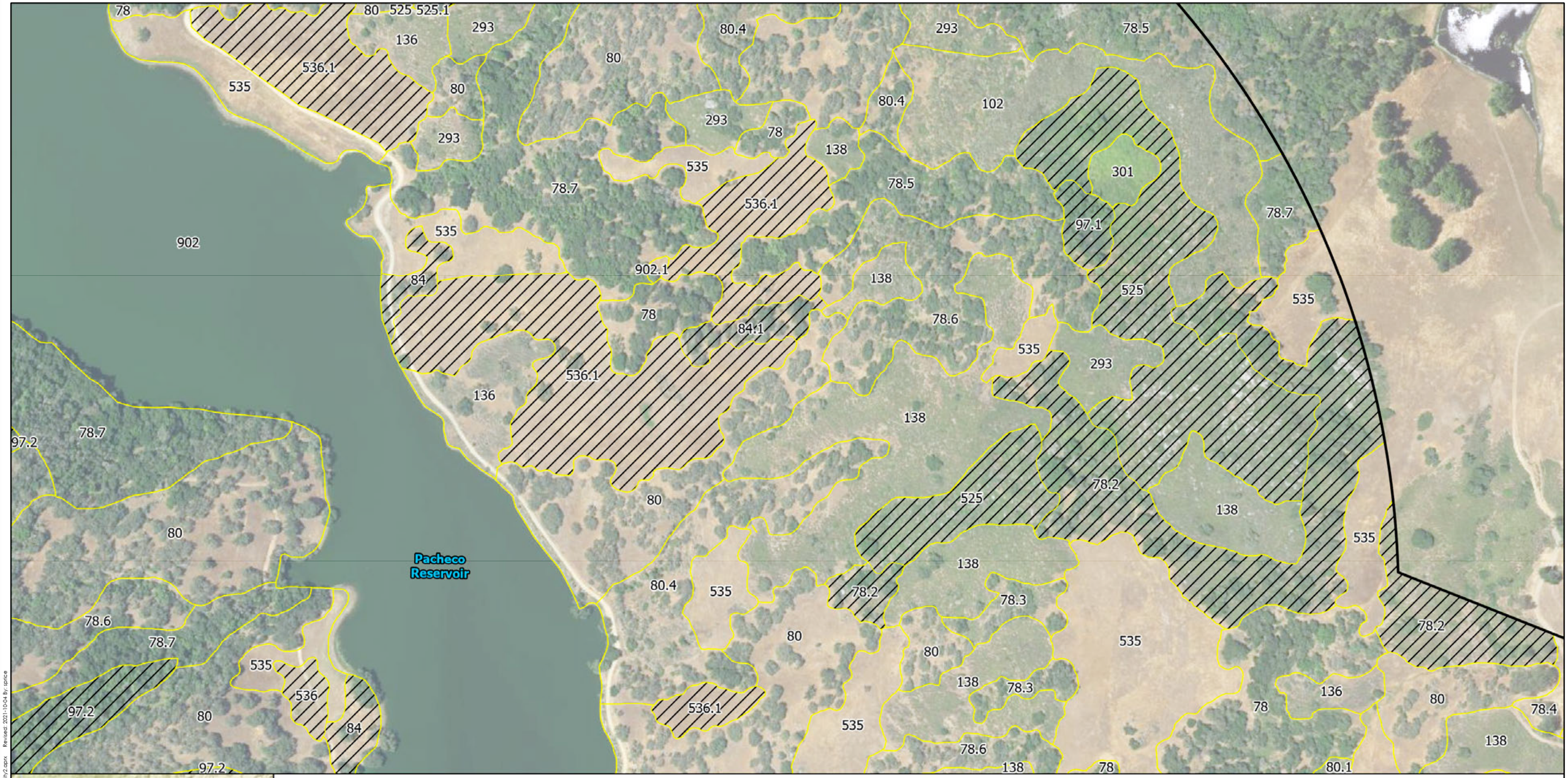

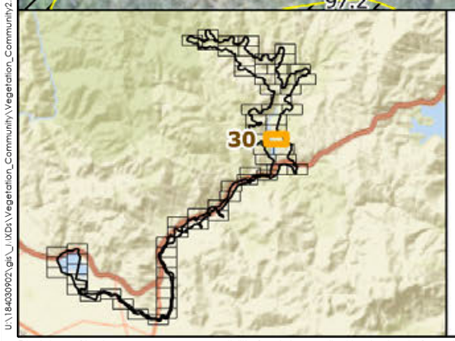

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Valley Water

AECOM

Stantec GEI

N

Appendix A : Vegetation Communities and Other Land Cover Types (Page 30 of 68)

0 300 600 Feet

1 in = 300 Feet

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Background: USGS/NAIP (2016)
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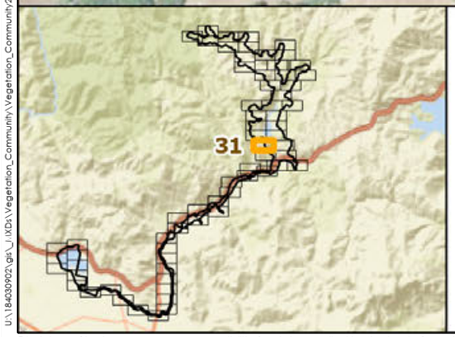

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Valley Water

AECOM

Stantec GEI

N

Appendix A : Vegetation Communities and Other Land Cover Types (Page 31 of 68)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
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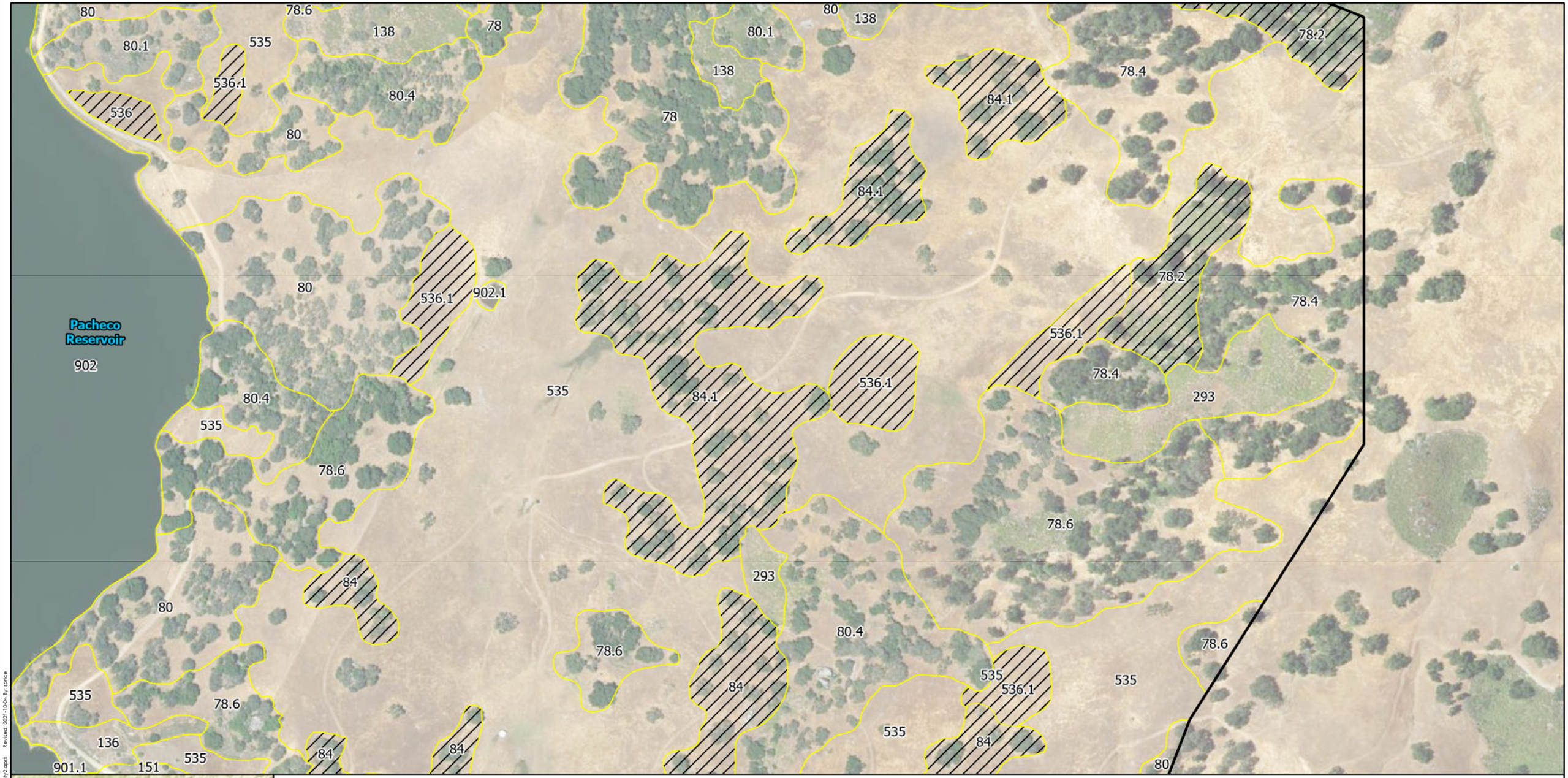

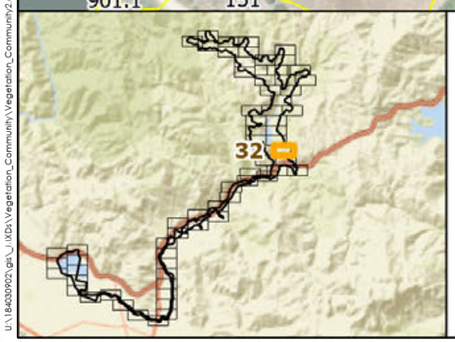

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Valley Water

AECOM

Stantec GEI

N

Appendix A : Vegetation Communities and Other Land Cover Types (Page 32 of 68)

0 300 600 Feet

1 in = 300 Feet

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Background: USGS/NAIP (2016)
Stantec, 2021

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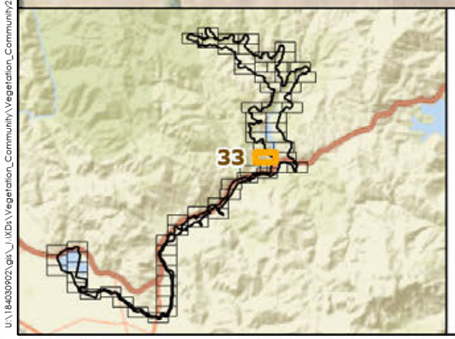

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Valley Water

AECOM

Stantec GEI

N

Appendix A : Vegetation Communities and Other Land Cover Types (Page 33 of 68)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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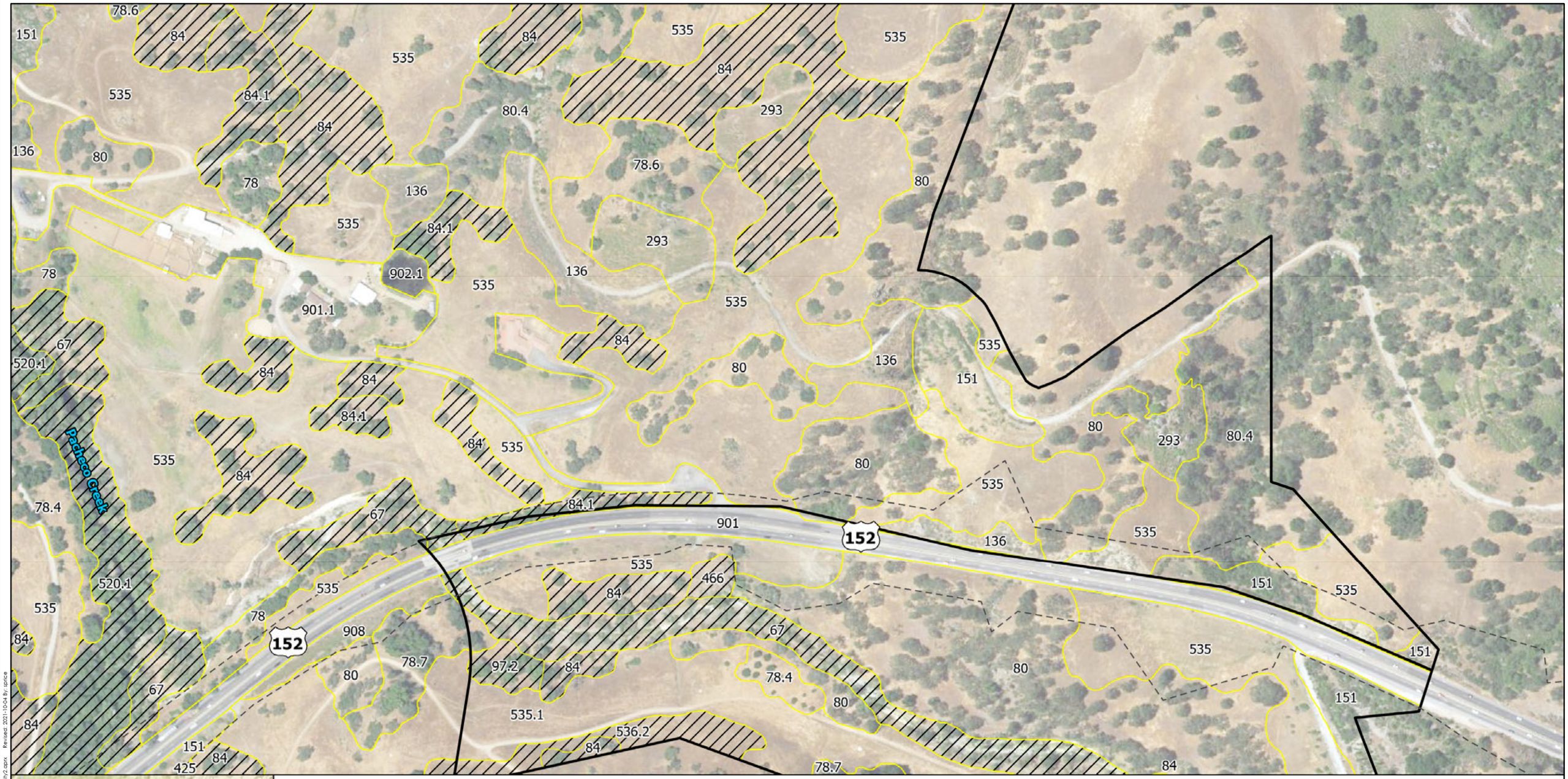

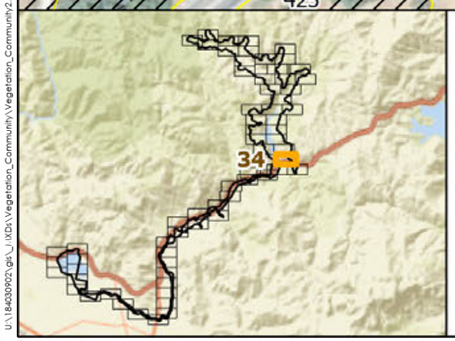

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Caltrans Right-of-way

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Vegetation Communities and Other Land Cover Types (Page 34 of 68)

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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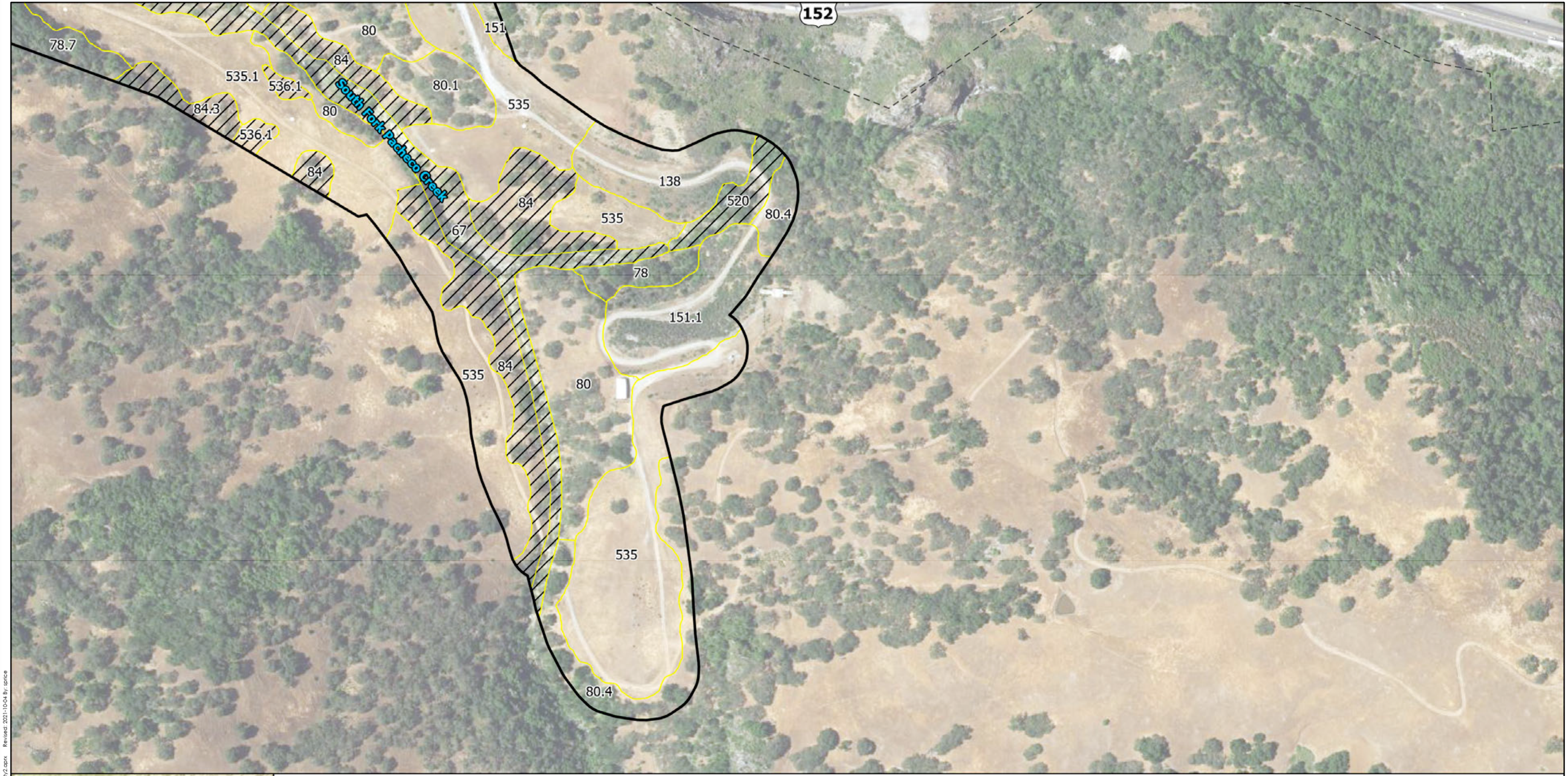

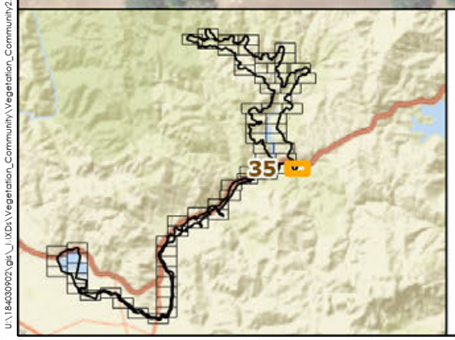

Pacheco Reservoir Expansion Project

- Study Area

Vegetation Communities

- 80 Not Sensitive or Not Listed
- 525 Sensitive
- County Line
- Caltrans Right-of-way

Valley Water

AECOM

Stantec GEI

N

Appendix A : Vegetation Communities and Other Land Cover Types (Page 35 of 68)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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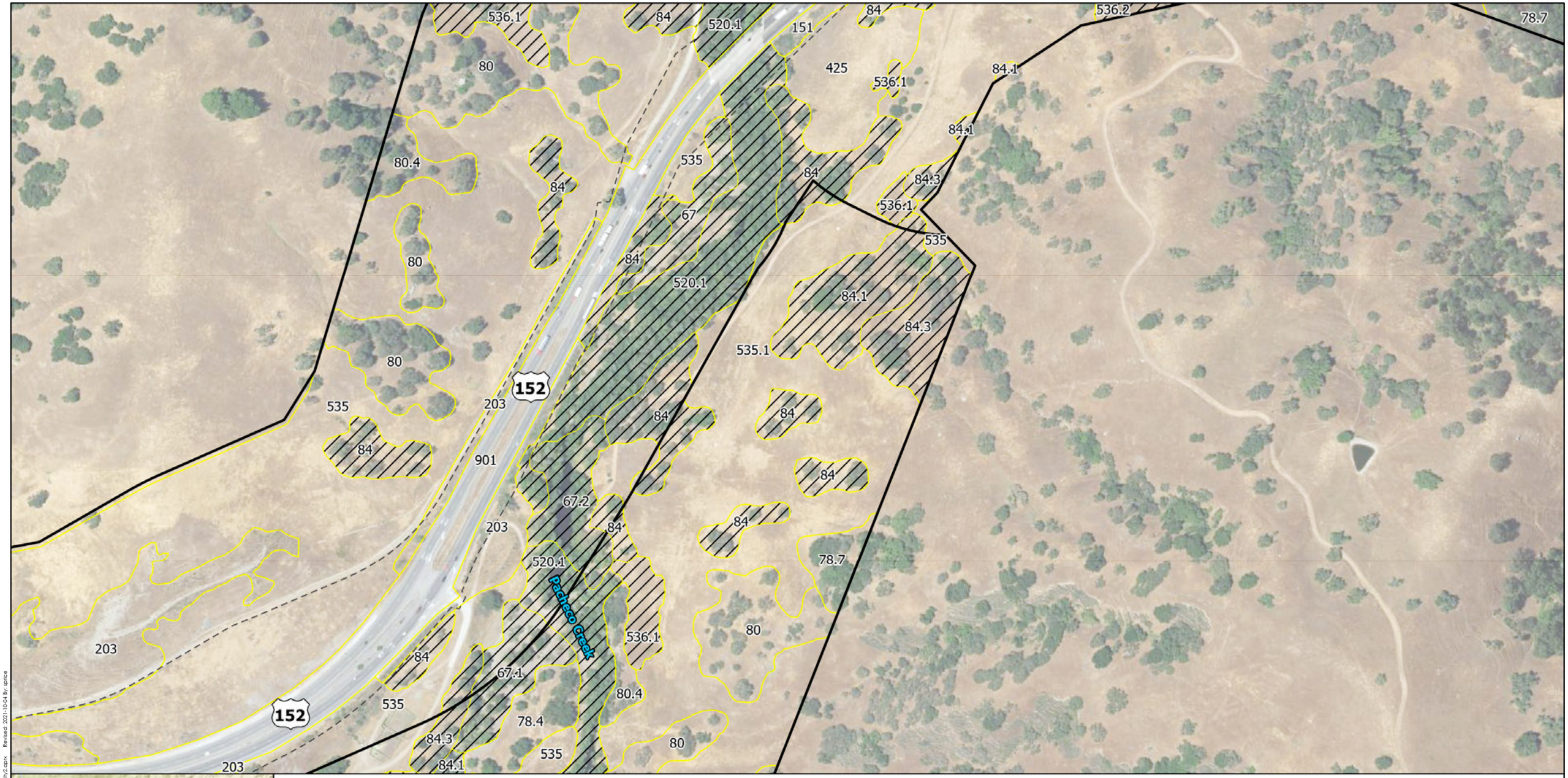

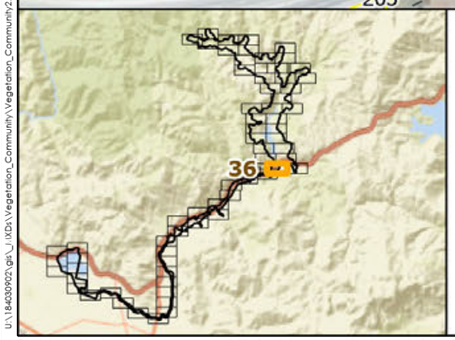

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Caltrans Right-of-way

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Vegetation Communities and Other Land Cover Types (Page 36 of 68)

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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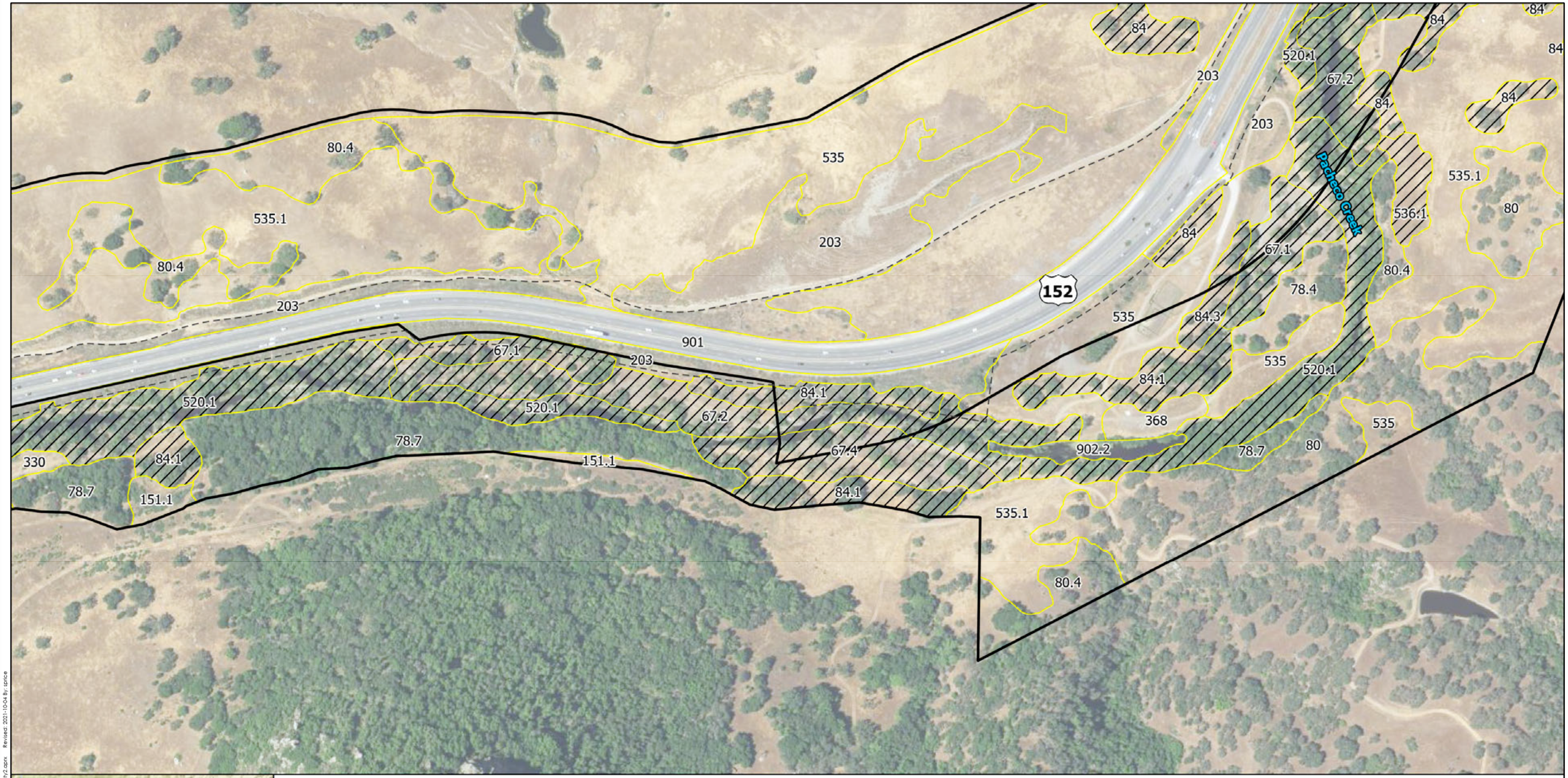

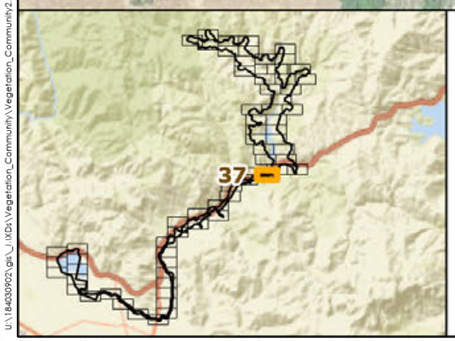

Pacheco Reservoir Expansion Project

- Study Area

Vegetation Communities

- 80 Not Sensitive or Not Listed
- 525 Sensitive
- County Line
- Caltrans Right-of-way

Valley Water

AECOM

Stantec GEI

N

Appendix A : Vegetation Communities and Other Land Cover Types (Page 37 of 68)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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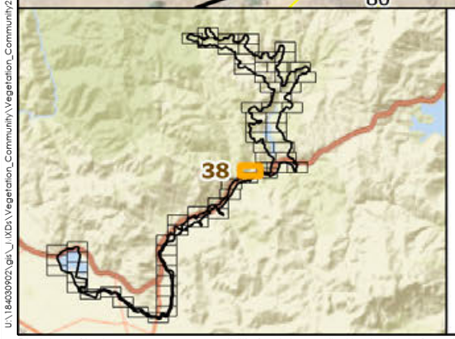

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Caltrans Right-of-way

Valley Water

AECOM

Stantec GEI

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0 300 600 Feet

1 in = 300 Feet

Appendix A : Vegetation Communities and Other Land Cover Types (Page 38 of 68)

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
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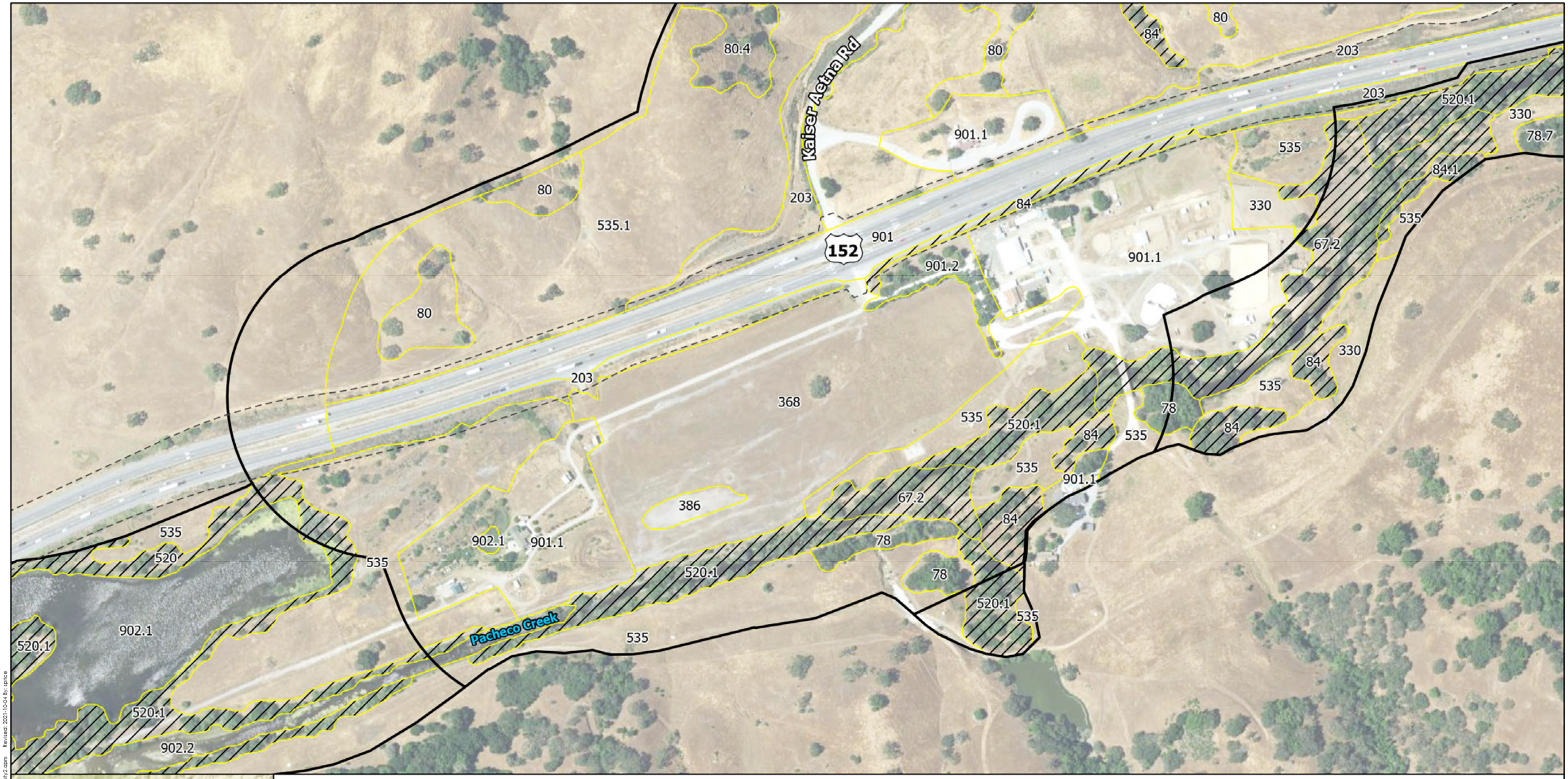

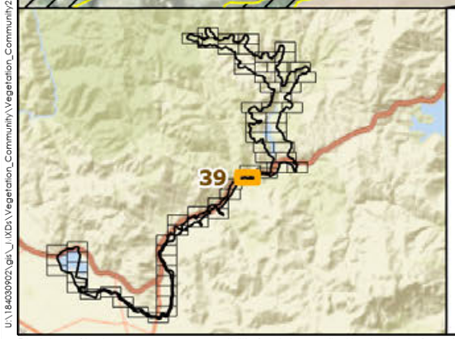

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Caltrans Right-of-way

Valley Water

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Appendix A : Vegetation Communities and Other Land Cover Types (Page 39 of 68)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
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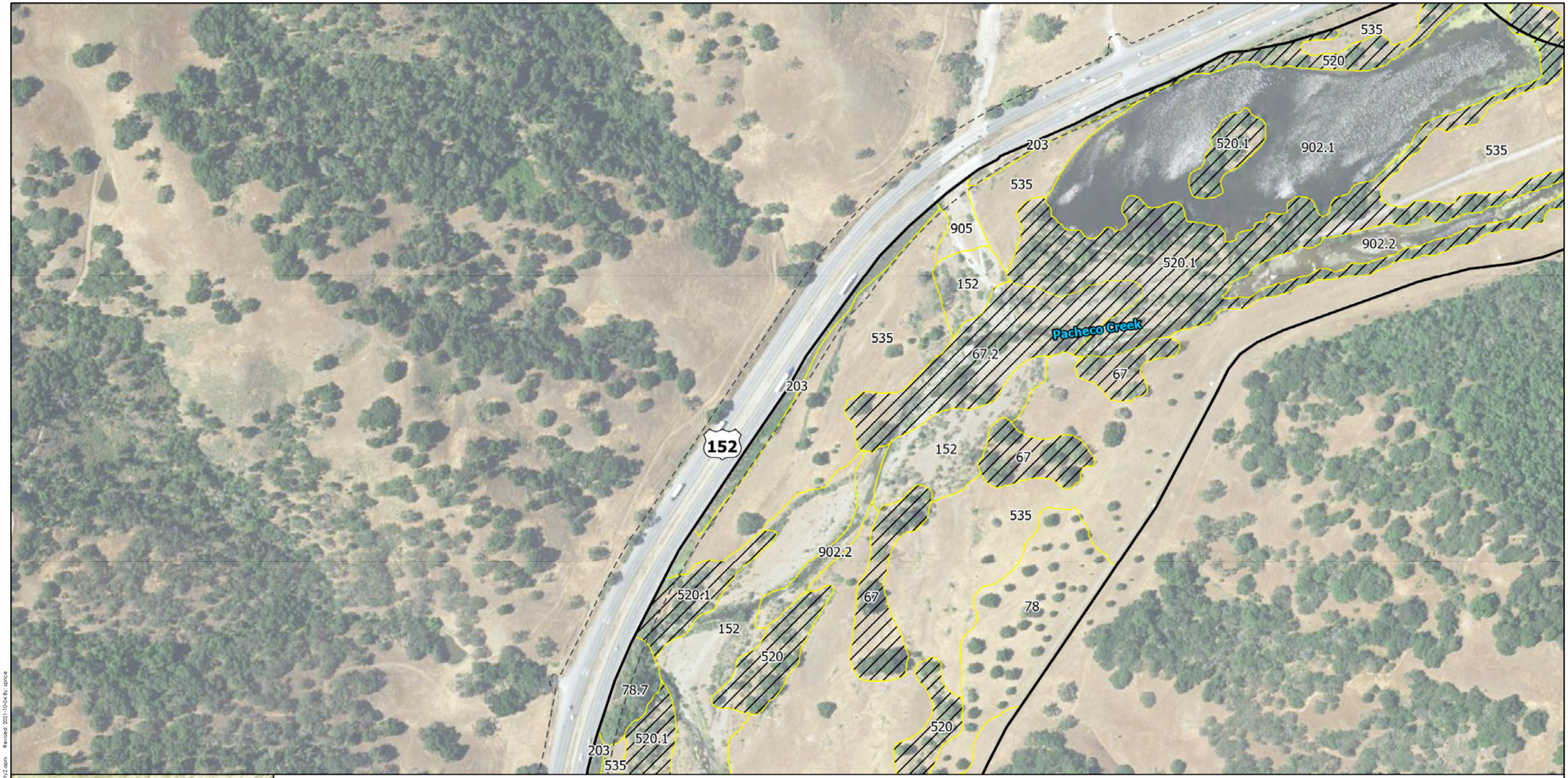

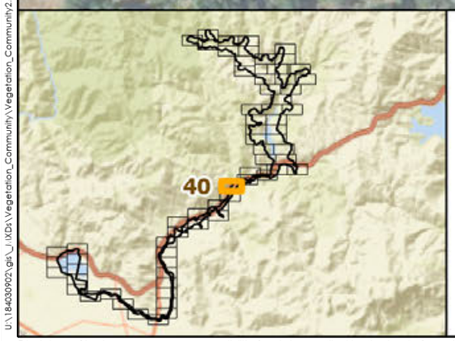

Pacheco Reservoir Expansion Project

- Study Area

Vegetation Communities

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- Caltrans Right-of-way

Valley Water

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Appendix A : Vegetation Communities and Other Land Cover Types (Page 40 of 68)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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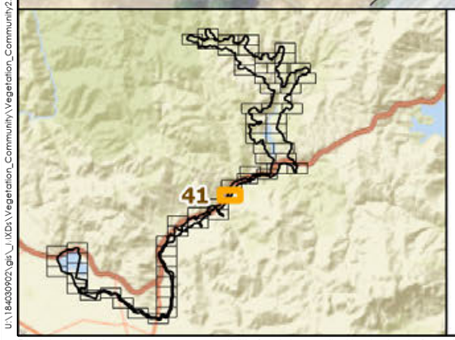

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Caltrans Right-of-way

Valley Water

AECOM

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Appendix A : Vegetation Communities and Other Land Cover Types (Page 41 of 68)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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County Line

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0 300 600 Feet

1 in = 300 Feet

Appendix A : Vegetation Communities and Other Land Cover Types (Page 42 of 68)

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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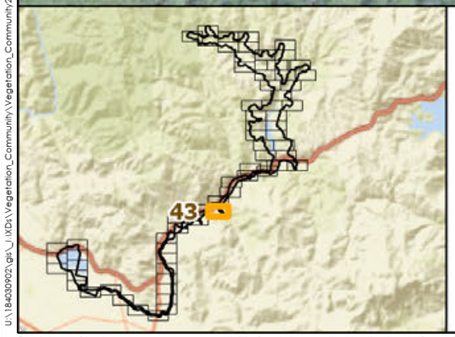

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Caltrans Right-of-way

Valley Water

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0 300 600 Feet

1 in = 300 Feet

Appendix A : Vegetation Communities and Other Land Cover Types (Page 43 of 68)

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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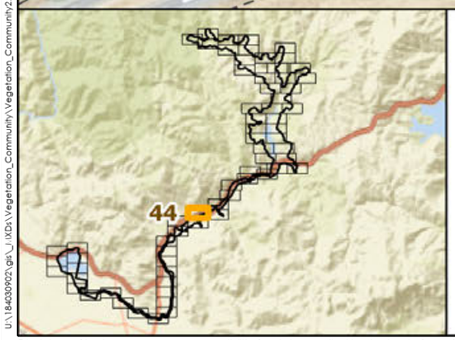

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Caltrans Right-of-way

Valley Water

AECOM

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Appendix A : Vegetation Communities and Other Land Cover Types (Page 44 of 68)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
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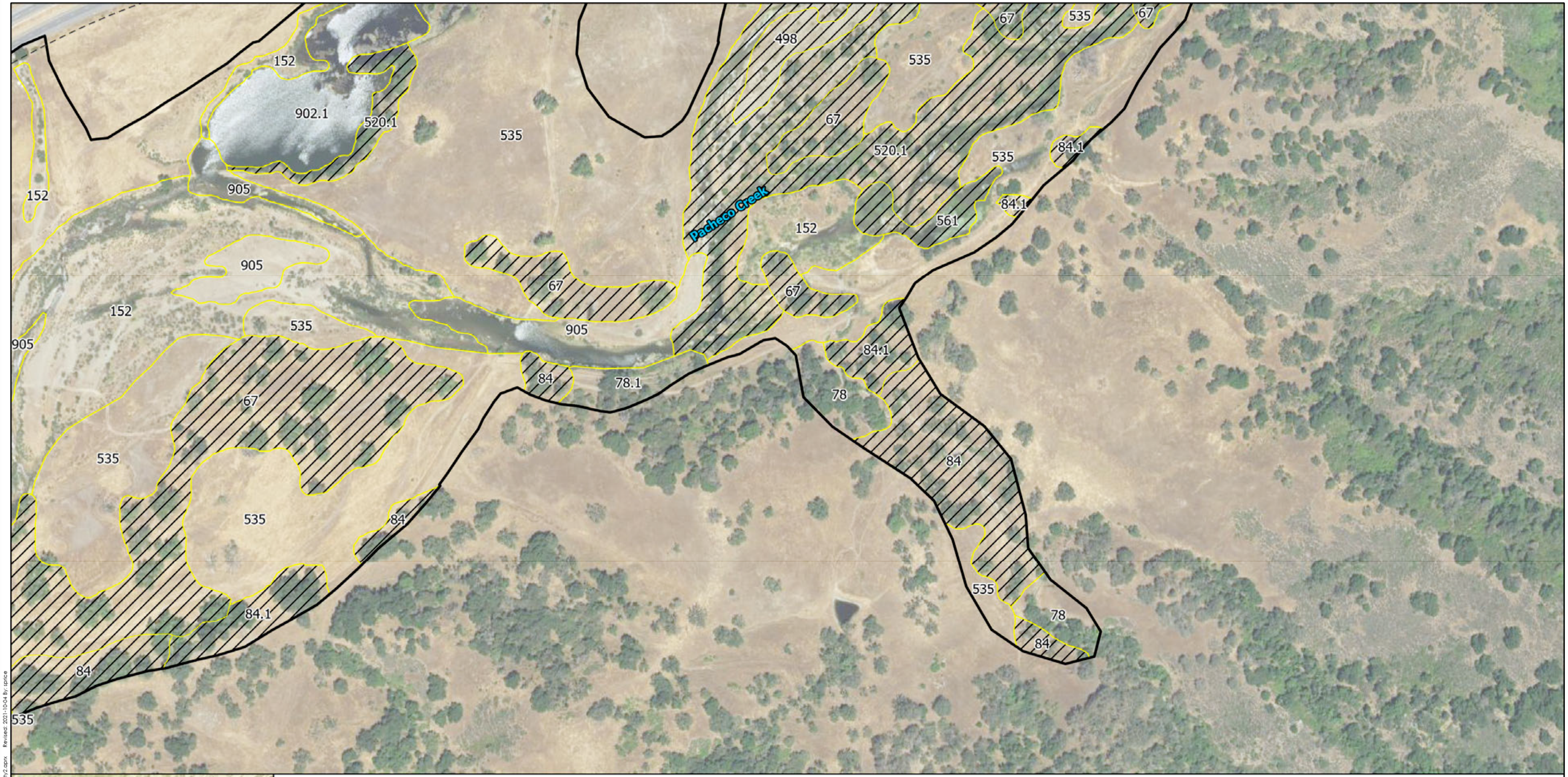

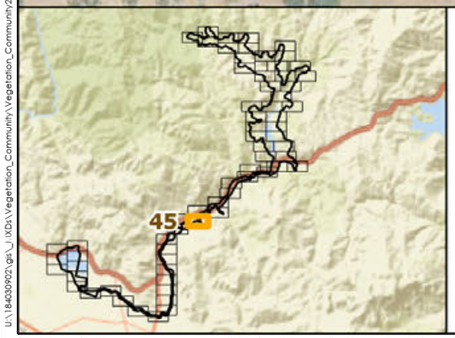

Pacheco Reservoir Expansion Project

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Vegetation Communities

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Appendix A : Vegetation Communities and Other Land Cover Types (Page 45 of 68)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
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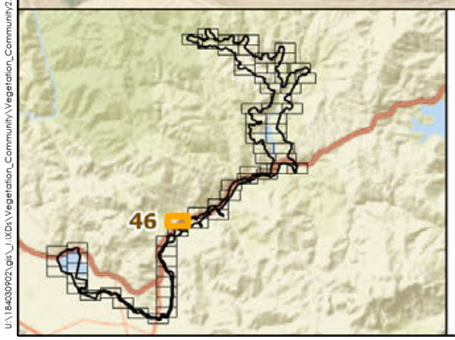

Pacheco Reservoir Expansion Project

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0 300 600 Feet

1 in = 300 Feet

Appendix A : Vegetation Communities and Other Land Cover Types (Page 46 of 68)

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Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
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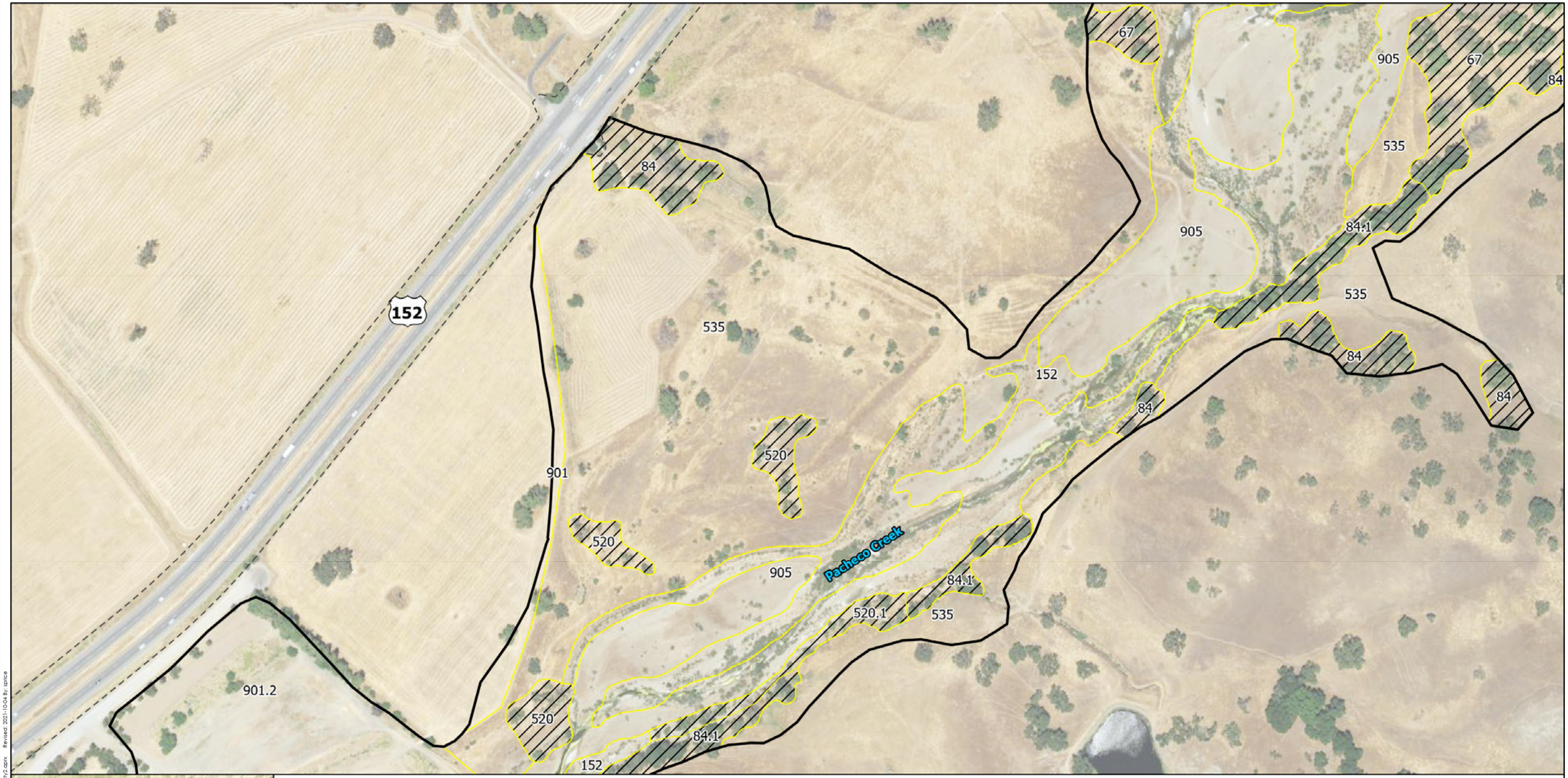

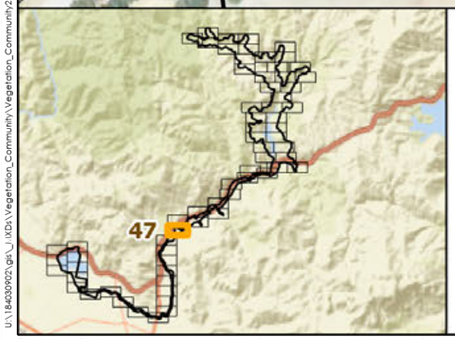

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Caltrans Right-of-way

Valley Water

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Appendix A : Vegetation Communities and Other Land Cover Types (Page 47 of 68)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
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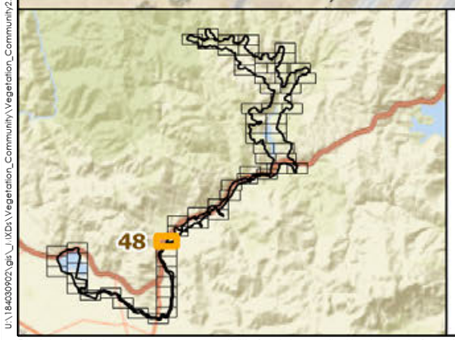

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Caltrans Right-of-way

Valley Water

AECOM

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Appendix A : Vegetation Communities and Other Land Cover Types (Page 48 of 68)

0 300 600 Feet

1 in = 300 Feet

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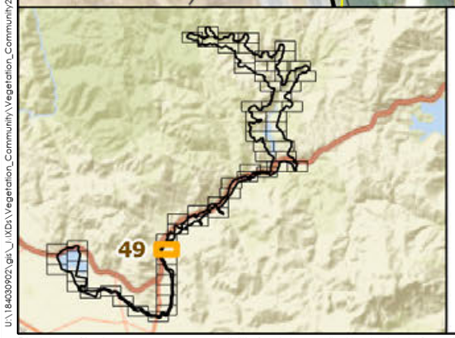

Pacheco Reservoir Expansion Project

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Valley Water

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0 300 600 Feet

1 in = 300 Feet

Appendix A : Vegetation Communities and Other Land Cover Types (Page 49 of 68)

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
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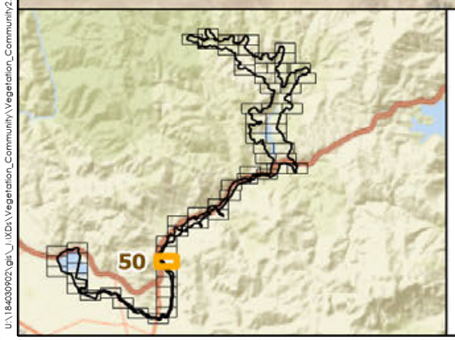

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

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County Line

Caltrans Right-of-way

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Appendix A : Vegetation Communities and Other Land Cover Types (Page 50 of 68)

0 300 600 Feet

1 in = 300 Feet

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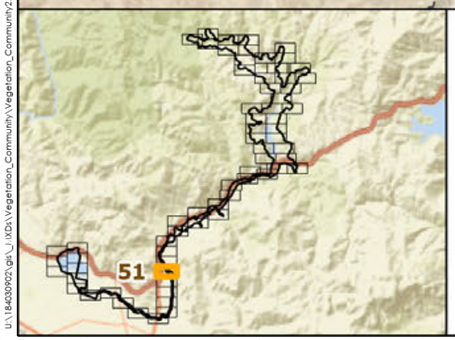

Pacheco Reservoir Expansion Project

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0 300 600 Feet

1 in = 300 Feet

Appendix A : Vegetation Communities and Other Land Cover Types (Page 51 of 68)

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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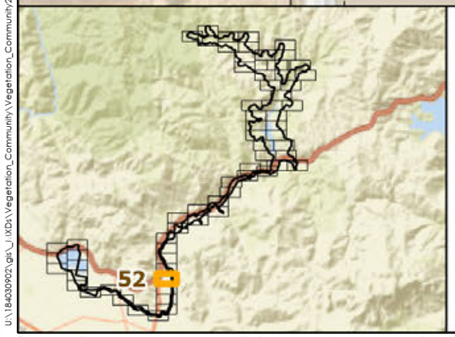

Pacheco Reservoir Expansion Project

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Valley Water

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0 300 600 Feet

1 in = 300 Feet

Appendix A : Vegetation Communities and Other Land Cover Types (Page 52 of 68)

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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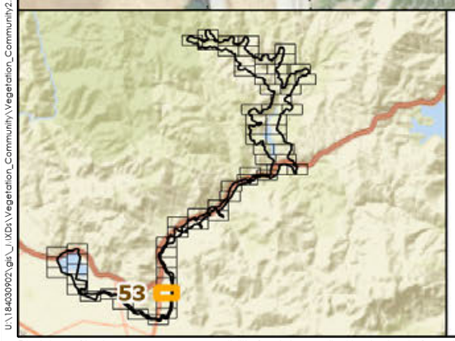

Pacheco Reservoir Expansion Project

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0 300 600 Feet

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Appendix A : Vegetation Communities and Other Land Cover Types (Page 53 of 68)

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
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Stantec, 2021

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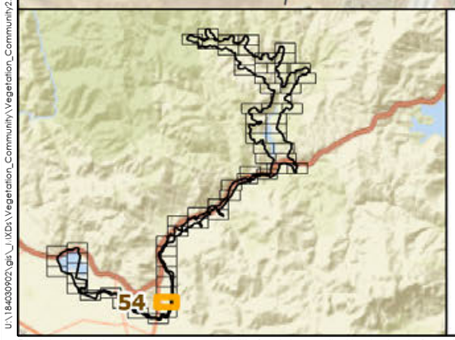

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0 300 600 Feet

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Appendix A : Vegetation Communities and Other Land Cover Types (Page 54 of 68)

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Background: USGS/NAIP (2016)
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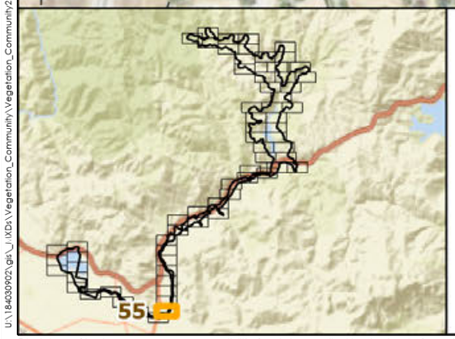

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0 300 600 Feet

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Appendix A : Vegetation Communities and Other Land Cover Types (Page 55 of 68)

Prepared by SCP: October 04, 2021
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Background: USGS/NAIP (2016)
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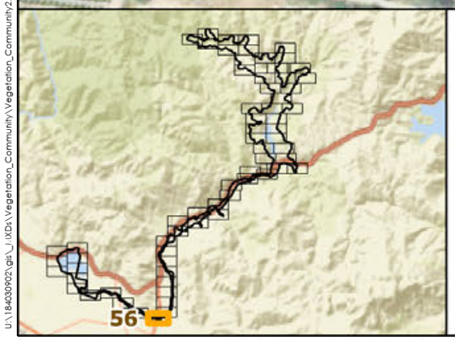

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AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Vegetation Communities and Other Land Cover Types (Page 56 of 68)

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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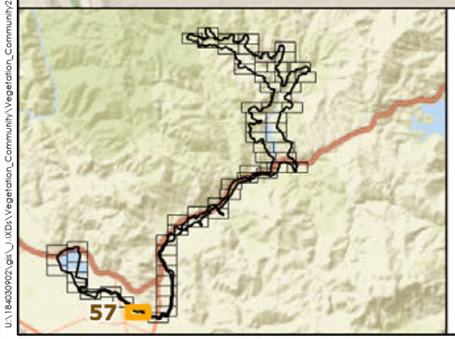

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Vegetation Communities and Other Land Cover Types (Page 57 of 68)

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
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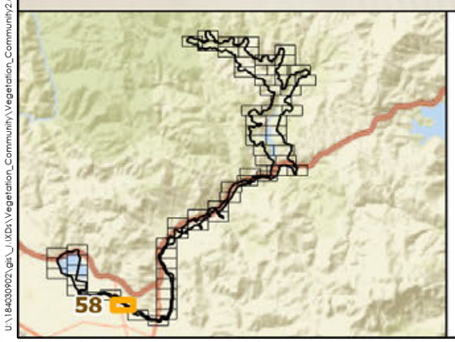

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Vegetation Communities and Other Land Cover Types (Page 58 of 68)

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
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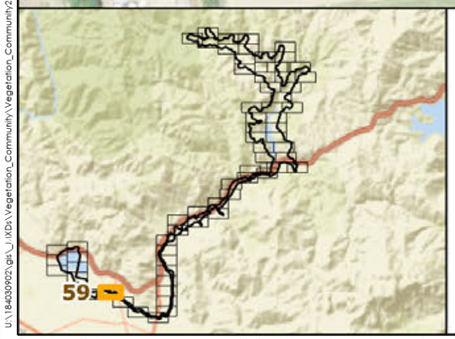

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

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525 Sensitive

County Line

Valley Water

AECOM

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0 300 600 Feet

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Appendix A : Vegetation Communities and Other Land Cover Types (Page 59 of 68)

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
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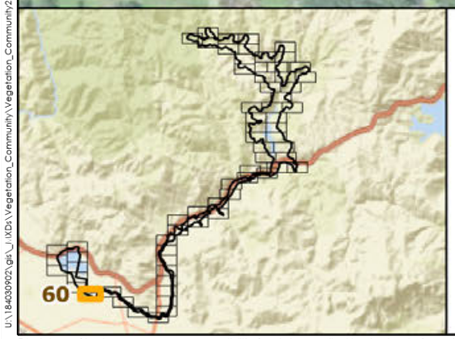

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Valley Water

AECOM

Stantec GEI

N

Appendix A : Vegetation Communities and Other Land Cover Types (Page 60 of 68)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
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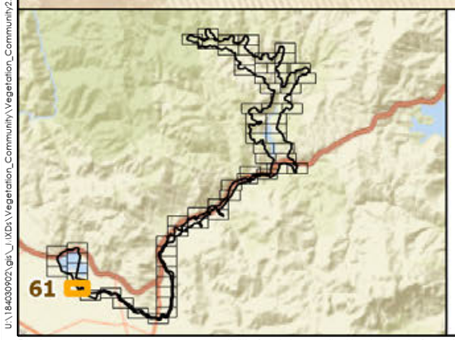
907
425
425
425.1
282
458.1
410
543
425.1
458.1
543
420
420
462
282
900.2
561
520.1
520
902.1
900.2
373
Pacheco Creek
900.2
520
900.2



Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Valley Water

AECOM

Stantec GEI

N

Appendix A : Vegetation Communities and Other Land Cover Types (Page 61 of 68)

0 300 600 Feet

1 in = 300 Feet

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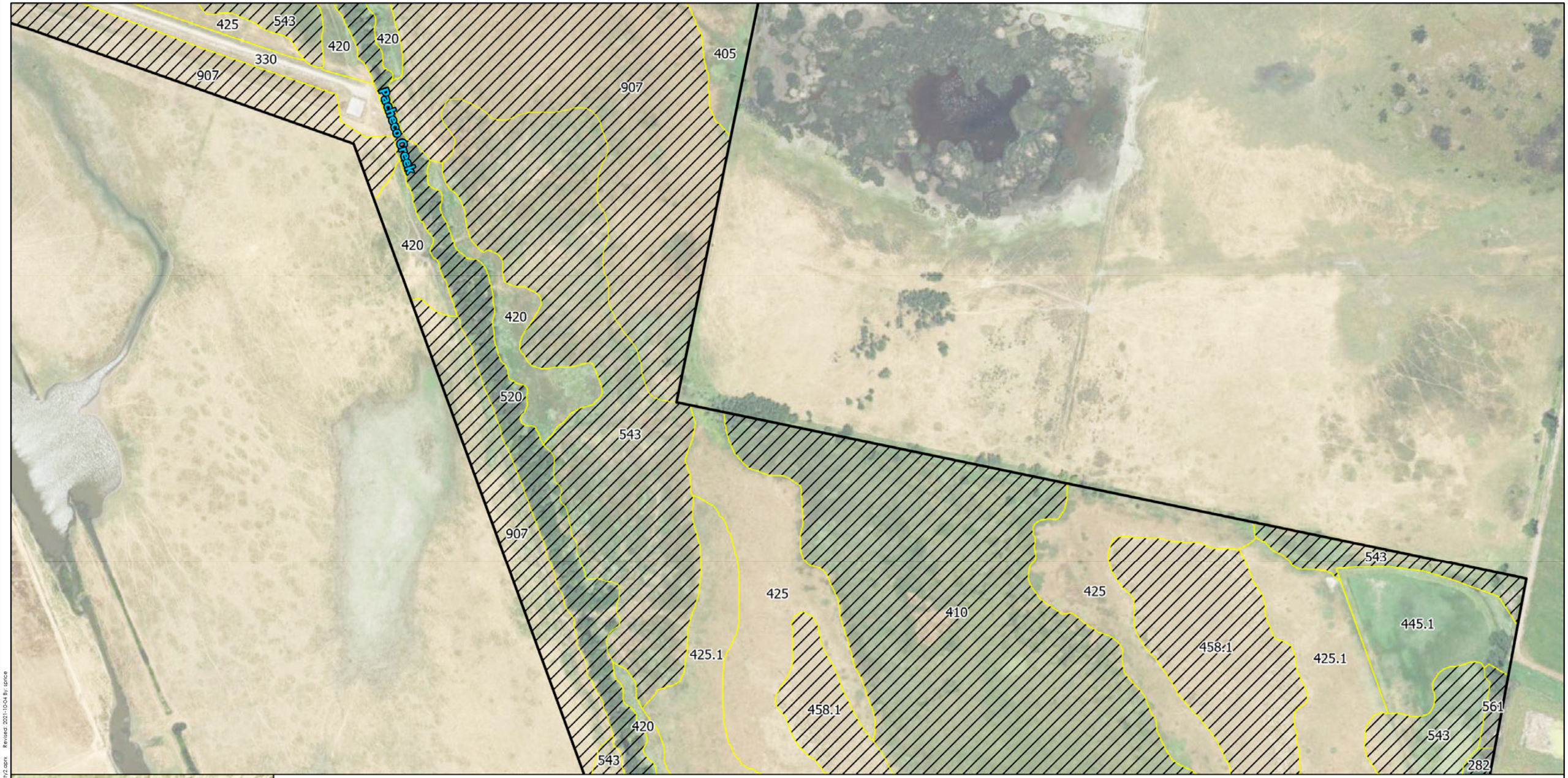

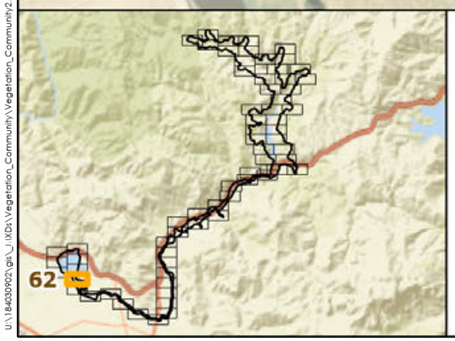

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

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525 Sensitive

County Line

Valley Water

AECOM

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N

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Appendix A : Vegetation Communities and Other Land Cover Types (Page 62 of 68)

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
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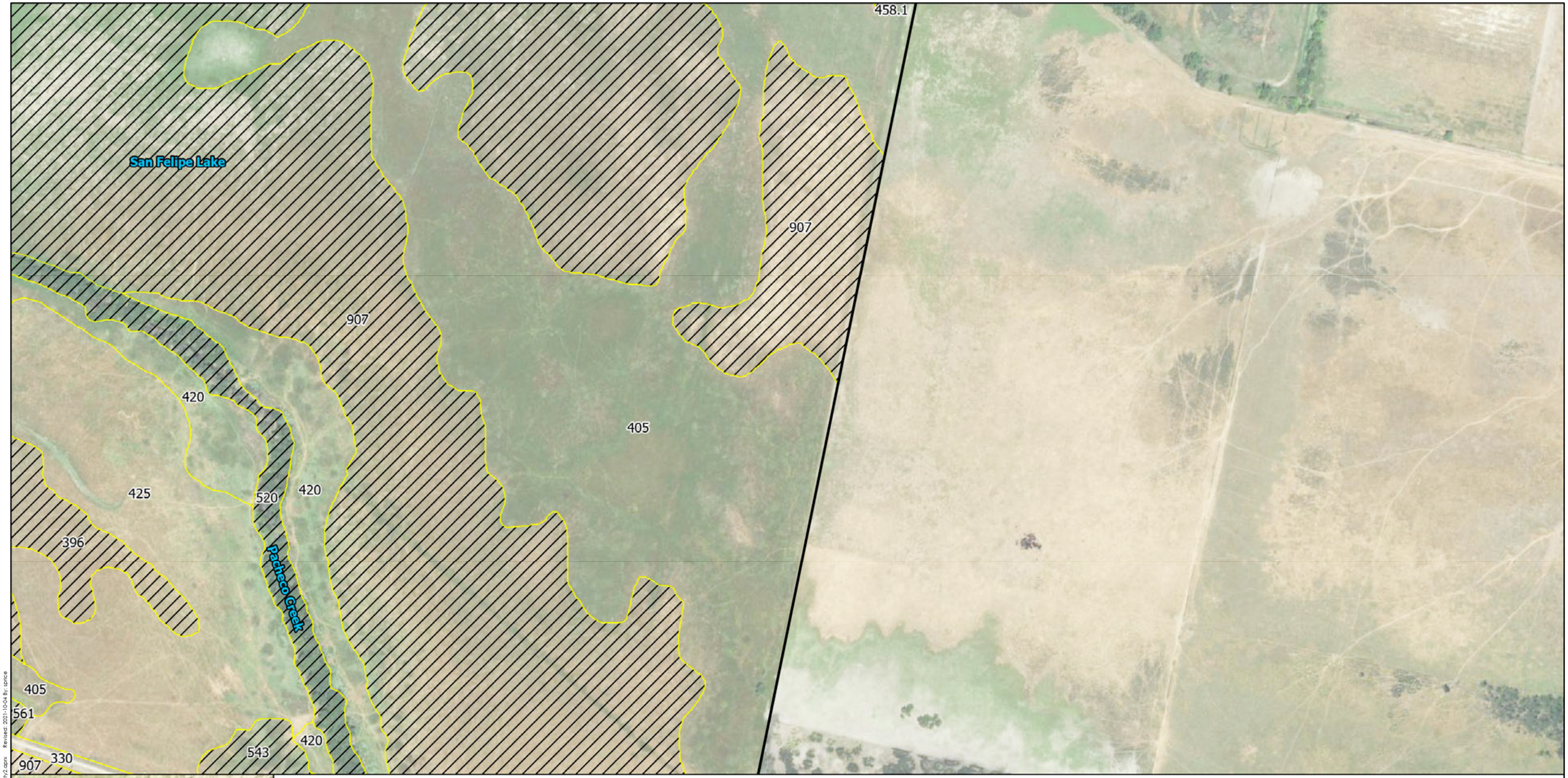

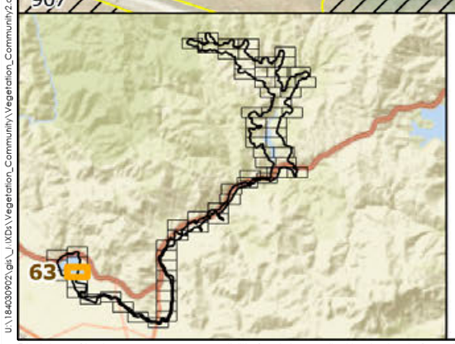

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

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525 Sensitive

County Line

Valley Water

AECOM

Stantec GEI

N

Appendix A : Vegetation Communities and Other Land Cover Types (Page 63 of 68)

0 300 600 Feet

1 in = 300 Feet

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San Felipe Lake

907

405

330

152

520

561

520

396

396

458

520

396

458

458

458.1

San Felipe Lake

445.1

520

445

396

907

405

458.1

425

396

520

405

458.1

SANTA CLARA

SAN BENITO

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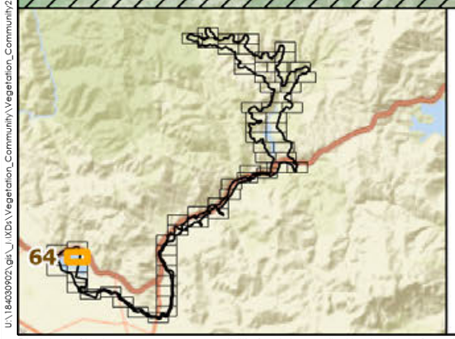

Pacheco Reservoir Expansion Project

Study Area

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525 Sensitive

County Line

Caltrans Right-of-way

Valley Water

AECOM

Stantec GEI

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0 300 600 Feet

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Appendix A : Vegetation Communities and Other Land Cover Types (Page 64 of 68)

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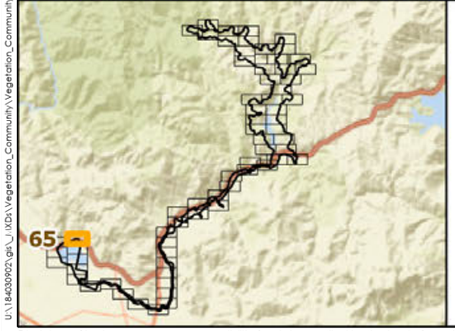

Pacheco Reservoir Expansion Project

- Study Area

Vegetation Communities

- 80 Not Sensitive or Not Listed
- 525 Sensitive
- County Line
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Valley Water

AECOM

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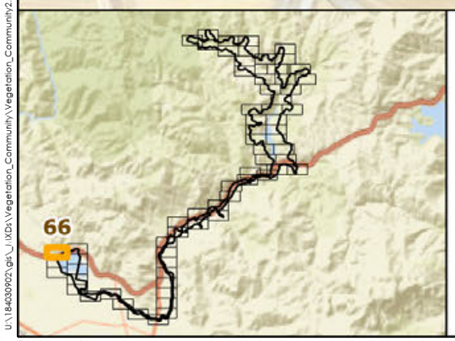

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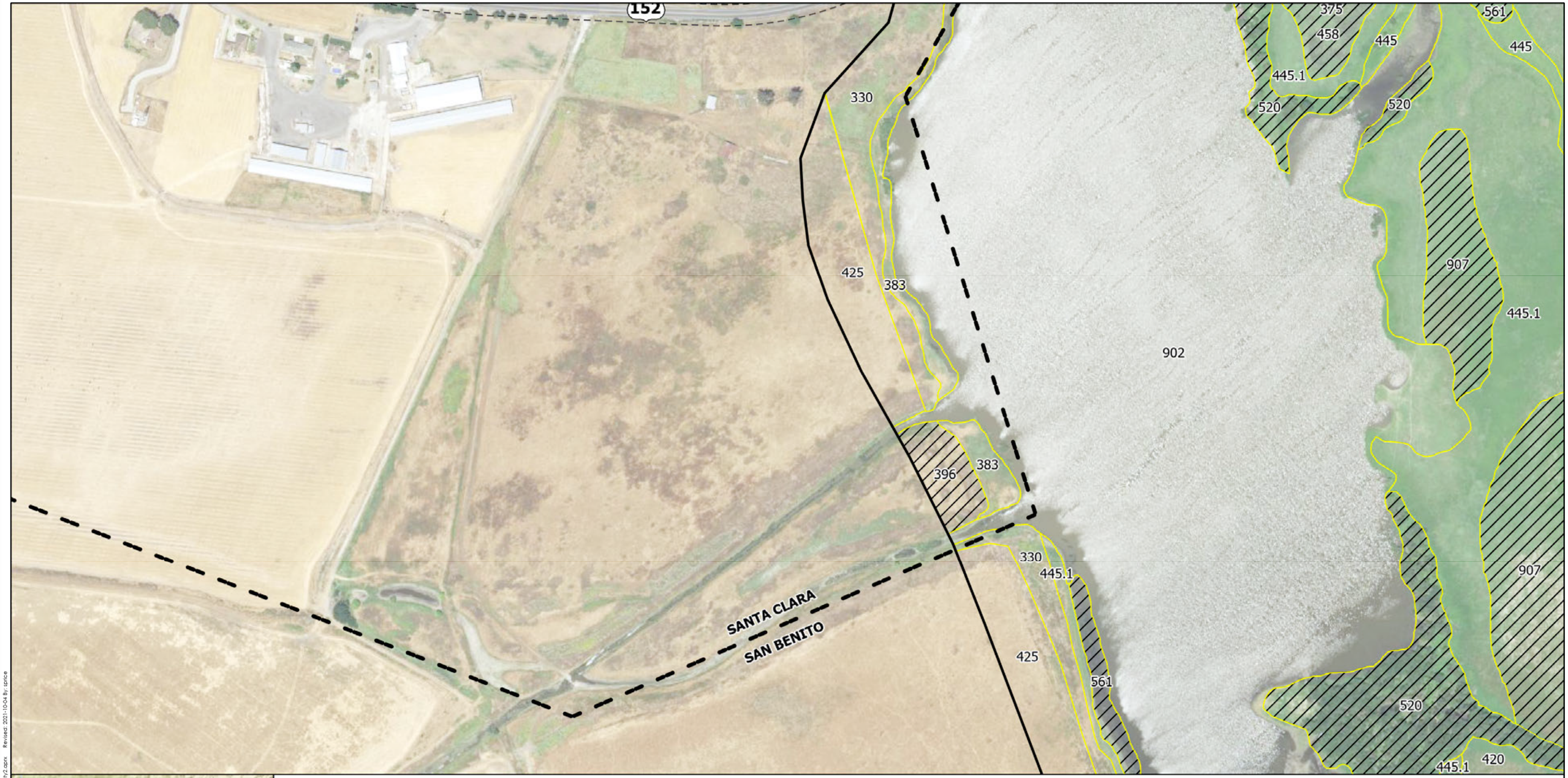

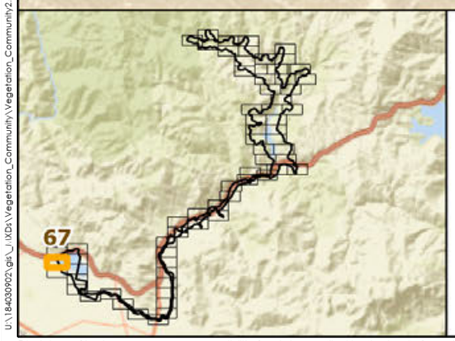

Pacheco Reservoir Expansion Project

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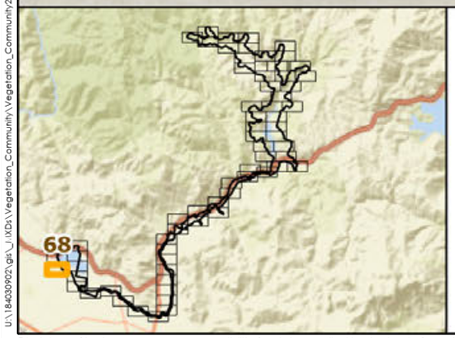

Pacheco Reservoir Expansion Project

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N

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Draft Environmental Impact Report

Appendix

Biological Resources – Botanical/Wildlife

Attachment C

Aquatic Resource Delineation

Pacheco Reservoir Expansion Project

November 2021

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Acronyms and Abbreviations

CWA	Clean Water Act
District	USACE Sacramento District
FAC	facultative
FACU	facultative upland
FACW	facultative wetland
GPS	global positioning system
LiDAR	Light Detection and Ranging
MCV	*A Manual of California Vegetation, 2nd Edition*
NI	no indicator
NL	not listed
NRCS	Natural Resources Conservation Service's
NWPR	Navigable Waters Protection Rule
OBL	obligate
OHWM	Ordinary High Water Mark
Project	Pacheco Reservoir Expansion Project
Report	Aquatic Resource Delineation Report
RWQCB	Regional Water Quality Control Board
SCVHP	Santa Clara Valley Habitat Plan
SR 152	State Route 152
SWRCB	State Water Resources Control Board
TNW	traditional navigable water
UPL	upland
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey

Executive Summary

Ascent Environmental conducted a delineation of aquatic resources within the 6,765-acre study area of the Pacheco Reservoir Expansion Project during May, August, September, October, and December 2019 and January, February, and March 2020. The U.S. Army Corps of Engineers (USACE) 1987 *Wetlands Delineation Manual* (Environmental Laboratory 1987), *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Environmental Laboratory 2008), and the 2008 *Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Lichvar and McColley 2008) were used to delineate potential wetlands and other waters of the United States that are subject to Sections 404 and 401 of the Clean Water Act (CWA). The delineation was conducted in accordance with the. The State Water Resources Control Board (SWRCB) *Implementation Guidance for the State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* (SWRCB 2020) was also used to delineate potential features considered wetlands and waters of the state under the Porter-Cologne water Quality Control Act. This report was prepared to support the request for a jurisdictional determination from the USACE Sacramento District (District) and the SWRCB, and conforms to the USACE Sacramento District's *Minimum Standards for Acceptance of Aquatic Resources Delineation Reports* (USACE 2016a) and *Updated Map and Drawing Standards for the Pacific Division Regulatory Program Delineations* (USACE 2016b).

Based on this study, a total of approximately 1,187 acres of potentially jurisdictional waters of the United States and state, including wetlands, are present within the 6,765-acre study area, consisting of approximately 790 acres of wetlands and approximately 400 acres of other waters. The predominant aquatic resources in the study area are North Fork Pacheco Creek, Pacheco Creek, Pacheco Reservoir, and San Felipe Lake. Multiple ephemeral and intermittent tributary streams flow into Pacheco Creek and North Fork Pacheco Creek within the study area. Several stock ponds, and other freshwater ponds are also present. Other waters consist of 0.61 acres of perennial streams, 171.85 acres of intermittent streams, 21.38 acres of ephemeral streams, 28.22 acres of ponds, and 174.20 acres of lake and reservoirs. Wetlands in the study area consist of 513.25 acres of seasonal wetland, 31.25 acres of freshwater marsh, and 246.64 acres of riparian wetland.

Chapter 1. Introduction

This Aquatic Resource Delineation Report (Report) was prepared in support of the Pacheco Reservoir Expansion Project (Project). This report has been prepared to describe aquatic resources (non-fisheries) in the study area. This Report facilitates efforts to:

- Avoid or minimize impacts to aquatic resources during the design process
- Document aquatic resource boundary determinations for review by regulatory authorities
- Provide background information

The Project is a multi-agency effort to provide water supply reliability, environmental restoration, and other benefits through the construction of new facilities and long-term operation strategies. The Project would include expanding the storage capacity of the existing Pacheco Reservoir to up to approximately 140,000 acre-feet through construction of a new dam, conveyance facilities, and appurtenant infrastructure.

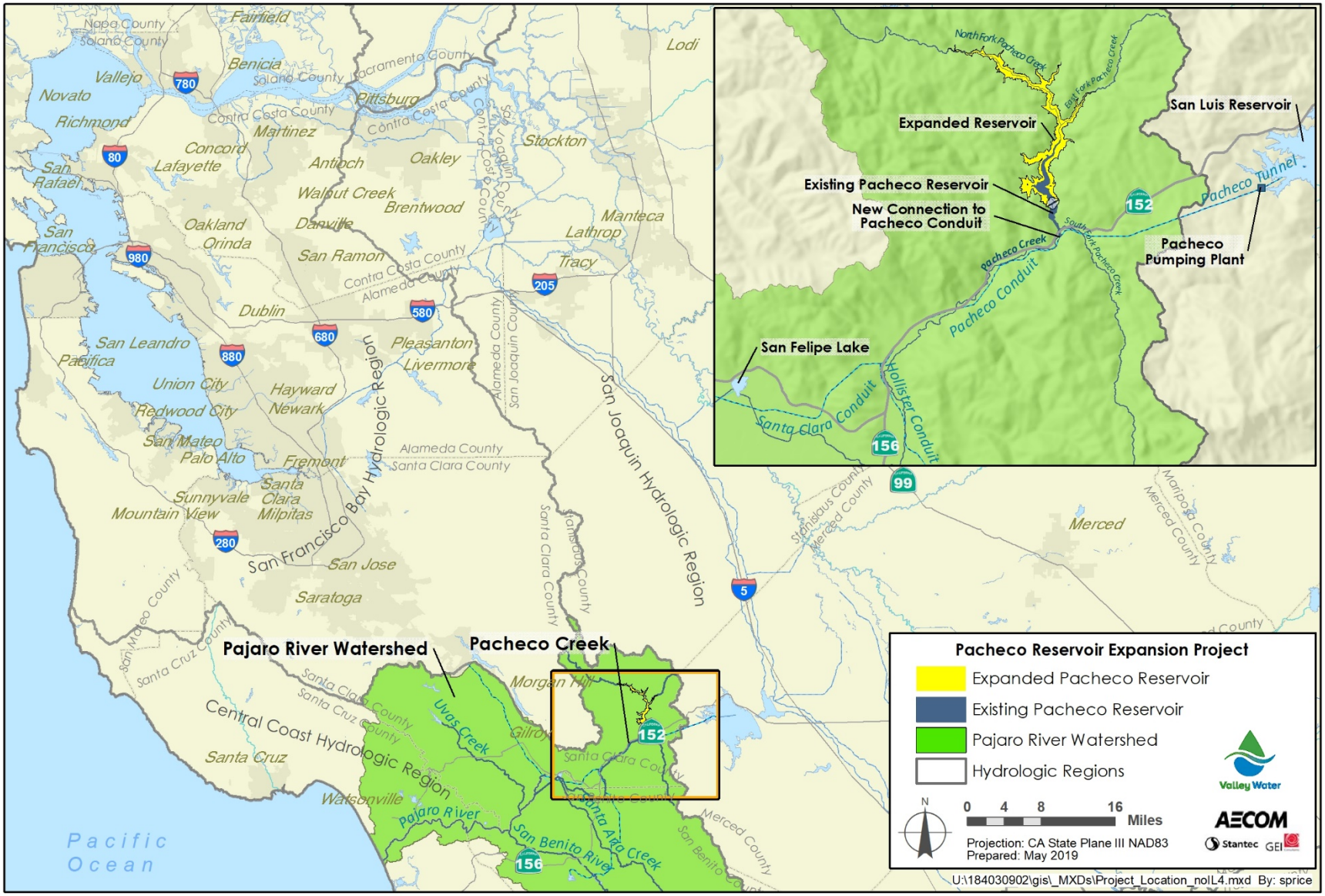
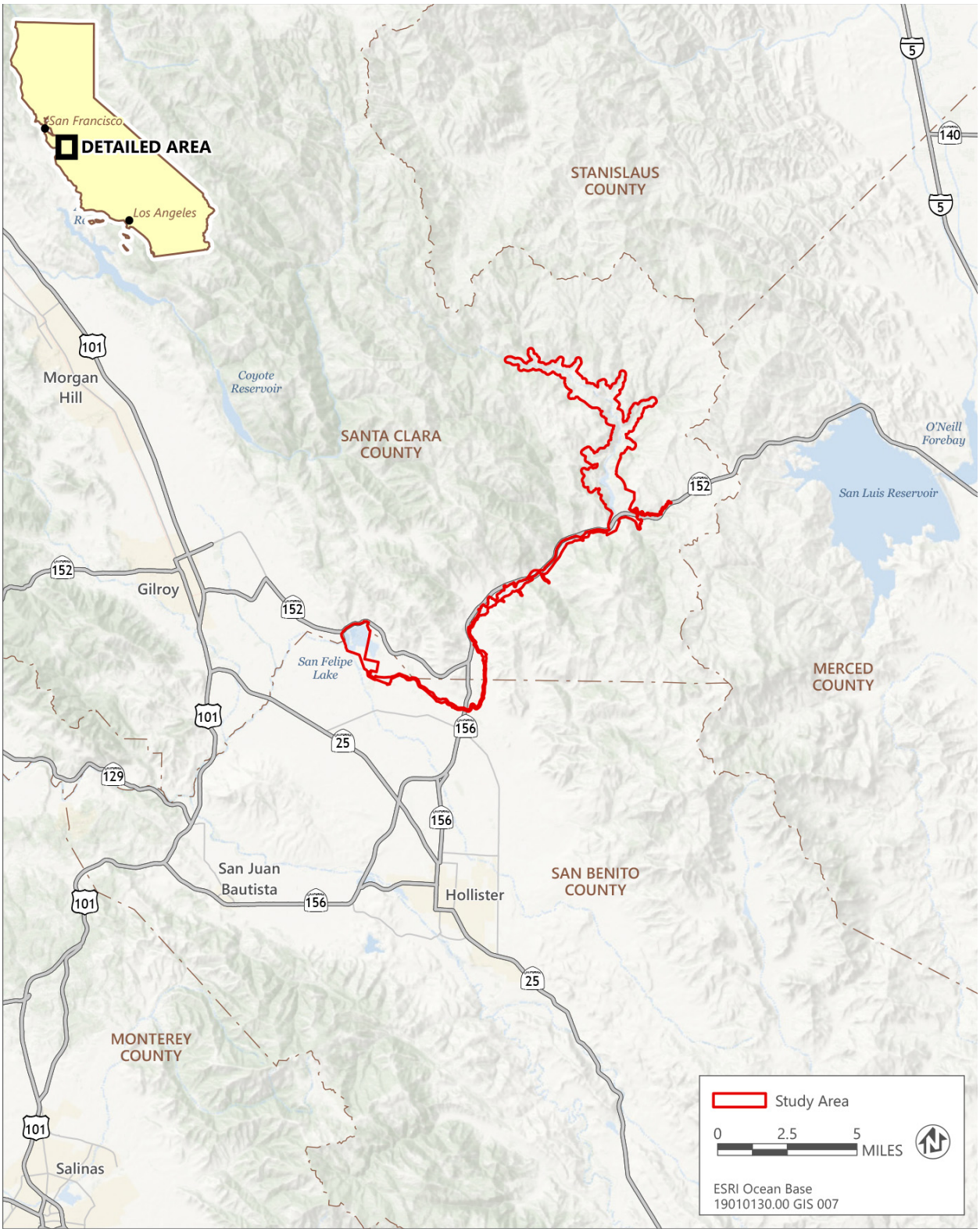


Figure 1-1. Pacheco Reservoir Expansion Project Location

Chapter 2. Study Area for Aquatic Resource Delineations

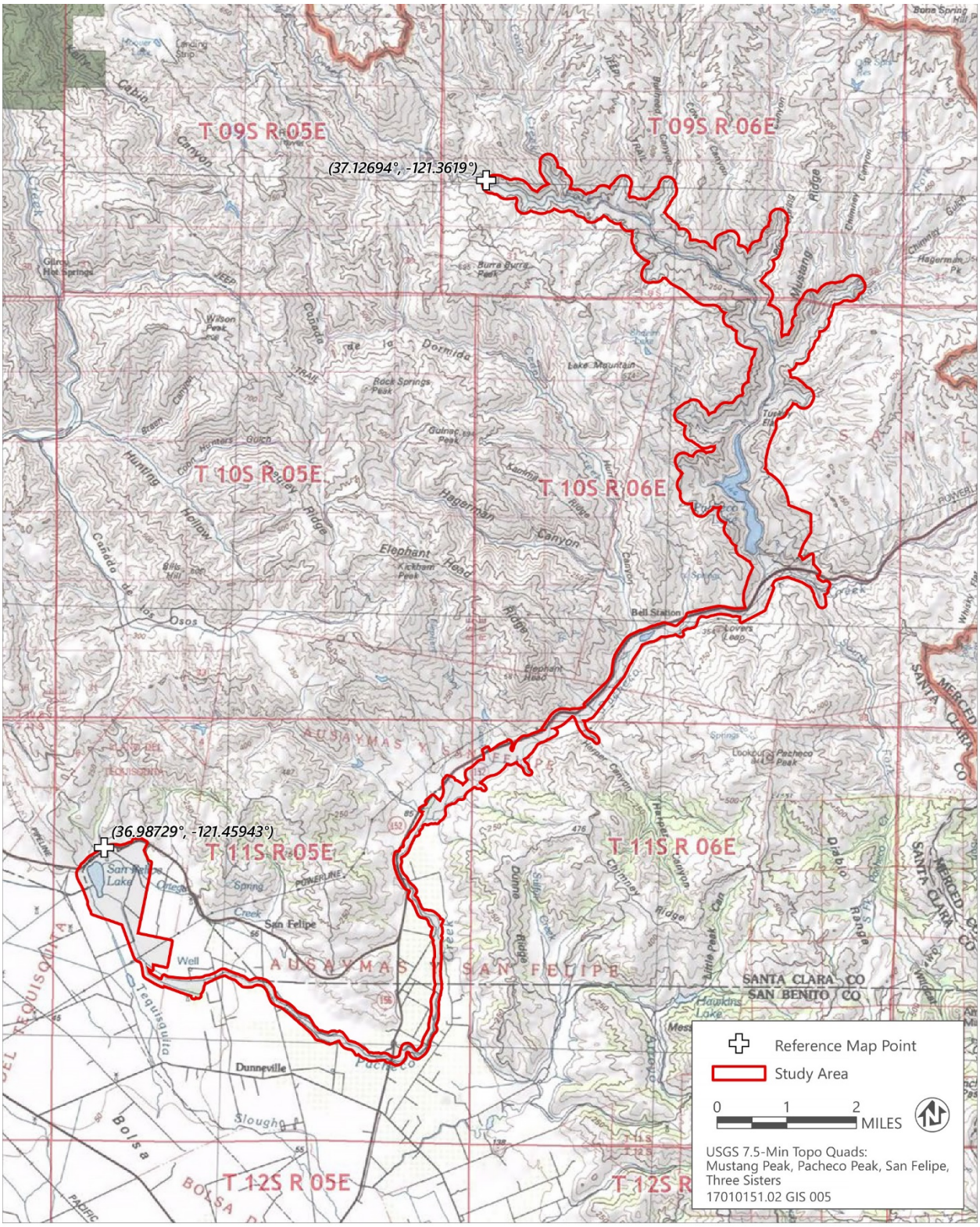
The study area for the aquatic resource delineation is located near the existing Pacheco Reservoir and along Pacheco Creek within the southern reaches of the Diablo Range, through Pacheco Pass and extending west into the Santa Clara Valley to San Felipe Lake (Figure 2-1). Pacheco Reservoir is located in unincorporated Santa Clara County, approximately 17 miles northeast of the City of Gilroy and 0.4 miles north of State Route 152 (SR 152). The approximately 6,765-acre study area subject to this delineation encompasses the existing Pacheco Reservoir and upstream areas (i.e., generally north of the existing North Fork Dam) surrounding the reservoir up to the expanded reservoir boundary plus an approximately 500-foot buffer, as well as approximately 17 miles of Pacheco Creek within the 100-year floodplain on both sides from the North Fork Dam downstream to San Felipe Lake in San Benito County (Figure 2-2). The 17-miles of Pacheco Creek downstream of North Fork Dam is included to account for potential operational changes in the creek's flow regime as a result of the Project. The study area includes all currently proposed biological impact areas associated with the Project (e.g., dam footprint, inundation area, borrow sites).

The study area can be accessed via SR 152. The study area discussed in this TM is located within the U.S. Geological Survey (USGS) 7.5-minute Pacheco Peak, Mustang Peak, Three Sisters, and San Felipe quadrangles (Figure 2-2).



Source: Adapted by Ascent Environmental in 2019

Figure 2-1. Project Vicinity and Study Area for Aquatic Resource Delineations



Source: Adapted by Ascent Environmental in 2019

Figure 2-2. Study Area of Aquatic Resource Delineations

Chapter 3. Current Regulations and Preliminary Jurisdictional Assessment

Agency jurisdiction for each of the delineated aquatic resources described in this Report is based on the definitions and regulations described in the sections below. All jurisdictional assessments in this Report should be considered preliminary until the U.S. Army Corps of Engineers (USACE) and SWRCB or Regional Water Quality Control Board (RWQCB) provide verification.

3.1 Waters of the United States

Waters of the United States as defined in the Clean Water Act (CWA) Sections 404 and 401 consist of wetlands and "other waters" regulated by the USACE and, for California, the SWRCB and the RWQCBs. On January 23, 2020 the Environmental Protection Agency and the USACE finalized the Navigable Waters Protection Rule (NWPR) which replaces all previous guidance regarding features considered waters of the United States, (i.e., wetlands and "other waters" subject to jurisdiction under the CWA The most notable changes or redefinitions described in the NWPR from previous guidance documents is ephemeral features (e.g., streams, ditches, swales) are no longer considered waters of the United States, and wetlands must be adjacent to other jurisdictional waters (i.e., physically touch, separated by a natural berm/bank or artificial barrier where there is a hydrologic surface connection, or the wetlands are inundated during flooding) to be considered waters of the United States.

In August 2021, the U.S. District court for the District of Arizona vacated and remanded the NWPR to USACE and EPA (Pascua Yaqui Tribe v. U.S. Environmental Protection Agency, No. CV-20-00266). On September 3, 2021, the agencies announced they have halted implementation of the NWPR and are interpreting waters of the United States consistent with the pre-2015 regulatory regime until further notice. Under the pre-2015 regulatory regime, ephemeral waters may be considered waters of the U.S. if there is a" significant nexus" to waters of the United States (EPA 2021).

3.2 Waters of the State

Waters of the state are defined under the Porter-Cologne Water Quality Control Act and are further described for wetlands in the SWRCB's *Implementation Guidance for the State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* (SWRCB 2020). The Porter-Cologne Water Quality Control Act uses similar definitions as those described in the CWA to define wetlands and "other waters" and are described below:

- **Wetlands**: Wetlands are considered waters of the state when features meet the 3-parameters/criteria used by the USACE (i.e., prevalence of hydrophytic vegetation, hydric soils, and hydrology). The state definition differs for wetlands in cases where features are naturally devoid of vegetation (i.e., features with less than 5 percent cover) where the hydric substrate indicators (i.e., hydric soils and hydrology) can act as a substitute for a dominance of hydrophytic vegetation. Under the state definition isolated wetlands are also considered waters of the state (i.e., non-adjacent features are jurisdictional).

- **Other Waters**: Similar to the waters of the United States definition, all "other water" features must have an Ordinary High Water Mark (OHWM); however, unlike the water of the United States, the state definition extends the jurisdiction to include ephemeral and isolated other water features as waters of the state.

Chapter 4. Methods

A delineation of aquatic resources was conducted using a combination of desktop review and interpretation of existing data and fieldwork conducted in 2019 and 2020. Before conducting the field delineation of the study area, an Ascent wetland ecologist reviewed color aerial imagery of the study area on Google Earth, Light Detection and Ranging (LiDAR) data, Valley Water's stream data (Valley Water 2018), National Wetlands Inventory data (USFWS 2019), and the Natural Resources Conservation Service's (NRCS) soil survey of Eastern Santa Clara Area, California (NRCS 1974) and the Soil Survey of San Benito County, California (NRCS 1969), to determine areas of potential USACE jurisdiction. The field delineation was conducted on September 10-12, 16-17, and 23-25; October 28-31; December 2-6 and 9-12, 2019; and February 10-13, 2020 by Ascent wetland ecologists Tammie Beyerl, Shannon Hickey, and Pamela Brillante. Stantec biologists Nick Eide, Tim Hansen, Leticia Morris, and Kurt Bainbridge on May 7, 8, 21, and 22 and August 8 and 9, 2019 performed the delineation efforts within the study area encompassing the South Fork Pacheco Creek upstream of SR 152 (i.e., generally south of the SR 152 bridge over South Fork Pacheco Creek), and along Pacheco Creek from the SR 152 bridge west to OHWM sample point PC11. As of December 31, 2019, average precipitation in the area was 100 percent of normal for the water year (NOAA 2019). As of March 31, 2020, average precipitation in the area was at 125 percent of normal for the water year (NOAA 2020). Potentially jurisdictional features were mapped, and jurisdictional determination and data forms and OHWM data forms were completed during this delineation field survey.

The methods identified in the USACE 1987 *Wetlands Delineation Manual* (Environmental Laboratory 1987), *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Environmental Laboratory 2008), and *Implementation Guidance for the State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* (SWRCB 2020) were used to delineate wetlands that are potentially subject to USACE jurisdiction under Section 404 of the CWA and SWRCB/RWQCB jurisdiction under CWA Section 401 and the Porter-Cologne Water Quality Control Act. The 1987 Manual and 2008 Arid West Supplement provide technical guidelines and methods for the three-parameter approach to determining the location and boundaries of jurisdictional wetlands. This approach requires that an area support positive indicators of hydrophytic vegetation, hydric soils, and wetland hydrology to be considered a jurisdictional wetland. Routine jurisdictional determination data forms were completed for 112 sample points during the survey. Potential jurisdictional areas were identified and mapped during desktop analysis and then confirmed and refined in the field using ArcGIS Collector application and a global positioning system (GPS) data logger. Sample point locations were also recorded digitally using a GPS data logger and imported onto an electronic version of the aerial photograph. GPS data were recorded in World Geodetic System datum of 1984.

Waters of the United States and state were delineated based on the OHWM, using the USACE's *Guide to OHWM Delineation in the Arid West Region* (Lichvar and McColley 2008) and the USACE's Updated Datasheet for the Identification of the OHWM in the Arid West region (Curtis and Lichvar 2010). OHWM data forms were completed for 36 sample points.

To determine whether the area at a wetland sample point was dominated by hydrophytic vegetation, plant species at each sample site were recorded and the wetland indicator status was recorded for the dominant species using USACE's National Wetlands Plant List for the Arid West Region (Lichvar et al. 2016). A species is considered dominant when that species—individually or collectively—accounts for 50 percent of the total absolute cover in a vegetation stratum. Additional

codominant species are identified if those species account for at least 20 percent of the absolute cover in a designated vegetation stratum (Environmental Laboratory 2008).

Hydrophytic species include those listed as obligate (OBL), facultative wetland (FACW), or facultative (FAC) species, which correspond to a given species' frequency of occurrence in wetlands. The plant indicator categories are defined as:

- OBL: Almost always (greater than 99 percent of the time) occur in wetlands,
- FACW: Usually (between 66 percent and 99 percent of the time) occur in wetlands, and
- FAC: Equally likely to occur in wetlands and non-wetlands (between 33 percent and 66 percent occurrence in wetlands).

Per delineation protocol, a sample site was considered to have hydrophytic vegetation if greater than 50 percent of the dominant species had an indicator status of FAC or wetter. The following indicators are used to identify species not considered hydrophytic:

- Facultative upland (FACU)— species that usually occur in non-wetlands (67 percent–99 percent estimated probability) but are occasionally found in wetlands (1 percent–33 percent estimated probability);
- Obligate upland (UPL)— species that may occur in wetlands in another region, but almost always (greater than 99 percent) occur in non-wetlands in California (Region 0) under natural conditions;
- No indicator (NI)—species for which insufficient information was available to determine an indicator status; and
- Not listed (NL)—species not listed in National Wetland Plant List (Lichvar et al. 2016).

Standard protocol states that a species with an NL designation should be considered UPL when the delineator completes the "Prevalence Index Worksheet" portion of the wetland delineation data form (Environmental Laboratory 2008). Botanical nomenclature follows *The Jepson Manual: Vascular Plants of California, Second Edition* (Baldwin et al. 2012).

The soil survey of Eastern Santa Clara Area, California (NRCS 1974) and the Soil Survey of San Benito County, California (NRCS 1969), were consulted to identify soil units mapped in the study area by NRCS and these soils were cross referenced to *The National Hydric Soils List* (NRCS 2019) to determine if any of the mapped soil units are listed as hydric. Soils were examined by digging soil test pits to determine whether hydric soils exist in a sampling location. Soils were described in terms of depth, matrix color, moisture status, and other diagnostic features indicative of hydric soils, such as the presence of concretions and oxidized rhizospheres (a redoximorphic feature, according to Vepraskas [1994]). Hydric soil indicators were based on those provided in the 1987 USACE manual, 2010 regional supplement, *Field Indicators of Hydric Soils in the United States: A Guide for Identifying and Delineating Hydric Soils* (NRCS 2018), and Vepraskas (1994).

Wetland hydrology was assessed by recording observations such as inundation, high water table, algal crust, drift deposits, water marks, and oxidized rhizospheres along living root channels. In addition, the potentially jurisdictional areas were all evaluated in terms of their status as a navigable waterway or their adjacency or hydrological connection to a navigable waterway.

Chapter 5. Existing Conditions

5.1 Landscape Setting

The study area occurs within the Pacheco Pass portion of the Diablo Range and Santa Clara Valley. Elevations range from a high of nearly 1,500 feet above mean sea level in the upper portions of the study area to a low of approximately 145 feet above mean sea level in the Santa Clara Valley portion at San Felipe Lake. The Pacheco Pass portion of the study area is characterized by rugged topography with steep, mostly northeast-facing and southwest-facing slopes. The predominant land use in the Pacheco Pass portions of the study area is livestock grazing. The Santa Clara Valley portion of the study area is characterized by mostly flat topography and the predominant land use is agriculture.

The climate of the study area is characterized by warm, dry summers, and moderate to cool, relatively dry winters. On average, temperatures are highest in July, reaching 92 degrees Fahrenheit, and lowest in January at about 38 degrees Fahrenheit. The study area experiences an average of 21 inches of rain per year.

The study area is within the Pajaro (HUC 18060002) USGS hydrologic unit code-8 watershed subbasin. The natural hydrology of study area has been substantially altered by construction of dams, canals, ditches, and flood-control channels and by groundwater pumping associated primarily with agricultural irrigation. The major named waterways in the study area are Pacheco Creek, Tequisquita Slough, Cedar Creek, Ortega Creek, North Fork Pacheco Creek, East Fork Pacheco Creek, and South Fork Pacheco Creek. Pacheco Creek originates upstream of the study area in the Diablo Range and drains approximately 168 square miles in Santa Clara and San Benito counties. Downstream of Pacheco Reservoir, Pacheco Creek flows westward to San Felipe Lake. San Felipe Lake is drained by Miller Canal, which joins the Pajaro River and flows southwest until it drains into Monterey Bay (Valley Water 2020). The Pajaro River is the nearest Traditional Navigable Water (TNW) that has surface hydrological connections to major waterways in the study area. TNWs are defined as all waters subject to the ebb and flow of the tide, or waters that are presently used, have been used in the past, or may be used in the future to transport interstate or foreign commerce, and all waters that are navigable in fact under federal law for any purpose.

The study area is in a tectonically active area associated with the San Andreas Fault system and geologic activity has greatly influenced local stream formation and watershed structure and function (Santa Clara County et al. 2010).

The Diablo Range consists of shallow bedrock and steep topography with some low-lying alluvium-filled valleys with gentle topographic relief (San Benito County 2015, Santa Clara County 1994). The Santa Clara Valley is flat and filled with alluvial sediment (Santa Clara County et al. 2010). The study area is generally composed of gently rolling to steep hills that are covered by oak woodland interspersed with annual grassland, sycamore alluvial woodland and other riparian forest and scrub vegetation types along Pacheco Creek, and agricultural lands in the western portions of the study area.

A list of the soil map units in the study area was created, according to the Soil Survey of Eastern Santa Clara Area, California (NRCS 1974) and the Soil Survey of San Benito County, California (NRCS 1969). In addition, the hydric status of each soil map unit according to the National Hydric Soils List (NRCS 2020a) was obtained.

Vegetation in the study area was mapped to the association level following the classification system described in *A Manual of California Vegetation, 2nd Edition* (MCV) (Sawyer et al. 2009) and updated in the current online edition (California Native Plant Society 2019) during ongoing biological studies being conducted as part of the Project. As part of the vegetation mapping a crosswalk was developed between the MCV and the Santa Clara Valley Habitat Plan (SCVHP) land cover types (Santa Clara Valley Habitat Agency 2012). For the purposes of this Report the more generic SCVHP landcover types are presented in Table 5-1, below as a summary of the vegetation communities present in the study area. The predominant land cover types in the study area are blue oak woodland and California annual grassland. Table 5-1 lists the land cover types, classified according to the classification system of the SCVHP (Santa Clara Valley Habitat Agency 2012), and provides a description of each type. Acreages for terrestrial land cover types are listed in the Terrestrial Vegetation Communities Mapping report (Table 3-1 in Attachment B) and acreages for aquatic land cover types are listed in Table 6-1 of this Report. A complete list of plant species observed in the study area during field delineations and botanical surveys, and their indicator status is provided in Attachment A, Exhibit B. The Terrestrial Vegetation Communities Mapping report (Attachment B) describes the vegetation classification and mapping methods and results, along with detailed descriptions of the 87 vegetation alliances and associations, and 11 other land cover types, identified in the study area and includes vegetation maps depicting the distribution of terrestrial vegetation types. A crosswalk between the SCVHP land cover types and the more detailed MCV alliances and associations is included as Table 3-1 of the Terrestrial Vegetation Communities Mapping report (Attachment B).

Table 5-1 Santa Clara Valley Habitat Plan Land Cover Types in the Study Area

SCVHP Land Cover Type	Description
Upland Forests and Woodlands	
Blue oak woodland	Dominant on xeric slopes in the vicinity of Pacheco Reservoir; generally absent from the floodplains and riparian corridors of Pacheco Creek in the downstream portion of the study area. Mostly occurs as an open-canopy savanna with an understory heavily dominated by nonnative annual grasses such as slim oat (*Avena barbata*) (NL) or soft brome (*Bromus hordeaceus*) (FACU) with little to no shrub cover.
Coast live oak forest and woodland	Most common on the slopes around Pacheco Reservoir and in the northern portion of the study area and occur in moderate abundance along the downstream sections of Pacheco Creek. Dominated by coast live oak (*Quercus agrifolia*) (NL) but often occurs in mixed stands with blue oak (*Quercus douglasii*) (NL), California bay (*Umbellularia californica*) (FAC), or other trees. Found both on xeric slopes and in mesic areas on north-slopes and in riparian corridors. The understory may be dominated by nonnative annual grasses or by shrubs such as California sagebrush (*Artemisia californica*) (NL), chamise (*Adenostoma fasciculatum*) (NL), or poison oak (*Toxicodendron diversifolia*) (FACU).
Foothill pine-oak woodland	Occurs on dry slopes north of Pacheco Reservoir. Foothill pine (*Pinus sabiniana*) (NL) is the dominant tree species with blue oak or coast live oak sometimes present in very low cover. The understory of the foothill pine woodland alliance is often dominated by shrubs such as California sagebrush (*Artemisia californica*) (NL) or chamise (*Adenostoma fasciculatum*) (NL) with annual grasses.
Valley oak woodland	Found on terraces and lower slopes around Pacheco Reservoir and downstream along Pacheco Creek. Heavily dominated by valley oak (*Quercus lobata*) (FACU) with lower cover of other trees such as blue oak or coast live oak in some stands. Trees are often widely spaced with an understory dominated by nonnative annual grasses. Valley oaks in stands associated with riparian habitat along Pacheco Creek are often co-dominant with coast live oak and have an understory dominated by shrubs such as poison oak.

Table 5-1 Santa Clara Valley Habitat Plan Land Cover Types in the Study Area (contd.)

SCVHP Land Cover Type	Description
Mixed evergreen forest	Two alliances in the study area fall into this cover type: California bay forest, which occurs primarily around Pacheco Reservoir, on north-facing slopes and in drainages, and California buckeye groves, which occurs in relatively mesic areas in drainages and on north-facing slopes around Pacheco Reservoir and North Fork Pacheco Creek. California bay dominates California bay forest, often with lesser cover of coast live oak. Shrubs are often absent from the understory, although some stands have moderate cover of poison oak. California buckeye groves are heavily dominated by California buckeye (*Aesculus californica*) (NL) with low cover of California bay, coast live oak, or foothill pine in some stands. The understory is relatively sparse with low cover of shrubs such as poison oak or scrub oak (*Quercus berberidifolia*) (NL).
Ornamental woodland	Consist of stands of ornamental and other introduced species of trees have been planted or naturalized, forming an open to dense canopy. There is one stand of ornamental woodland in the study area along Pacheco Creek downstream of the North Fork Dam near the Santa Clara/San Benito County line. This stand is dominated by mature eucalyptus (*Eucalyptus* sp.) (NL) with coyote brush (*Baccharis pilularis*) (NL) and ruderal forbs in the understory. A second stand of ornamental woodland occurs in the downstream portion of the study area across from Kaiser Aetna Road.
Riparian Forests, Woodlands, and Scrub	
Mixed riparian forest and woodland	Found in and along active channel margins of intermittent and perennial streams. Tree canopy composition varies with elevation, aspect, hydrology, and channel type. Characteristic species in the study area include box elder (*Acer negundo*) (FACW), Hind's walnut (*Juglans hindsii*) (FAC), black cottonwood (*Populus trichocarpa*) (FAC) and stands dominated by each of these species were observed, as well as a few stands dominated by blue elderberry growing on dry stream terraces adjacent to Pacheco Creek.
Central California sycamore alluvial woodland	Associated with seasonal drainages and floodplains in the study area, both upstream and downstream of Pacheco Reservoir. On deep, fine textured soils, this type occurs as a mixed woodland where California sycamore (*Platanus racemosa*) (FAC) is co-dominant with other trees such as coast live oak, red willow (*Salix laevigata*) (FACW), or valley oak. On the floodplains and wider portions of Pacheco Creek and the North, East, and South forks of Pacheco Creek, the California sycamore woodlands are generally dominated by widely spaced California sycamores with barren, coarse-textured alluvial substrates with mulefat (*Baccharis salicifolia*) (FAC) or annual grasses dominating the understory.
Willow riparian forests, woodlands, and scrub	One of the most abundant vegetation communities in the study area along Pacheco Creek from the North Fork Dam downstream to San Felipe Lake. In the study area, this type is heavily dominated by red willow with low to moderate cover of other riparian trees such as black cottonwood, box-elder, Fremont cottonwood (*Populus fremontii*) (FAC), or California sycamore. The understory is often dominated by arroyo willow (*Salix lasiolepis*) (FACW). Thickets dominated by mulefat also fall into this land cover category and occur in the study area primarily in the alluvial, intermittently flooded channel of Pacheco Creek downstream of the North Fork Dam. Some gravel bars and terraces along Pacheco Creek downstream of North Fork Dam support sparse vegetative cover dominated by Oregon goldenaster (*Heterotheca oregona*) (FACU). These areas are also classified into this land cover category. Some areas in and along Pacheco Creek dominated by invasive giant reed (*Arundo donax*) (FACW) are included in this category.
Shrublands	
Northern coastal scrub/Diablan sage scrub	Northern coastal scrub/Diablan coastal scrub communities are typically dominated by California sagebrush and black sage (*Salvia mellifera*) (NL), with associated species including coyote brush, California buckwheat (*Eriogonum fasciculatum*) (NL), poison-oak, and sticky monkey flower (*Diplacus aurantiacus*) (FACU). The California sagebrush alliance occurs on xeric slopes around Pacheco Reservoir and the upstream portions of the study area. The California sagebrush-black sage scrub alliance occurs in the study area on steep slopes, primarily east of the existing Pacheco Reservoir. Stands dominated by California buckwheat are present in the study area on disturbed cut and fill slopes along State Route 152.

Table 5-1 Santa Clara Valley Habitat Plan Land Cover Types in the Study Area (contd.)

SCVHP Land Cover Type	Description
Northern mixed chaparral/chamise chaparral	Dominant shrubs in this land cover type in the study area are chamise, scrub oak (*Quercus berberidifolia*) (NL), California bay, birchleaf mountain-mahogany (*Cercocarpus betuloides*) (NL), buck brush (*Ceanothus cuneatus*) (NL), holly leaf cherry (*Prunus ilicifolia*) (NL), and poison-oak. Common associate species in this type include toyon (*Heteromeles arbutifolia*) (NL) and coffeeberry (*Frangula californica*) (NL).
Upland Herbaceous Vegetation	
California annual grassland	Eight vegetation alliances mapped in the study area fit into this land cover category, including the wild oats and annual brome grasslands alliance, which is the dominant herbaceous vegetation community in uplands in the study area and one of the most abundant cover types in the study area overall. Wild oats and annual brome grasslands in the study area are dominated by upland grasses such as ripgut brome (*Bromus diandrus*) (NL), slim oat, and soft brome. Perennial rye grass fields dominated by Festuca perennis (FAC) are a common annual grassland alliance around San Felipe Lake. This land cover type is also found in more heavily disturbed areas where weedy forbs, including yellow starthistle (*Centaurea solstitialis*) (NL), poison hemlock (*Conium maculatum*) (FACW), perennial pepperweed (*Lepidium latifolium*) (FAC), charlock (*Sinapis arvensis*) (NL), milk thistle (*Silybum marianum*) (NL), or mustard (*Hirschfeldia incana*) (NL), are dominant.
Non-serpentine native grassland	Non-serpentine native grasslands generally occur in small patches within a larger annual grassland matrix. These grasslands are characterized by native perennial grass species such as creeping ryegrass (*Elymus triticoides*) (FAC) or purple needlegrass (*Stipa pulchra*) (NL) with nonnative grasses still being dominant or codominant. In the study area, grasslands characterized by purple needlegrass occur in relatively low abundance on upland slopes in the vicinity of Pacheco Reservoir and those characterized by creeping ryegrass are present on mesic soils southeast of San Felipe Lake.
Wetlands	
Seasonal wetlands	These are wetlands found in areas that support ponded or saturated soil conditions during winter and spring and are typically dry through the summer and fall. These areas are characterized by herbaceous cover of wetland generalist plant species and may be dominated by native or nonnative species. Seasonal wetlands in the study area are variable and consist of alkali weed-salt grass playas and sinks, salt grass flats, alkali heath marsh, pickleweed mats, and alkali meadows found in the seasonally saturated, alkaline soils around San Felipe Lake; as well as wetlands dominated by species of Juncus, Eleocharis, or nonnative wetland generalist species. These seasonal wetlands are discussed in more detail in Section 4.2.2.
Coastal and valley freshwater marsh	This land cover type is dominated by emergent herbaceous plants in areas with intermittently flooded or permanently saturated soils. Freshwater marshes in the study area are dominated by water smartweed (*Persicaria amphibia*) (OBL), cocklebur (*Xanthium strumarium*) (FAC), hardstem bulrush (*Schoenoplectus acutus*) (OBL), American bulrush (*Schoenoplectus americanus*) (OBL) with cattail (Typha spp.) (OBL) and broadfruit bur reed (*Sparganium eurycarpum*) (OBL) often occurring as associates.
Other Waters	
Riverine	Perennial, intermittent, and ephemeral streams including North Fork Pacheco Creek, East Fork Pacheco Creek, South Fork Pacheco Creek, Pacheco Creek, Cedar Creek, Ortega Creek, and Tequisquita Slough.
Reservoir	Reservoirs are large open water bodies, greater than 20 acres, that are highly managed for water storage, water supply, flood protection, or recreational uses. Reservoirs in the study area consist of Pacheco Reservoir and San Felipe Lake.

Table 5-1 Santa Clara Valley Habitat Plan Land Cover Types in the Study Area (contd.)

SCVHP Land Cover Type	Description
Pond	Ponds are small (less than 20 acres) perennial or seasonal water bodies with little or no vegetation. If vegetation is present, it is typically submerged or floating. Ponds may occur naturally or may be created or expanded for livestock use (stock ponds). Most of the ponds in the study area are created stock ponds. Ponds occur upstream and downstream of North Fork Dam but upstream ponds tend to be small stock ponds created in uplands or on seasonal tributaries to Pacheco Creek whereas downstream ponds are generally on Pacheco Creek and are larger than the stock ponds. These include two freshwater lakes, Elephant Head Lake and Fish Lake, which are visible from State Route 152.
Other Land Cover Types	
Orchard	Orchards are areas planted with fruit-bearing trees. They occur in the downstream portion of the study area adjacent to Pacheco Creek.
Vineyard	Vineyards are areas planted with grapes arranged in rows. They occur in the downstream portion of the study area adjacent to Pacheco Creek.
Grain, row-crop, hay and pasture, disked/short-term fallowed	Tilled land that does not support orchards or vineyards and is used for agricultural crops, hay production, or pasture.
Barren	These are non-agricultural areas that have been historically and recently disturbed.
Rock outcrop	This land cover type consists of exposures of bedrock that lack soil and support sparse vegetation cover composed of grasses and forbs or mosses. Rock outcrops often occur within grassland matrices but also in chaparral and oak woodlands. In the Terrestrial Vegetation Communities Mapping report (Attachment B), rock outcrops were mapped within the bushy spikemoss mats alliance.
Rural residential	This land cover type is similar to the urban-suburban type except that it is typically much less dense (defined as less than 1 structure per 2.5 acres) and usually contains extensive landscaping and/or irrigated lands (including small areas of pasture).
Urban-suburban	Urban areas occur in relatively low abundance, primarily in the downstream portion of the study area near Pacheco Creek. This land cover comprises areas where the native vegetation has been cleared for residential, commercial, industrial, transportation, or recreational structures, and is defined as one or more structures per 2.5 acres. These include areas that have structures, paved and impermeable surfaces, horticultural plantings (e.g., ornamental woodlands), and lawns smaller than 10 acres.

Sources: Santa Clara Valley Habitat Agency 2012, Valley Water 2020

Key
FAC = facultative
FACU = facultative upland
FACW = facultative wetland
NL = not listed
OBL = obligate
Report = Aquatic Resource Delineation Report

Chapter 6. Aquatic Resources Delineation Results

Sites qualifying as waters of the United States and state according to Sections 404 and 401 of the CWA and the Porter-Cologne Water Quality Control Act are depicted on the aquatic resource delineation maps in Exhibit A. Delineation sample sites are also depicted on the aquatic resources delineation maps and are cross-referenced to the wetland determination and OHWM data forms. The OHWM data forms include representative photographs of the streams sampled. Descriptions of the aquatic resources in the study area are included below and representative photographs of each aquatic resource type are provided in Exhibit B.

A total of approximately 1,187 acres of potentially jurisdictional features, including wetlands, are present within the 6,765-acre study area. The study area contains approximately 396 acres of other waters, consisting of less than 1 acre of perennial streams, 172 acres of intermittent streams, 21 acres of ephemeral streams, 28 acres of ponds, and 174 acres of lake and reservoirs. Approximately 791 acres of wetland habitats are present consisting of approximately 513 acres of seasonal wetland, 31 acres of freshwater marsh, and approximately 247 acres of riparian wetland (Table 6-1).

Table 6-1 Aquatic Resources by Jurisdiction in the Study Area

Resource Type (Map Code)	Waters of the United States		Waters of the State	
	Area (acres)	Length (feet)	Area (acres)	Length (feet)
Other (Non-Wetland) Waters				
Riverine Perennial Streams (RVP)	0.61	1,161	0.61	1,161
Riverine Intermittent Streams (RVI)	171.80	177,459	171.80	177,459
Riverine Ephemeral Streams (RVE)	-	-	21.38	227,070
Lake and Reservoirs (RES)	174.20	-	174.20	-
Ponds (PND)	27.55	-	28.21	-
Total Other Waters	**374.16**	**178,620**	**396.21**	**405,690**
Wetlands				
Freshwater Marsh (FWM)	31.247	NA	31.247	NA
Seasonal Wetland (SWD)	507.016	NA	513.251	NA
Riparian Wetland (RWD)	246.535	NA	246.535	NA
Total Wetlands	**784.798**	**NA**	**791.033**	**NA**
Total Aquatic Resources in Study Area	**1,158.96**		**1,187.24**	

Note: Totals cannot be considered cumulatively given the overlap in the jurisdictional extents between waters of the United States and waters of the state.

6.1.1 Other Waters

Other waters are non-wetland aquatic resources with an OHWM, including lakes, rivers, sloughs, ponds, and perennial, intermittent, or ephemeral streams. Other waters in the study area consist of natural intermittent drainages, ephemeral drainages, ponds, reservoirs, and lakes. These features were delineated based on their OHWM.

6.1.1.1 Riverine Perennial

The riverine perennial streams in the study area were delineated as potentially jurisdictional features under Section 404 of the CWA because they have an OHWM, support continuous flow, and have a surface hydrological connection to the Pajaro River, a TNW, either directly or through other waters of the United States. The Pajaro River drains into Monterey Bay. Therefore, these tributaries contribute surface flow to a TNW and the territorial seas in a typical year and are considered waters of the United States. There are 0.61 acres of perennial stream in the study area, consisting of one segment of Pacheco Creek (Pacheco Creek 8), Tequisquita Slough, and three unnamed stream segments. OHWM data form 326 provides information about a channelized segment of Tequisquita Slough draining San Felipe Lake and is representative of the perennial stream segments in the study area. All of the riverine perennial streams are located near San Felipe Lake.

6.1.1.2 Riverine Intermittent

Approximately 171.85 acres of riverine intermittent streams in the study area were delineated as potentially jurisdictional features under Section 404 of the CWA because they have an OHWM, support continuous flow at least seasonally, and are tributary to other waters with a direct surface hydrological connection to the Pajaro River, a TNW. Therefore, these tributaries contribute surface flow to a TNW in a typical year and are considered waters of the United States. Named intermittent streams in the study area consist of North Fork Pacheco Creek, East Fork Pacheco Creek, South Fork Pacheco Creek, Pacheco Creek, Cow Canyon Creek, Bullhead Canyon Creek, Pine Spring Canyon Creek, Coon Creek, Cedar Creek, Elephant Head Creek, and Ortega Creek. There are also numerous unnamed intermittent streams in the study area. Intermittent streams in the study area generally have bedrock or boulder and cobble beds and typical vegetation consists of Central California sycamore alluvial woodlands or mulefat thickets (Table 5-1). Downstream of the North Fork Dam, willow riparian forests, woodlands, and scrub (Table 5-1) becomes more prevalent along Pacheco Creek. The OHWM of intermittent streams was delineated based on indicators such as changes in average sediment texture, water stains on rock, changes in vegetation species composition and cover, drift deposits, cut banks, and break in slope. OHWM data forms 13, 27, 100, 174, 202 Coon Creek, 224, and 320 Ortega Creek provide information about representative intermittent streams within the study area. Several OHWM forms were also completed on North Fork Pacheco Creek, East Fork Pacheco Creek, Pacheco Creek, Cow Canyon Creek, Bullhead Canyon Creek, Coon Creek, and Pine Spring Canyon Creek.

6.1.1.3 Riverine Ephemeral

Approximately 21.38 acres of riverine ephemeral stream occurs in the study area. These ephemeral streams are generally on moderately steep to steep slopes and drain to intermittent streams, including North Fork Pacheco Creek, East Fork Pacheco Creek, and Pacheco Creek, or to Pacheco Reservoir. Some of the ephemeral streams dissipate before reaching another water. Although most of the ephemeral streams are tributary to other waters, they flow only in direct response to precipitation and do not support continuous flow at least seasonally. Vegetation in the ephemeral stream channels generally consists of upland grasses and forbs. Vegetative cover ranges from relatively dense to sparse depending on the depth of soil. Many of the ephemeral streams have bedrock or boulder beds with little to no vegetation. The OHWM of ephemeral streams was delineated based on indicators such as changes in average sediment texture, changes in vegetation cover, and break in slope. OHWM data forms 34, 70, 82, 144, 186, and 485 provide information about representative ephemeral streams in the study area. Ephemeral features, including ephemeral streams, were not considered waters of the United States under the NWPR and instead considered waters of the state and regulated as such under the Porter-Cologne Water Quality Control Act.

6.1.1.4 Ponds

There are approximately 28.22 acres of ponds in the study area. As described in Table 5-1, ponds are perennial or seasonal water bodies with varying amounts of emergent and submergent vegetation. Many of the ponds in the study area were excavated to provide seasonal or perennial sources of water for livestock. Some of the ponds were constructed in a manner that changed the bed and/or bank of intermittent and ephemeral streams while some were excavated in uplands. Many of the ponds on the ranchlands in the North Fork Pacheco Creek watershed upstream from North Fork Dam are very small and dry out seasonally, while other ponds retain at least some amount of water year-round. OHWM data form 371, Triangle Pond, and wetland data form 5 provide information about representative ponds in the study area. Generally, ponds that dry up seasonally and support 5 percent or greater cover of hydrophytic vegetation were delineated as seasonal wetlands. Lakes, ponds, and impoundments of federally jurisdictional waters were considered jurisdictional when they contribute surface flow to a TNW in a typical year either directly or through other waters of the United States, or through channelized non-jurisdictional surface waters or artificial features such as culverts and spillways as was previously defined in the NWPR. Therefore, ponds in the study area that were excavated in or are connected to intermittent or perennial streams would be considered waters of the United States. Ponds that were excavated in uplands or within ephemeral stream channels for stock watering may not be considered waters of the United States without a significant nexus; however, some of the ponds would likely be considered waters of the state and regulated as such under the Porter-Cologne Water Quality Control Act.

6.1.1.5 Reservoirs and Lakes

Reservoirs are large open water bodies, greater than 20 acres, that are highly managed for water storage, water supply, flood protection, or recreational uses. Lakes are large (greater than 20 acres), naturally occurring, open water bodies. Reservoirs and lakes in the study area consist of Pacheco Reservoir and San Felipe Lake. Pacheco Reservoir is an impoundment of North Fork Pacheco Creek created through the construction of North Fork Dam. Vegetation within the high-water contour consists primarily of seasonal wetlands dominated by cocklebur patches. Approximately 98.13 acres of open water were delineated within Pacheco Reservoir. San Felipe Lake comprises approximately 76.07 acres of open water and is fed by Pacheco Creek, Ortega Creek, and Tequisquita slough. San Felipe Lake formed from a sag pond dammed by the fault scarp of the Calaveras Fault (Casagrande 2010). San Felipe Lake is a warm, shallow lake drained by Miller Canal, which joins the Pajaro River and flows southwest until it drains into Monterey Bay. The lake is surrounded by an extensive network of wetlands, including riparian wetlands, freshwater marsh, freshwater seasonal wetlands, salt grass flats, alkali heath marsh, pickleweed mats, and alkali meadows. The wetlands are described in Table 5-1 and in Section 4.2.2 below. Lakes, ponds, and impoundments of federally jurisdictional waters are jurisdictional where they contribute surface flow to a TNW in a typical year either directly or through other waters of the United States. Therefore, Pacheco Reservoir would be considered a jurisdictional water of the United States because it contributes flow to the Pajaro River, a TNW, in a typical year, through Pacheco Creek. Likewise, San Felipe Lake is a water of the United States because it contributes flow to the Pajaro River in a typical year.

6.1.2 Wetlands

6.1.2.1 Freshwater Marsh

Freshwater marshes are characterized by emergent herbaceous plants, including hardstem bulrush, American bulrush, and cattail, growing in areas with intermittently flooded or permanently saturated soils. Approximately 31.247 acres of freshwater marsh are present in the study area primarily around San Felipe Lake, but with some small stands occurring in ponds or intermittent stream channels. Primary wetland hydrology indicators observed in freshwater marsh habitats

include surface water, saturation, and hydrogen sulfide odor. Hydric soil indicators include depleted matrix and redox dark surface. Wetland determination data forms 2004-W, 2032-W, 3000-W, 4007-W, and 6001-W provide information about the freshwater marsh habitat in the study area. These wetlands are classified, according to the Cowardin classification system, as palustrine emergent persistent. The freshwater marsh wetlands in the study area were delineated as waters of the United States because they are contiguous with (i.e., physically touching) or are inundated by other waters that ultimately contribute flow to the Pajaro River.

6.1.2.2 Seasonal Wetlands

A total of approximately 513.250 acres of seasonal wetlands are present in the study area. Alkaline soils around San Felipe Lake support alkaline wetland types consisting of alkali weed-salt grass playas and sinks, salt grass flats, alkali heath marsh, and pickleweed mats. Characteristic species in these alkaline seasonal wetlands include salt grass (*Distichlis spicata*) (FAC), alkali weed (*Cressa truxillensis*) (FACW), alkali heath (*Frankenia salina*) (FACW), pickleweed (*Salicornia pacifica*) (NL), swamp grass (*Crypsis schoenoides*) (FACW), Italian ryegrass (*Festuca perennis*) (FAC), and alkali mallow (*Malvella leprosa*) (FACU). Seasonally saturated, nonalkaline soils around San Felipe Lake support stands of vegetation dominated by Baltic rush (*Juncus balticus*) (FACW) often with Hoover's button celery (*Eryngium aristulatum* var. *hooveri*) (OBL) or cocklebur as subdominant species. Other seasonal wetlands in the study area occur in hillside seeps, small depressions, and swales, or within small stock ponds that dry up in summer, and within intermittent drainages. These wetlands support vegetation characterized by Baltic rush, spike rush (*Eleocharis macrostachya*) (OBL), hyssop loosestrife (*Lythrum hyssopifolia*) (OBL), toad rush (*Juncus bufonius*) (FACW), Mediterannean barley (*Hordeum marinum* ssp. *gussoneanum*) (FAC), Italian rye grass, and rabbitsfoot grass (*Polypogon monspeliensis*) (FACW) Seeps dominated by iris-leaved rush (*Juncus xiphioides*) (OBL) are a type of seasonal wetland found in hillside seeps and other groundwater seepage areas in the study area, including around San Felipe Lake and on hillslopes upstream of North Fork Dam. Seasonal wetlands along the shoreline of Pacheco Reservoir support extensive patches of cocklebur. These wetlands are classified, according to the Cowardin classification system, as palustrine emergent nonpersistent (FGDC 2013).

Soils in the seasonal wetlands were characterized by hydric soil indicators including depleted matrix, loamy gleyed matrix, and redox dark surface. Saturation, surface water, oxidized rhizospheres along living root channels, and high-water table are primary indicators of wetland hydrology that were observed in the seasonal wetlands. Wetland determination data forms 3, 503-W, 1003-W, 1007-W, 2005-W, 2011-W, 3002-W, 4004-W, 4009-W5001-W, 7016, 7018-7022, 6003-W, 6005-W, 6006-W, 6009-W, 6013-W, 6015-W, 6019-W, and SWD-26 provide information about the seasonal wetlands in the study area.

Seasonal wetlands in the study area were delineated as potentially jurisdictional wetlands based on dominance by hydrophytic plant species, wetland hydrology, hydric soils, and adjacency to other waters of the United States. Many of the seasonal wetlands in the study area are within or adjacent to perennial or intermittent streams or to Pacheco Reservoir or San Felipe Lake and would therefore qualify as wetland waters of the United States. However, some of the seasonal wetlands in the study area are within or adjacent to ephemeral streams.

Wetlands are jurisdictional if they physically touch other jurisdictional waters or are inundated by flooding from a water of the United States in a typical year. Any seasonal wetlands that are within or adjacent to ephemeral streams and are not adjacent to other waters of the United States would be subject to federal jurisdiction under Section 404 of the CWA now that the NWPR has been vacated. These wetlands would meet the state definition of wetlands (California Water Boards

2020) and would be considered wetland waters of the state under the Porter-Cologne Water Quality Control Act.

6.1.2.3 Riparian Wetlands

Riparian areas are transitional between wetlands and uplands and, as such, they may or may not meet the three criteria to be defined as a wetland under the USACE methods for delineating wetlands. Riparian habitats below North Fork Dam are often characterized by mixed riparian forest and woodland vegetation with hydrophytic herbaceous understory vegetation and meet the three-parameter federal definition of a wetland. A total of approximately 246.642 acres of riparian wetlands are present in the study area. These wetlands are classified, according to the Cowardin classification system, as riparian lotic forested (FGDC 2013). Hydric soil indicators observed in the riparian wetlands include depleted matrix and redox dark surface. Drift deposits, surface water, saturation, oxidized rhizospheres along living root channels, and high-water table are primary indicators of wetland hydrology that were observed in the seasonal wetlands. Wetland determination data forms 703-W, 5000-W, 4001-W, 4003-W, 4005-W, 4008-W, 6007-W, 6008-W, RW-1, RW-2, RW-3, and RW-50 provide information about the riparian wetlands in the study area. Drift deposits, surface water, saturation, oxidized rhizospheres along living root channels, and high-water table are primary indicators of wetland hydrology that were observed in the riparian wetlands. The riparian wetlands in the study area were delineated as waters of the United States because they are contiguous with (i.e., physically touching) other waters that ultimately contribute flow to the Pajaro River.

Riparian habitats above North Fork Dam tend to be lacking one or more wetland criteria (i.e., wetland vegetation, wetland soils, or wetland hydrology). Often these non-wetland riparian habitats are characterized by Central California sycamore alluvial woodlands, willow scrub, or mulefat thickets with no herbaceous understory or upland herbaceous understory vegetation. Riparian habitats were delineated as uplands if above the OHWM and lacking one or more wetland indicators, which included hydrology indicators such as debris deposits/wrack lines, sediment lines, and others that would indicate riparian areas are frequently flooded where the soil conditions may be unsuitable to provide hydric soil indicators (e.g., sand, gravel, or cobble substrates).

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Draft Environmental Impact Report

Appendix

Biological Resources – Botanical/Wildlife

Attachment C

Aquatic Resources Delineation

Exhibit A

Delineation Maps

Pacheco Reservoir Expansion Project

November 2021

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North Fork Pacheco Creek
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Pacheco Reservoir Expansion Project

Study Area

Aquatic Resource

- Riparian Wetland (RWD)
- Riverine Ephemeral (RVE)
- Riverine Intermittent (RVI)

Valley Water

AECOM

Stantec GEI

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0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 1 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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Pacheco Reservoir Expansion Project

Study Area

Aquatic Resource

- Riparian Wetland (RWD)
- Riverine Ephemeral (RVE)
- Riverine Intermittent (RVI)

Valley Water

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1 in = 300 Feet

Appendix A : Aquatic Resources (Page 2 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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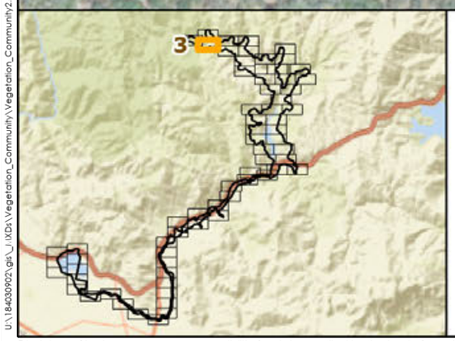

Pacheco Reservoir Expansion Project

Study Area

Aquatic Resource

- Riparian Wetland (RWD)
- Riverine Ephemeral (RVE)
- Riverine Intermittent (RVI)

Valley Water

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Appendix A : Aquatic Resources (Page 3 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
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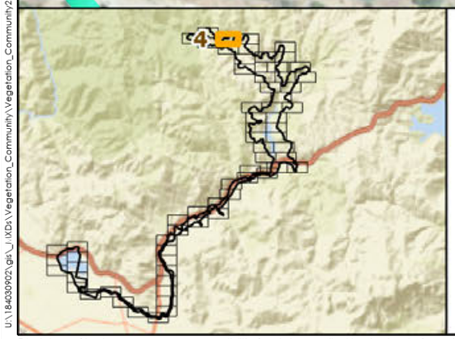
North Fork Pacheco Creek



Pacheco Reservoir Expansion Project

Study Area

Aquatic Resource

- Riparian Wetland (RWD)
- Riverine Ephemeral (RVE)
- Riverine Intermittent (RVI)
- Seasonal Wetland (SWD)

Valley Water

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Appendix A : Aquatic Resources (Page 4 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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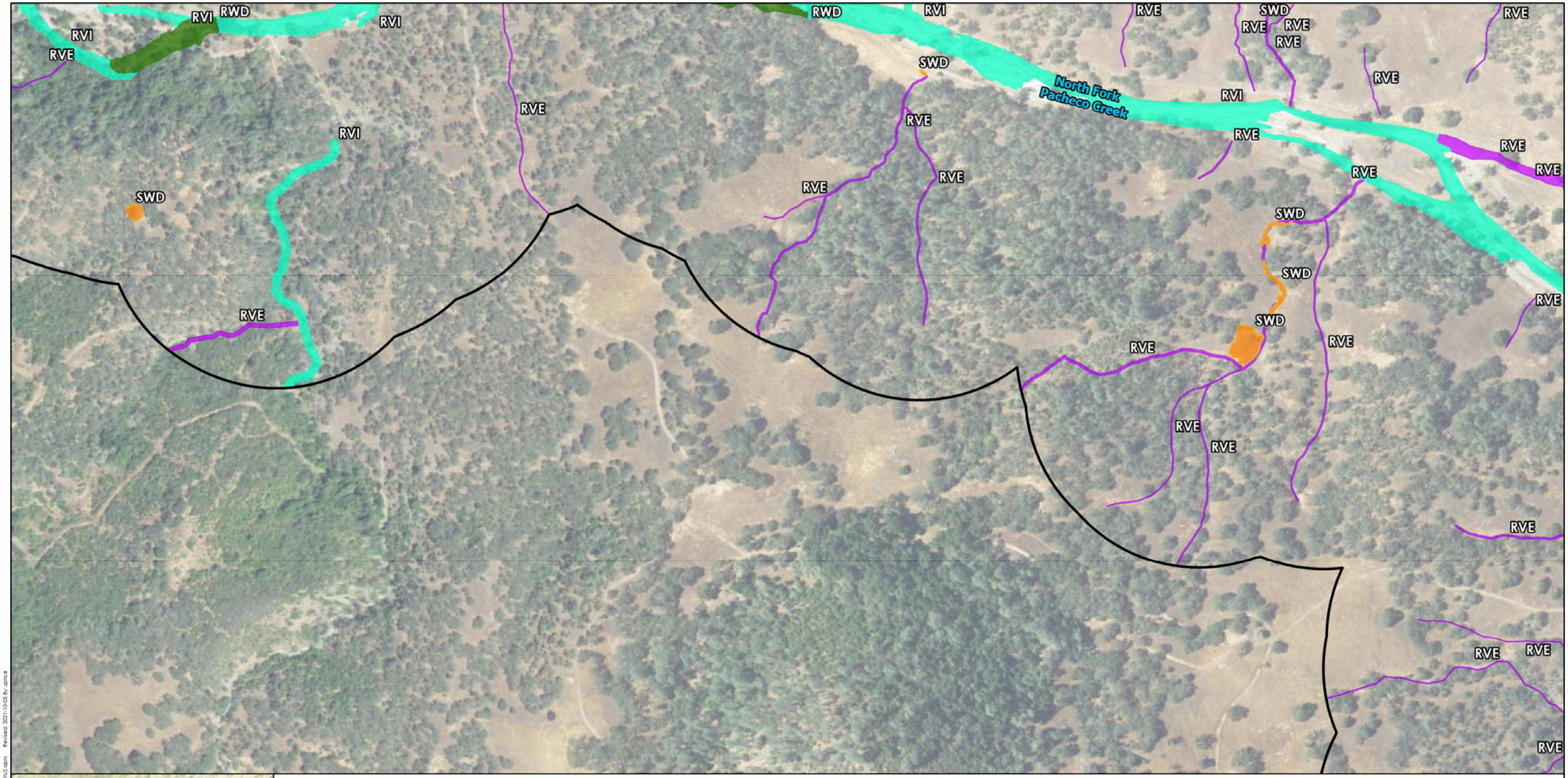

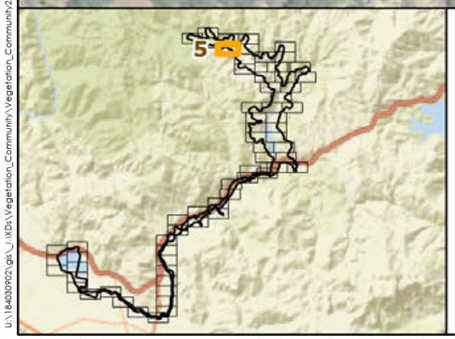

Pacheco Reservoir Expansion Project

Study Area

Aquatic Resource

- Riparian Wetland (RWD)
- Riverine Ephemeral (RVE)
- Riverine Intermittent (RVI)
- Seasonal Wetland (SWD)

Valley Water

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Appendix A : Aquatic Resources (Page 5 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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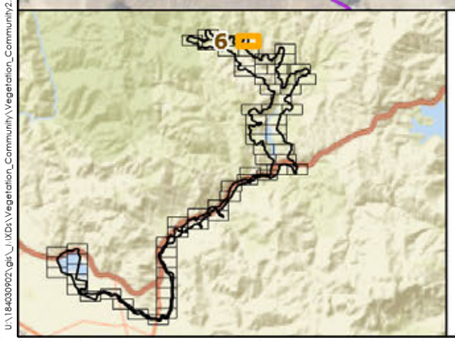

Pacheco Reservoir Expansion Project

Study Area

Aquatic Resource

- Riparian Wetland (RWD)
- Riverine Ephemeral (RVE)
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- Seasonal Wetland (SWD)

Valley Water

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Appendix A : Aquatic Resources
(Page 6 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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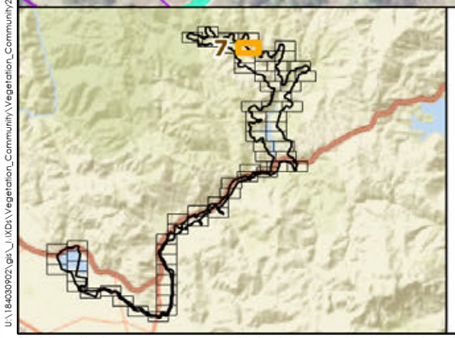
RVE
RVE



Pacheco Reservoir Expansion Project

Study Area

Aquatic Resource

- Riparian Wetland (RWD)
- Riverine Ephemeral (RVE)
- Riverine Intermittent (RVI)
- Seasonal Wetland (SWD)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 7 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

U:\184630920.gis_LXDs\Vegetation_Community\Vegetation_Community2.aprx Revised: 2021-10-05 By: spice

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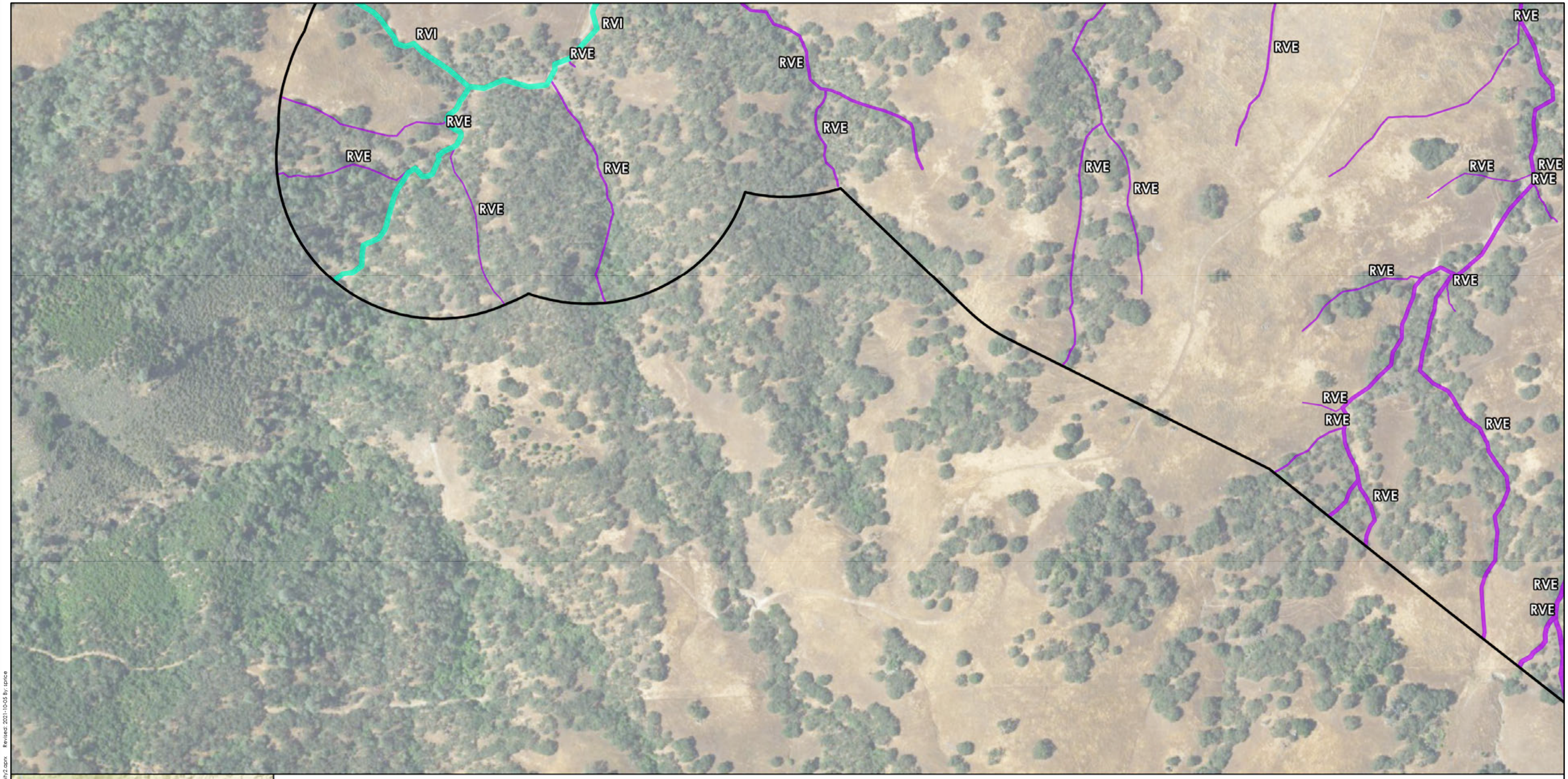
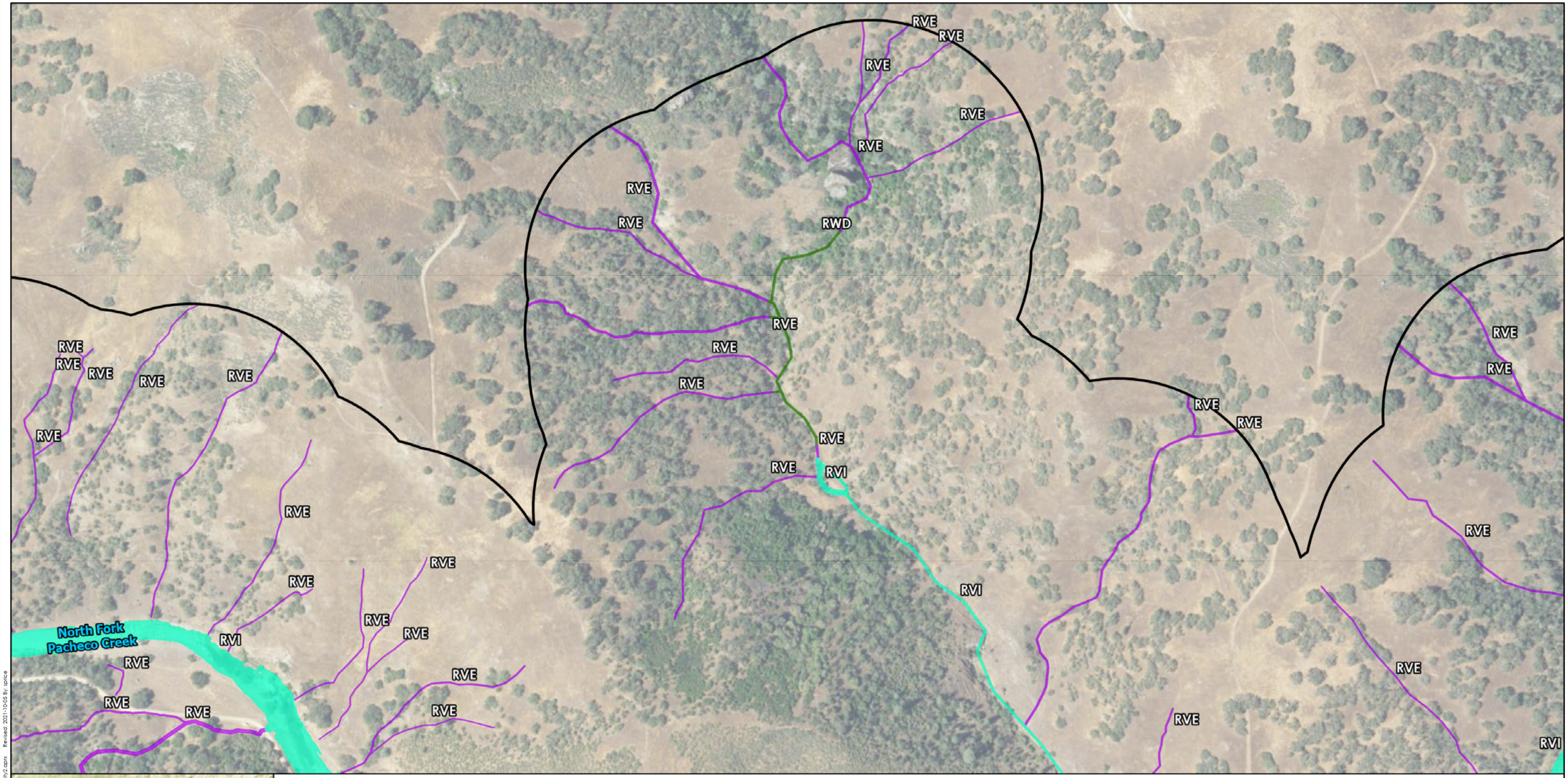
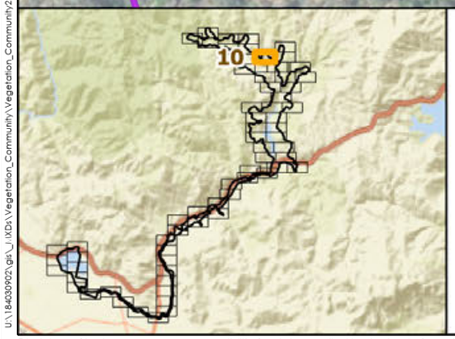
RVE RVE RVE RVI PND RVE RVE RVE SWD RVE RVE SWD RVE RVE RWD PND RVI North Fork Pacheco Creek RVE RVE RVE


RVI
RVI
RVE
RVE
RVE





Pacheco Reservoir Expansion Project

Study Area

Aquatic Resource

- Riparian Wetland (RWD)
- Riverine Ephemeral (RVE)
- Riverine Intermittent (RVI)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 10 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

U:\184630902\gis_MXDs\Vegetation_Community\Vegetation_Community2.mxd Revised: 2021-10-05 By: spruce

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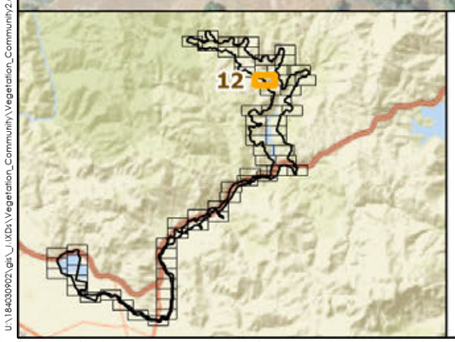
RVE
RVE
RVE

RVE
RVE
RVE
RVE
RVE
RVE
RVE
RVE
RVE
RVI
RVI
North Fork Pacheco Creek



Pacheco Reservoir Expansion Project

Study Area

Aquatic Resource

Riverine Ephemeral (RVE)

Riverine Intermittent (RVI)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 12 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

U:\185630922\gis_MXDs\Vegetation_Community\Vegetation_Community2.aprx Revised: 2021-10-05 By: sprice

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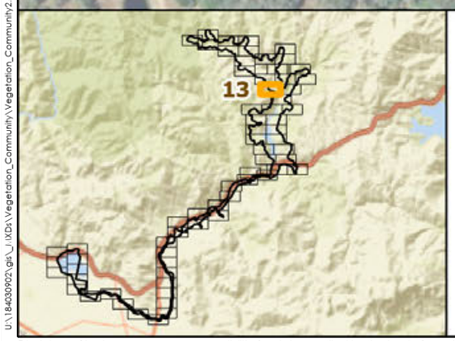
RVE
RVE
RVE
RVE
RVE
RVE
RVE
RVE
RVE
RVI
RVI
North Fork Pacheco Creek



Pacheco Reservoir Expansion Project

Study Area

Aquatic Resource

Riverine Ephemeral (RVE)

Riverine Intermittent (RVI)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 13 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

U:\184039901\gis_UXDs\Vegetation_Community\Vegetation_Community2.mxd Revised: 2021-10-05 By: spruce

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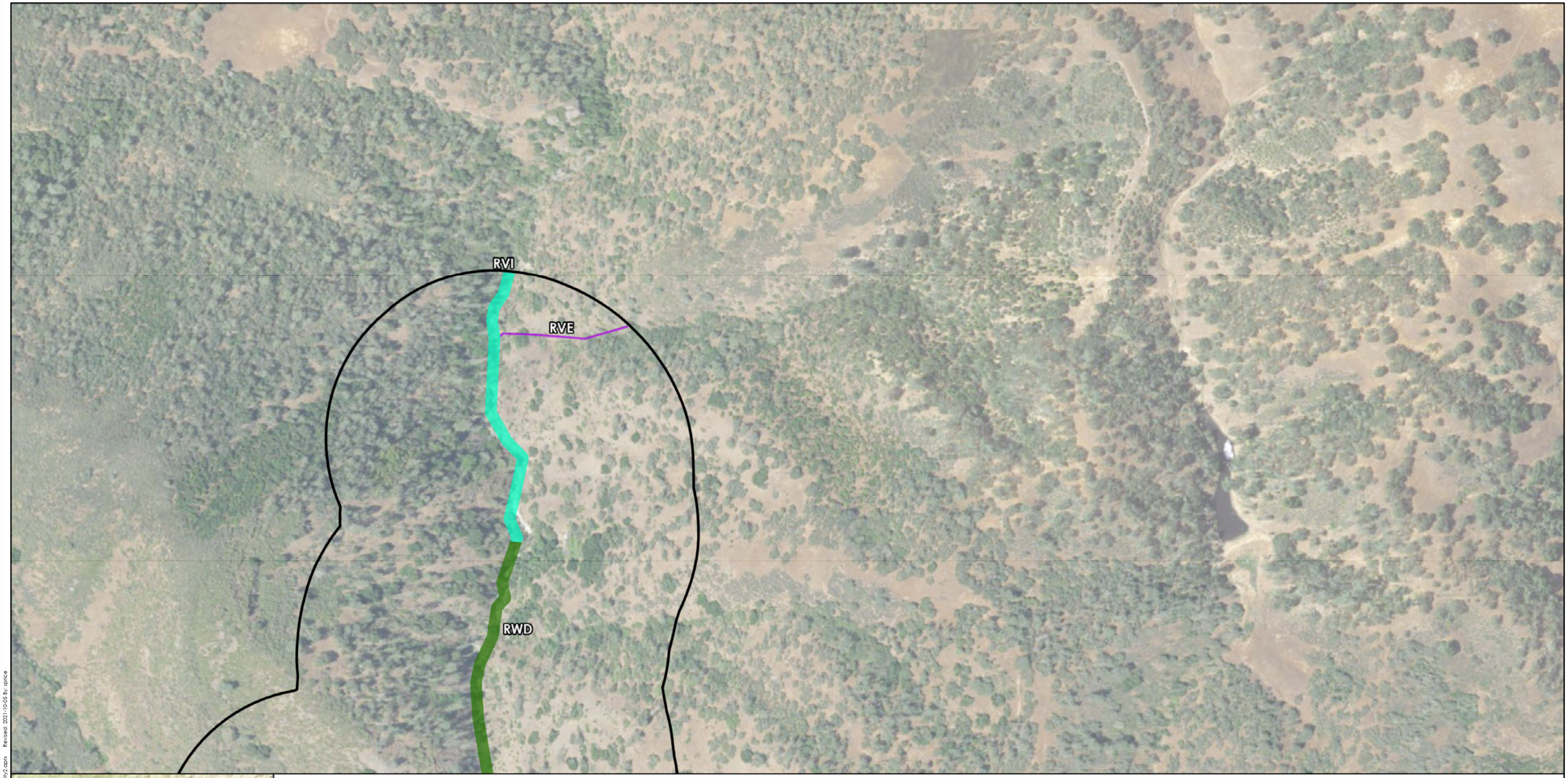

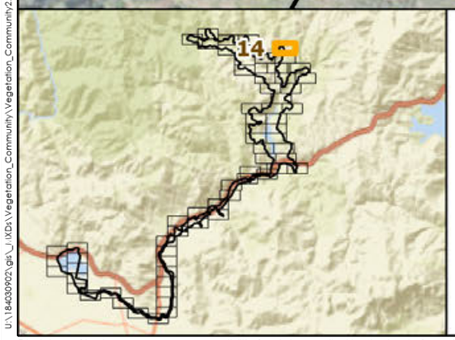

Pacheco Reservoir Expansion Project

Study Area

Aquatic Resource

- Riparian Wetland (RWD)
- Riverine Ephemeral (RVE)
- Riverine Intermittent (RVI)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 14 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

u:\18439921.gis_\XDs\Vegetation_Community\Vegetation_Community2.aprx Revised: 2021-10-05 By: aprice

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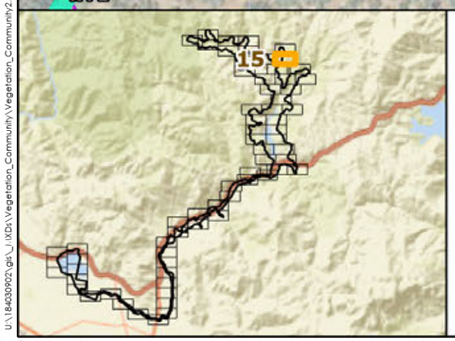
RWD
FWM
RVI
RVE
RWD
RVE
RVE
RVI
RVE



Pacheco Reservoir Expansion Project

Study Area

Aquatic Resource

- Freshwater Marsh
- Riparian Wetland (RWD)
- Riverine Ephemeral (RVE)
- Riverine Intermittent (RVI)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 15 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

U:\186439922\gis_U\MXDs\Vegetation_Community\Vegetation_Community2.aprx Revised: 2021-10-05 By: spice

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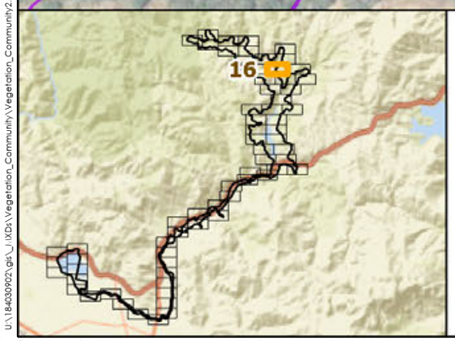
RVE
RVE
RVI
RVE
RVE
RWD
RVI
RVI
RVI
RVE
RVE
RVI
North Fork Pacheco Creek
RVI
RVE
RVE
RVE
RVE
RVE
RVE
RVE



Pacheco Reservoir Expansion Project

Study Area

Aquatic Resource

- Riparian Wetland (RWD)
- Riverine Ephemeral (RVE)
- Riverine Intermittent (RVI)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources
(Page 16 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

U:\184309921.gis_U_IXD\Vegetation_Community\Vegetation_Community2.aprx Revised: 2021-10-05 By: aprice

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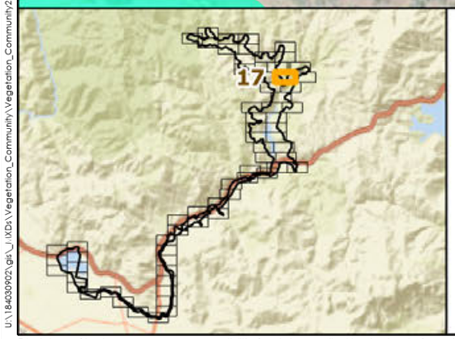
RVE
RVE
SWD
RVE
RVE
RVE
RVE
RVI
RWD
RVE
RVE
East Fork Pacheco Creek
RVE
RVI
RVE
RVE
RVI



Pacheco Reservoir Expansion Project

Study Area

Aquatic Resource

- Riparian Wetland (RWD)
- Riverine Ephemeral (RVE)
- Riverine Intermittent (RVI)
- Seasonal Wetland (SWD)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 17 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

U:\18403902\gis_MXDs\Vegetation_Community\2.aprx Revised: 2021-10-05 By: sprice

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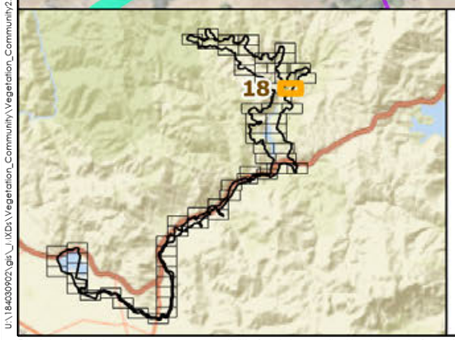
RVE
RVI
RVE
RVE
East Fork Pacheco Creek
RVE
RVE
RWD
RVI
RWD
RVI
RVE
RVE



Pacheco Reservoir Expansion Project

Study Area

Aquatic Resource

- Riparian Wetland (RWD)
- Riverine Ephemeral (RVE)
- Riverine Intermittent (RVI)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 18 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

U:\18403092\gis_UXD\Vegetation_Community\Vegetation_Community2.mxd - Revised: 2021-10-05 By: spruce

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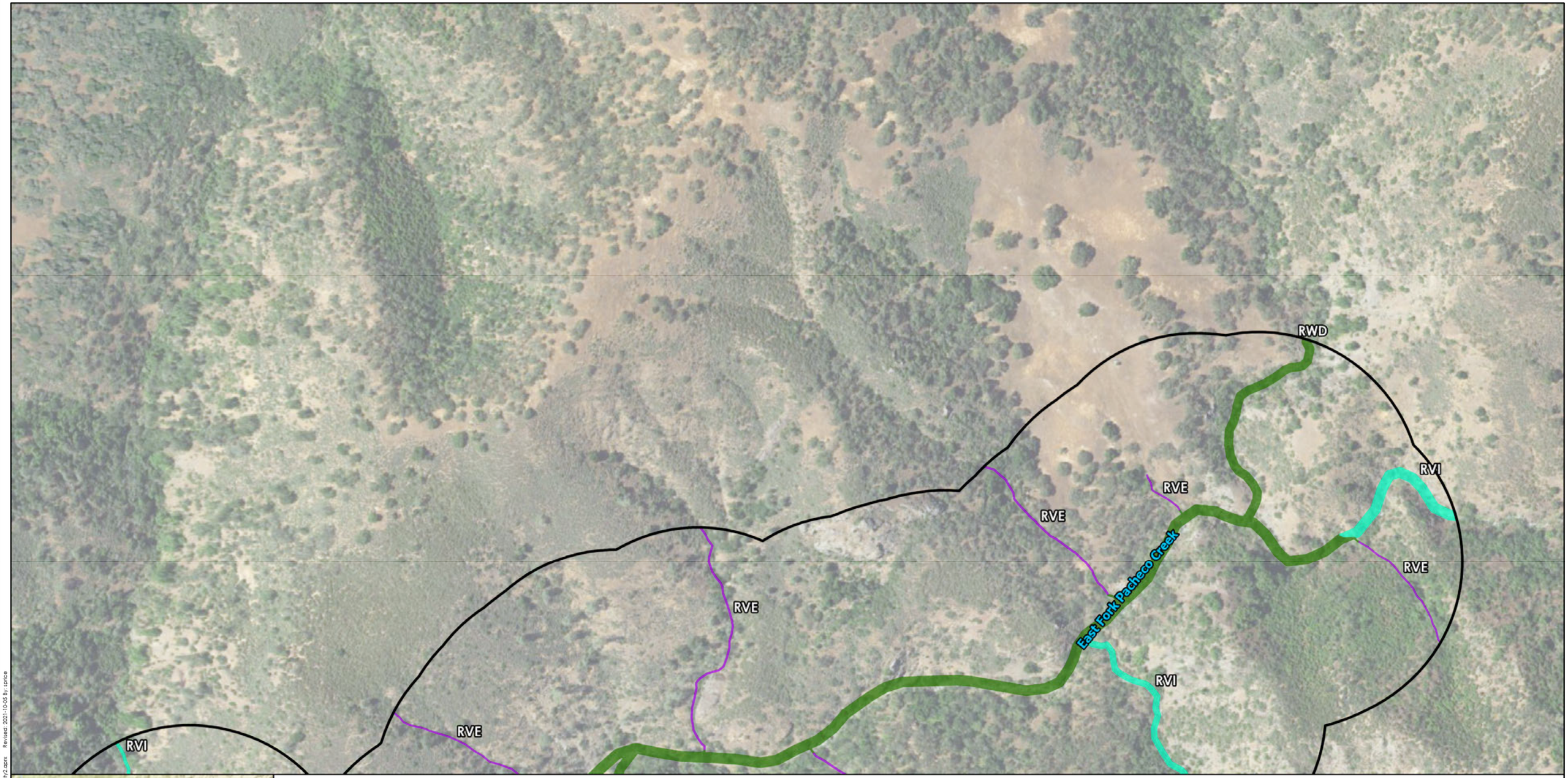

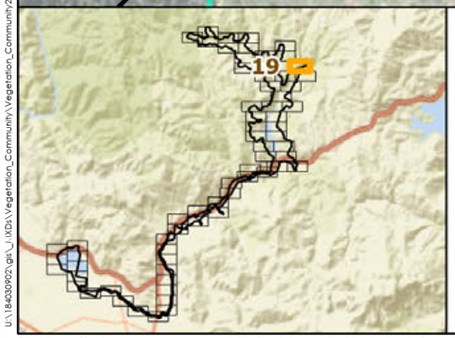

Pacheco Reservoir Expansion Project

Study Area

Aquatic Resource

- Riparian Wetland (RWD)
- Riverine Ephemeral (RVE)
- Riverine Intermittent (RVI)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 19 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

U:\184303902\gis_MXDs\Vegetation_Community\Vegetation_Community2.aprx Revised: 2021-10-05 By: spruce

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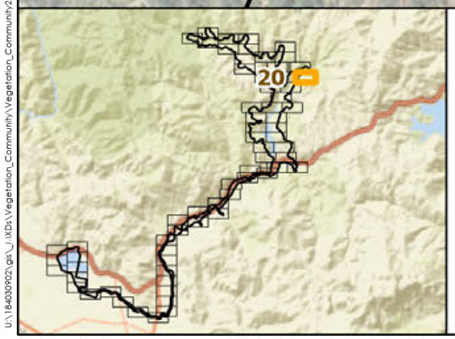
RVE
RWD
RVE
RVI
East Fork Pacheco Creek
RVE
RVE
RVE



Pacheco Reservoir Expansion Project

Study Area

Aquatic Resource

- Riparian Wetland (RWD)
- Riverine Ephemeral (RVE)
- Riverine Intermittent (RVI)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources
(Page 20 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

U:\1840390\GIS_LMDs\Vegetation_Community\Vegetation_Community2.aprx Revised: 2021-10-05 By: sprice

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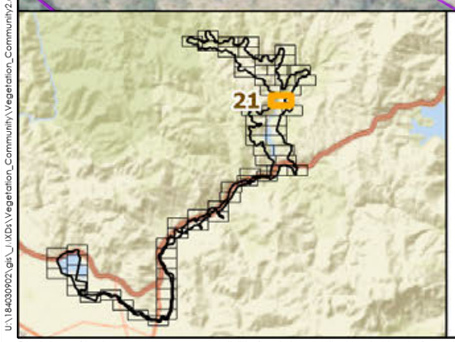
RVI
RVI
RVE
RVE
RVE
RVE
RVE
RVE
RVE
RVE
RVE
RVE
North Fork Pacheco Creek
SWD
RWD
RVI
RVI
RVE
RVE



Pacheco Reservoir Expansion Project

Study Area

Aquatic Resource

- Riparian Wetland (RWD)
- Riverine Ephemeral (RVE)
- Riverine Intermittent (RVI)
- Seasonal Wetland (SWD)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 21 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

U:\186539923.gis_LXDs\Vegetation_Community\Vegetation_Community2.aprx Revised: 2021-10-05 By: spice

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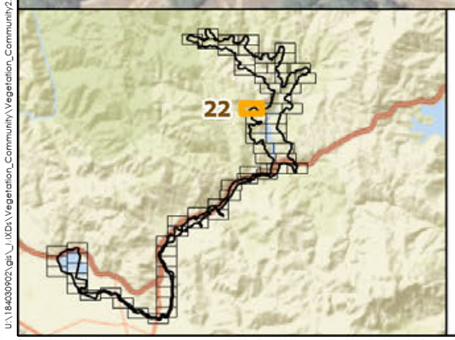
RVE
RVI
RVE
RVE
RVI
RVE
RWD
RVE



Pacheco Reservoir Expansion Project

Study Area

Aquatic Resource

- Riparian Wetland (RWD)
- Riverine Ephemeral (RVE)
- Riverine Intermittent (RVI)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 22 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

U:\185403902\gis_MXDs\Vegetation_Community\Vegetation_Community2.mxd Revised: 2021-10-05 By: sprice

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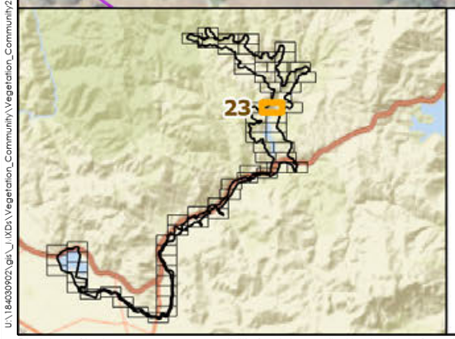
RVE
RVE
RWD
RWD
RWD
RVI
RVI
RWD
RWD
RVI
RWD
SWD
SWD
RVI
RVE
RWD
RVI
RWD
RVE
RVE
RVE
RVE
RVE
RWD
RVI
North Fork Pacheco Creek
RES
SWD



Pacheco Reservoir Expansion Project

Study Area

Aquatic Resource

- Reservoir (RES)
- Riparian Wetland (RWD)
- Riverine Ephemeral (RVE)
- Riverine Intermittent (RVI)
- Seasonal Wetland (SWD)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources
(Page 23 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

U:\185309\21_gis_MXDs\Vegetation_Community\Vegetation_Community2.aprx Revised: 2021-10-05 By: spriece

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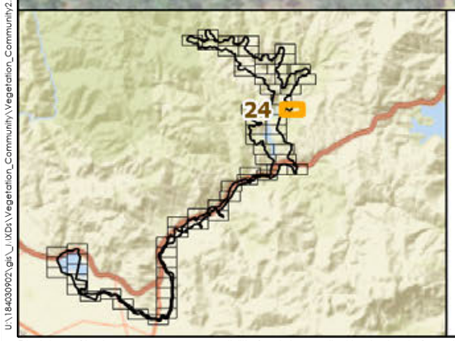
RVI
RWD
RVI
RVI
RWD
RVE



Pacheco Reservoir Expansion Project

Study Area

Aquatic Resource

- Riparian Wetland (RWD)
- Riverine Ephemeral (RVE)
- Riverine Intermittent (RVI)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources
(Page 24 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

U:\184309921.gis_MDs\Vegetation_Community\Vegetation_Community2.aprx Revised: 2021-10-05 By: jprice

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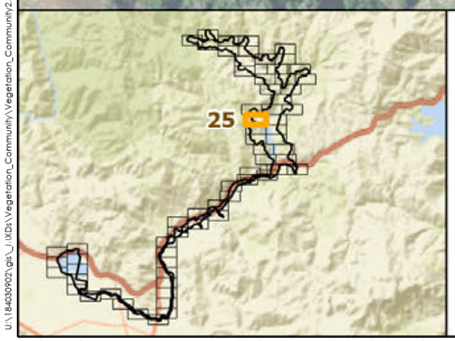
RWD
RVI
RWD
RVE
RWD
RVI
RWD
RVI
RVE
RVE
RVE
RVE



Pacheco Reservoir Expansion Project

Study Area

Aquatic Resource

- Riparian Wetland (RWD)
- Riverine Ephemeral (RVE)
- Riverine Intermittent (RVI)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 25 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

U:\185403902\gis_UXDs\Vegetation_Community\Vegetation_Community2.mxd Revised: 2021-10-05 By: spruce

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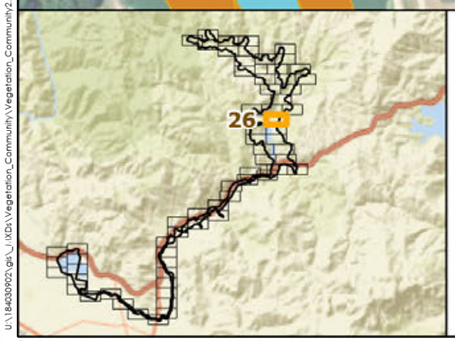
RWD
RVE
RVI
RES
SWD
SWD
SWD
SWD
SWD
SWD
SWD
SWD
RVE
RVE
Pacheco Reservoir



Pacheco Reservoir Expansion Project

Study Area

Aquatic Resource

- Reservoir (RES)
- Riparian Wetland (RWD)
- Riverine Ephemeral (RVE)
- Riverine Intermittent (RVI)
- Seasonal Wetland (SWD)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 26 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

U:\18453902\gis_MXDs\Vegetation_Community\Vegetation_Community2.aprx Revised: 2021-10-05 By: spruce

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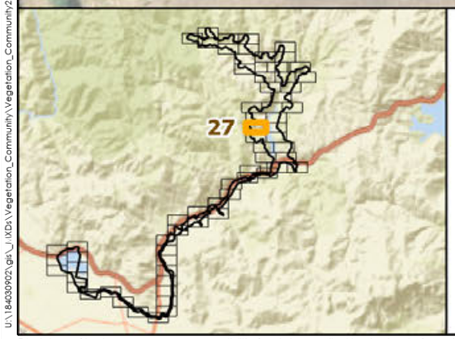
RVE
RVE
RVE
RVE
RWD
RVE
SWD
SWD
RVE
RVI
RVE
RVE
RVE
RVE
RVI
RVE
RVE
SWD
RES
Pacheco Reservoir
SWD
PND
RVE
SWD
SWD



Pacheco Reservoir Expansion Project

Study Area

Aquatic Resource

- Pond (PND)
- Reservoir (RES)
- Riparian Wetland (RWD)
- Riverine Ephemeral (RVE)
- Riverine Intermittent (RVI)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources
(Page 27 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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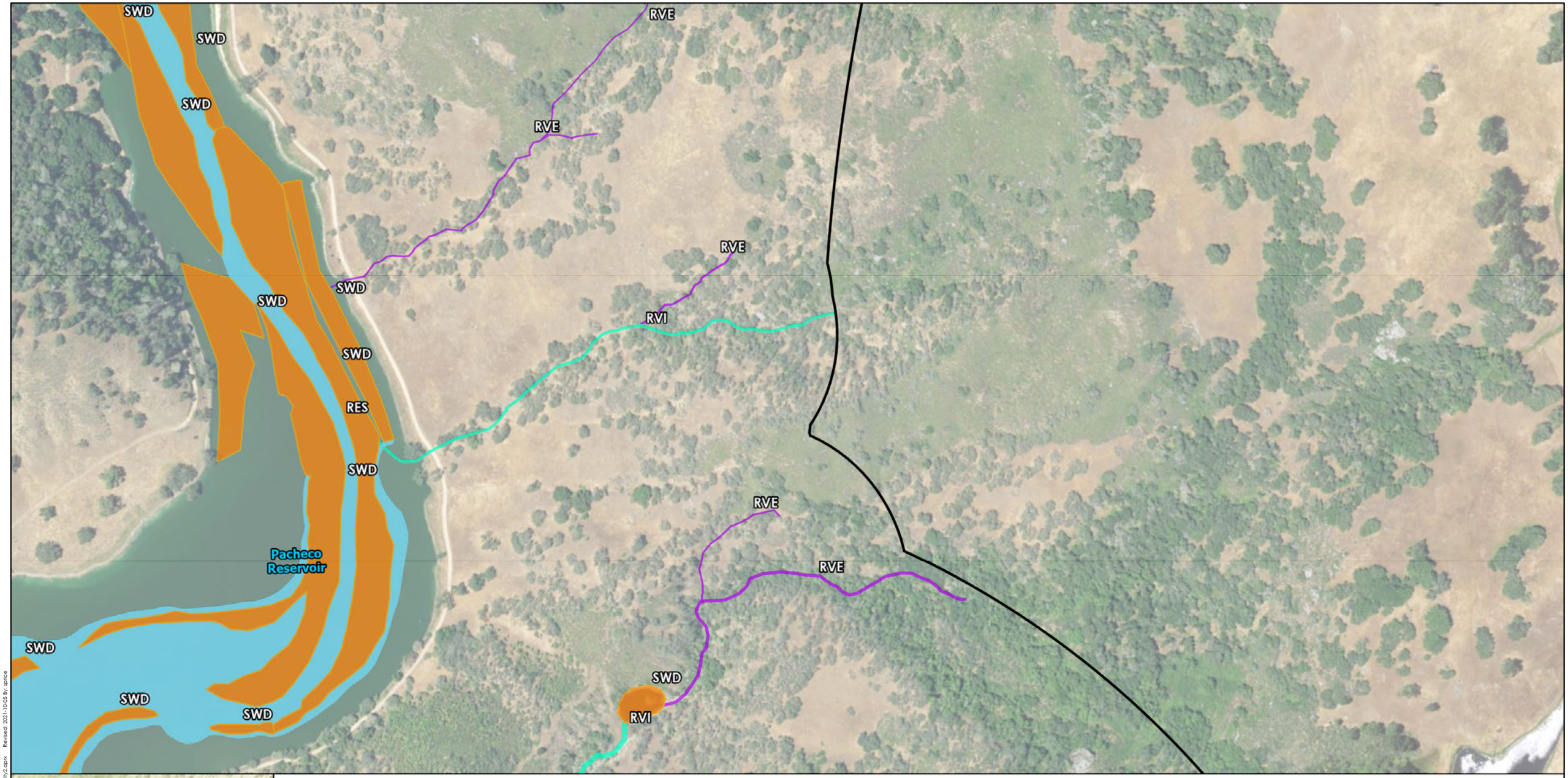

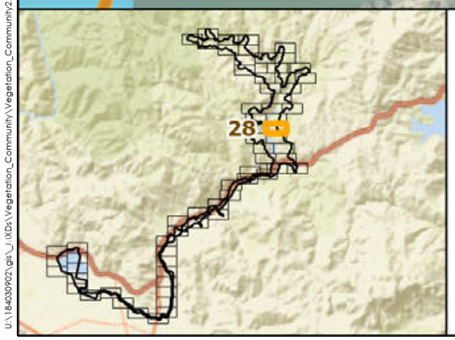

Pacheco Reservoir Expansion Project

Study Area

Aquatic Resource

- Reservoir (RES)
- Riverine Ephemeral (RVE)
- Riverine Intermittent (RVI)
- Seasonal Wetland (SWD)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources
(Page 28 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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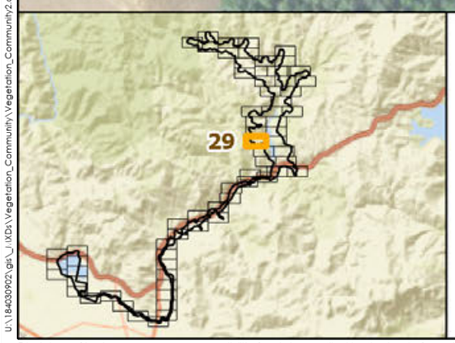
RVE
RVE
RVE
RVE
RVE
RVE
RVE
RVE
RVI
PND
RVE
SWD
RES
SWD
SWD
SWD
Pacheco Reservoir
RVE
RVE



Pacheco Reservoir Expansion Project

Study Area

Aquatic Resource

- Pond (PND)
- Reservoir (RES)
- Riverine Ephemeral (RVE)
- Riverine Intermittent (RVI)
- Seasonal Wetland (SWD)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 29 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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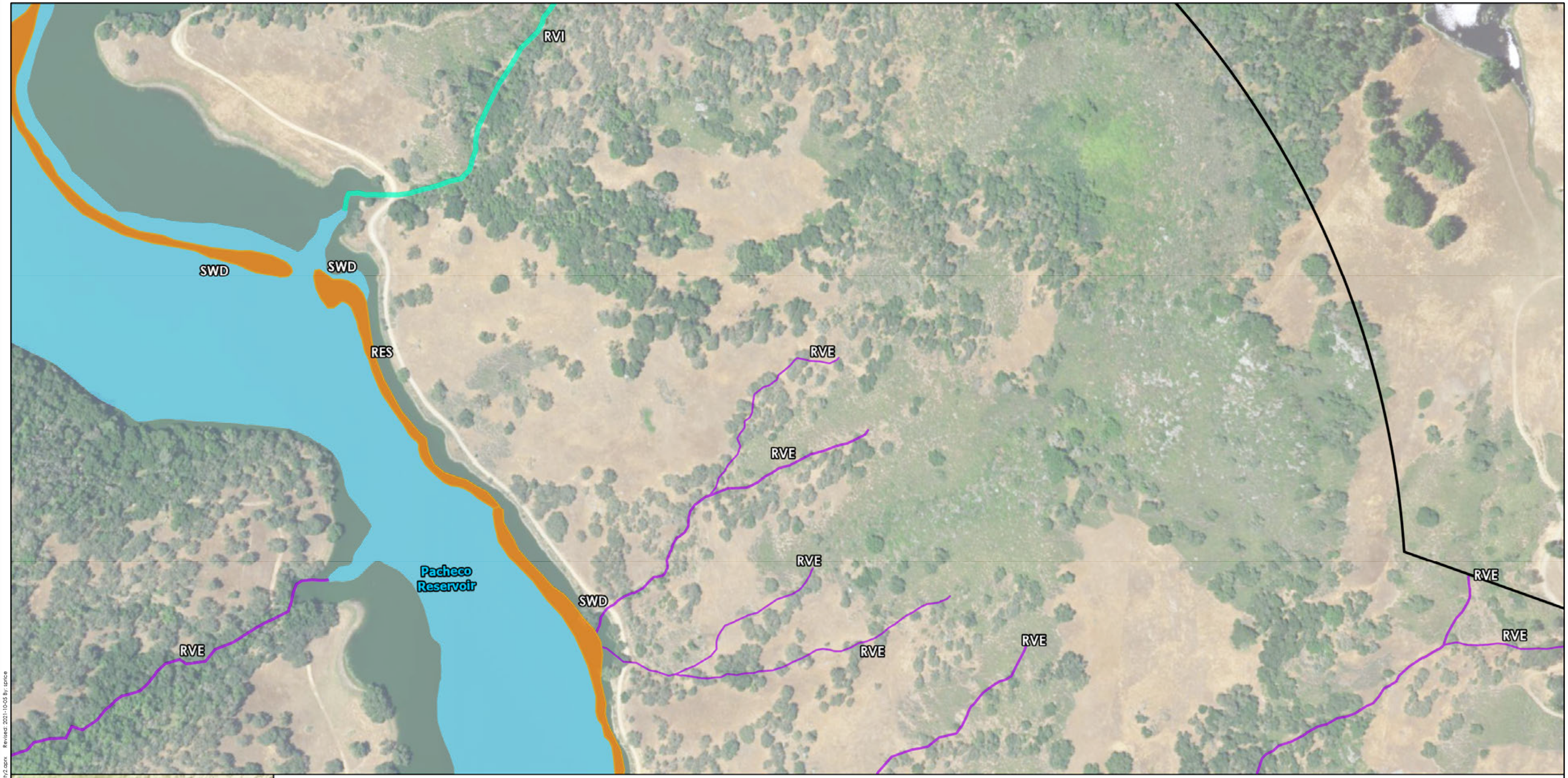

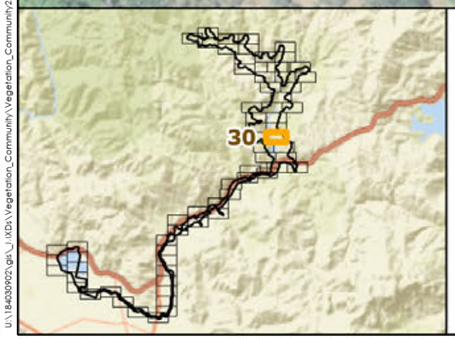

Pacheco Reservoir Expansion Project

Study Area

Aquatic Resource

- Reservoir (RES)
- Riverine Ephemeral (RVE)
- Riverine Intermittent (RVI)
- Seasonal Wetland (SWD)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources
(Page 30 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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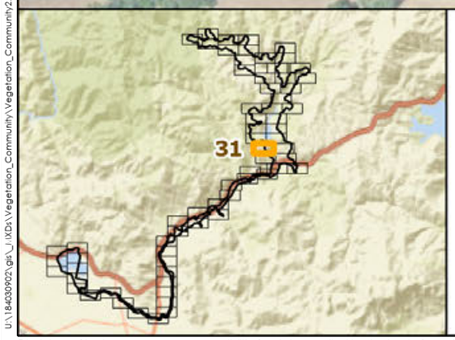
RVE
RVE
RVE
SWD
RES
Pacheco Reservoir
SWD
RVE



Pacheco Reservoir Expansion Project

Study Area

Aquatic Resource

- Reservoir (RES)
- Riverine Ephemeral (RVE)
- Seasonal Wetland (SWD)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources
(Page 31 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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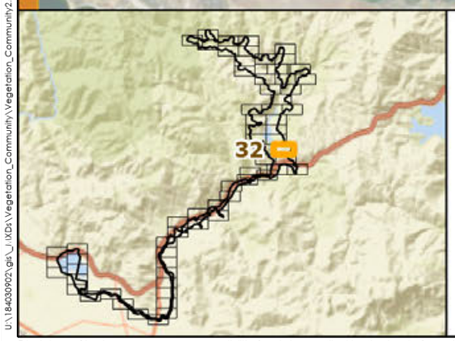
RVE
RVE
RVE
SWD
PND
SWD
SWD
SWD
SWD
RES
SWD
SWD
SWD
Pacheco Reservoir
RVE
SWD
SWD
RVE
RVE
SWD
RVE
SWD



Pacheco Reservoir Expansion Project

Study Area

Aquatic Resource

- Pond (PND)
- Reservoir (RES)
- Riverine Ephemeral (RVE)
- Seasonal Wetland (SWD)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 32 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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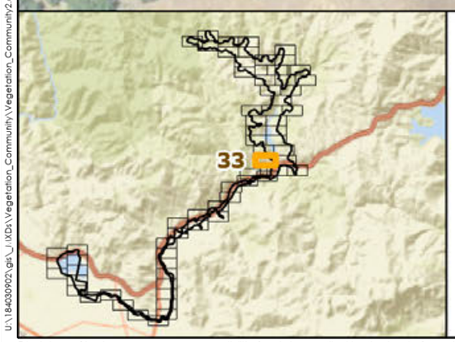

Pacheco Reservoir Expansion Project

Study Area

Aquatic Resource

- Pond (PND)
- Reservoir (RES)
- Riparian Wetland (RWD)
- Riverine Ephemeral (RVE)
- Seasonal Wetland (SWD)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources
(Page 33 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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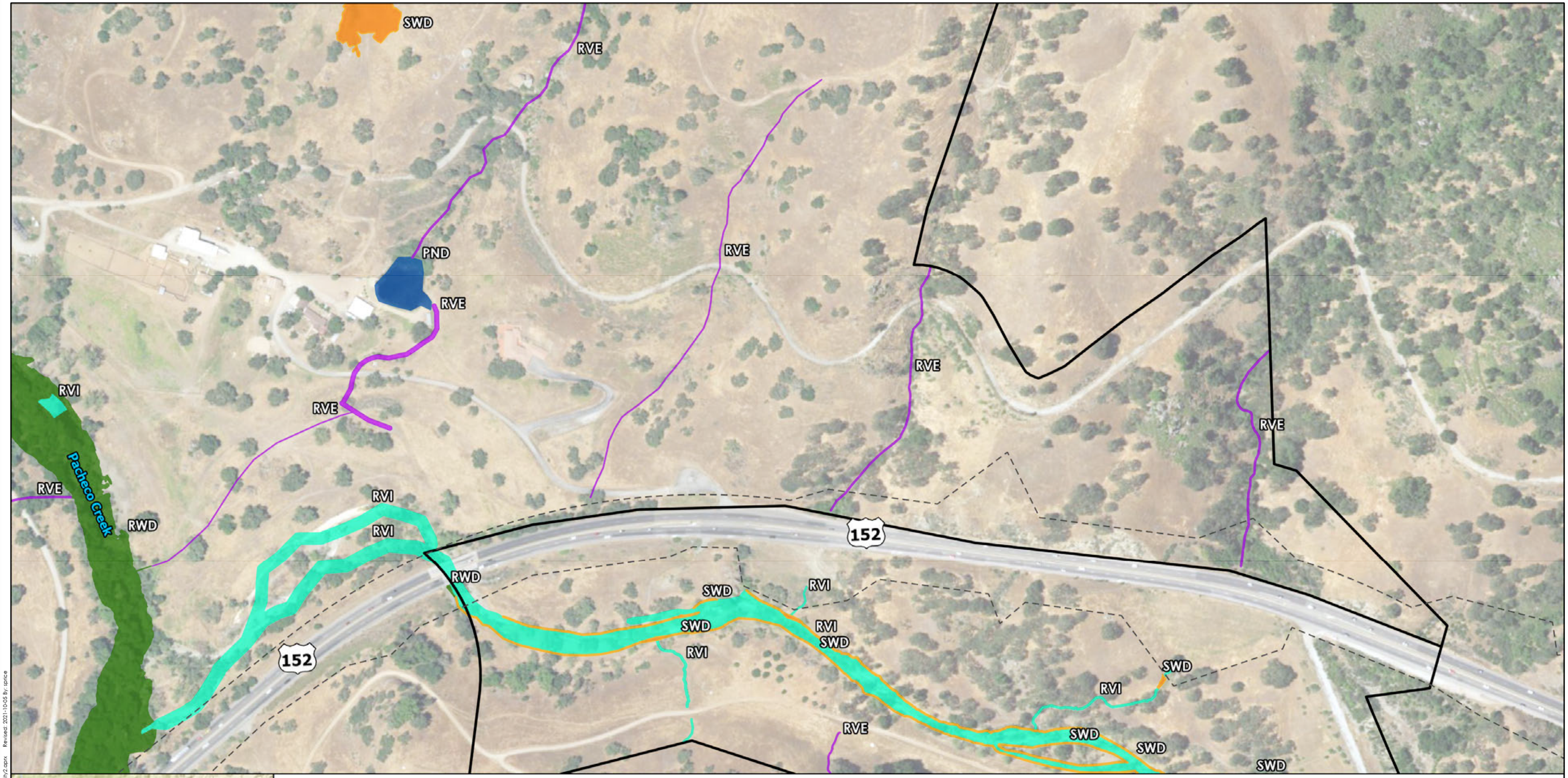

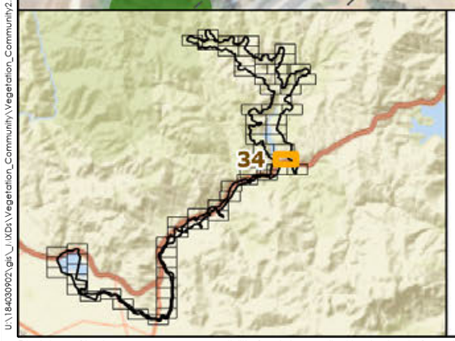

Pacheco Reservoir Expansion Project

Study Area

Caltrans Right-of-way

Aquatic Resource

- Pond (PND)
- Riparian Wetland (RWD)
- Riverine Ephemeral (RVE)
- Riverine Intermittent (RVI)
- Seasonal Wetland (SWD)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 34 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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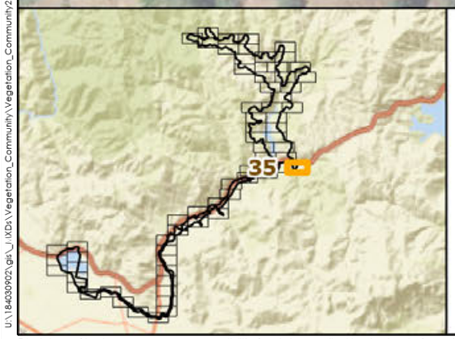

Pacheco Reservoir Expansion Project

Study Area

Caltrans Right-of-way

Aquatic Resource

- Riparian Wetland (RWD)
- Riverine Ephemeral (RVE)
- Riverine Intermittent (RVI)
- Seasonal Wetland (SWD)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 35 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

U:\186309\25_gis_LXDs\Vegetation_Community\Vegetation_Community2.aprx Revised: 2021-10-05 By: jprice

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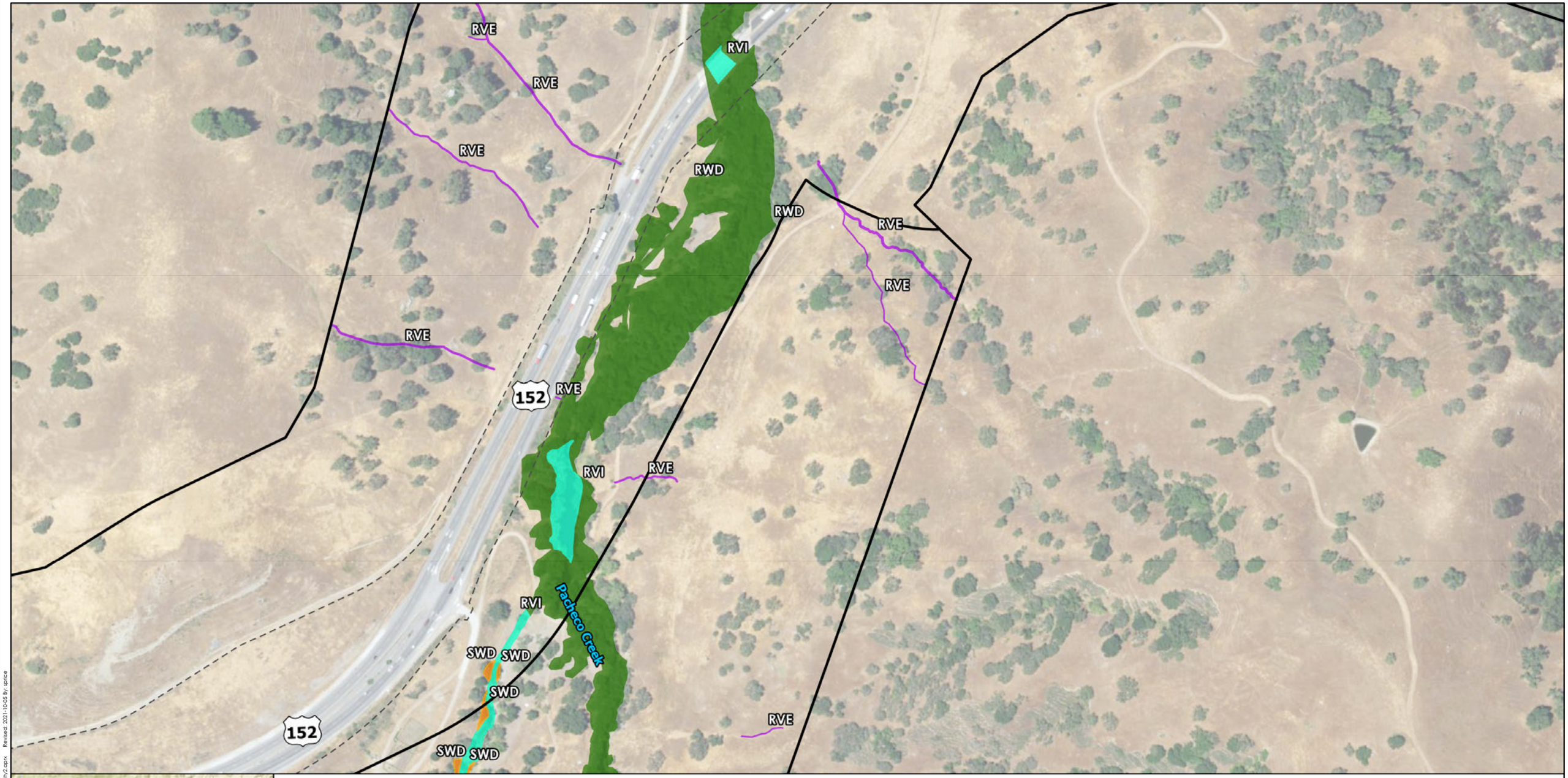

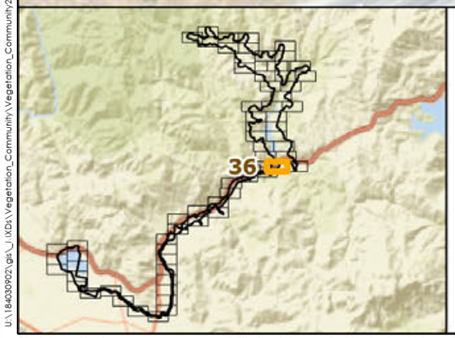

Pacheco Reservoir Expansion Project

Study Area

Caltrans Right-of-way

Aquatic Resource

- Riparian Wetland (RWD)
- Riverine Ephemeral (RVE)
- Riverine Intermittent (RVI)
- Seasonal Wetland (SWD)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 36 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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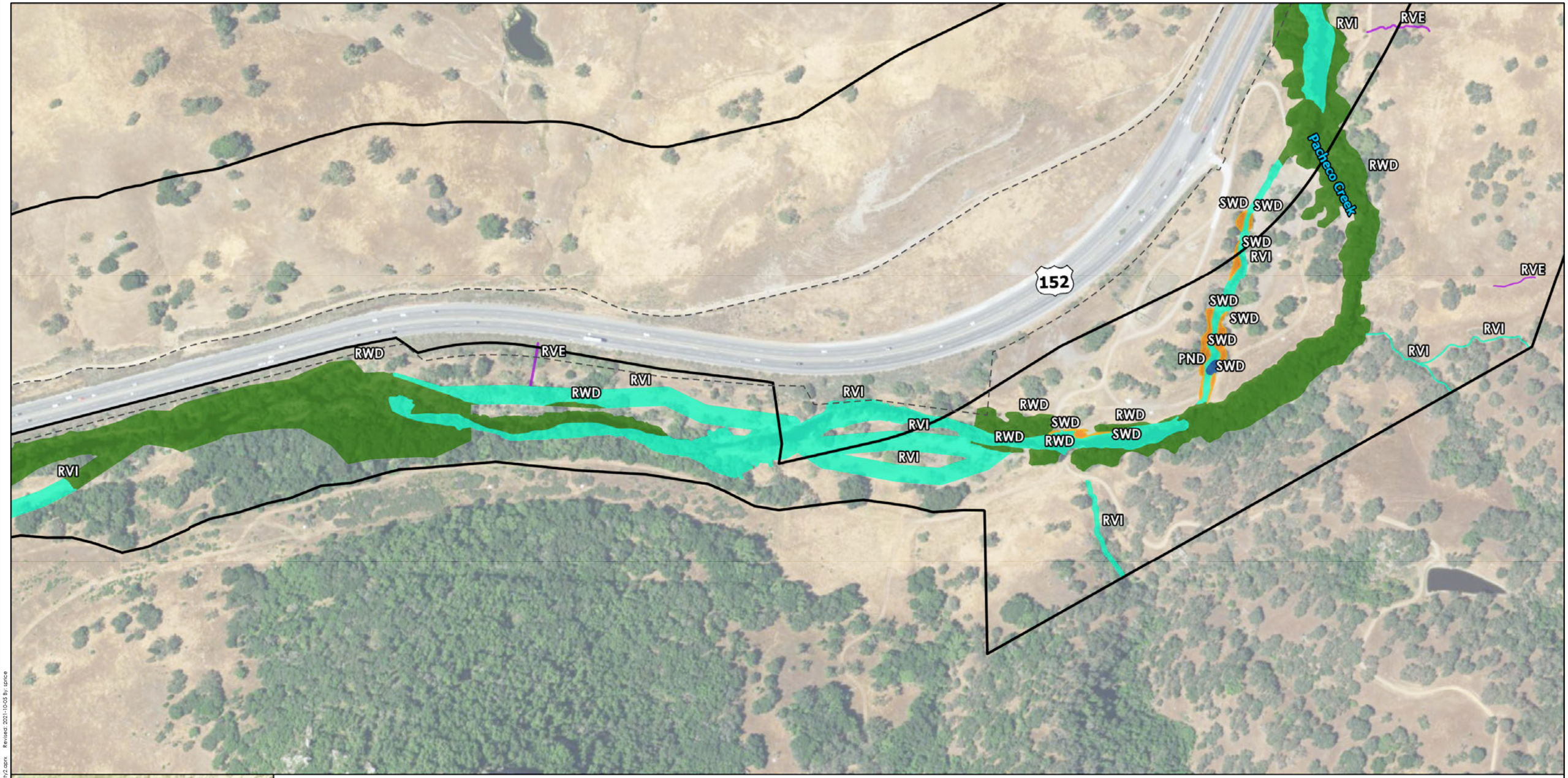

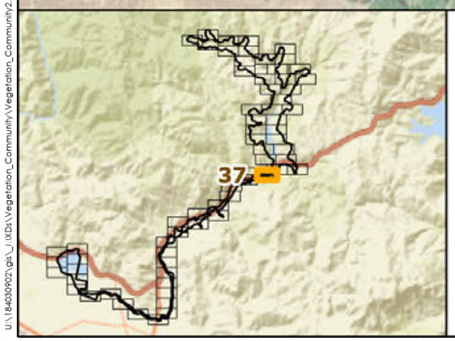

Pacheco Reservoir Expansion Project

Study Area

Caltrans Right-of-way

Aquatic Resource

- Pond (PND)
- Riparian Wetland (RWD)
- Riverine Ephemeral (RVE)
- Riverine Intermittent (RVI)
- Seasonal Wetland (SWD)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 37 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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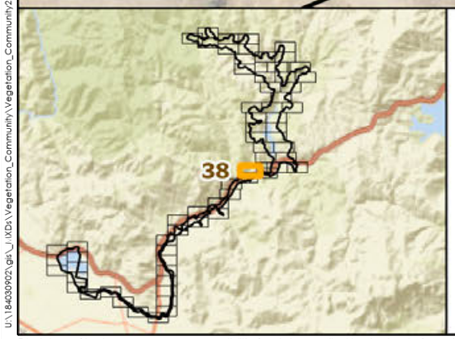

Pacheco Reservoir Expansion Project

Study Area

Caltrans Right-of-way

Aquatic Resource

Riparian Wetland (RWD)

Riverine Ephemeral (RVE)

Riverine Intermittent (RVI)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

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Appendix A : Aquatic Resources (Page 38 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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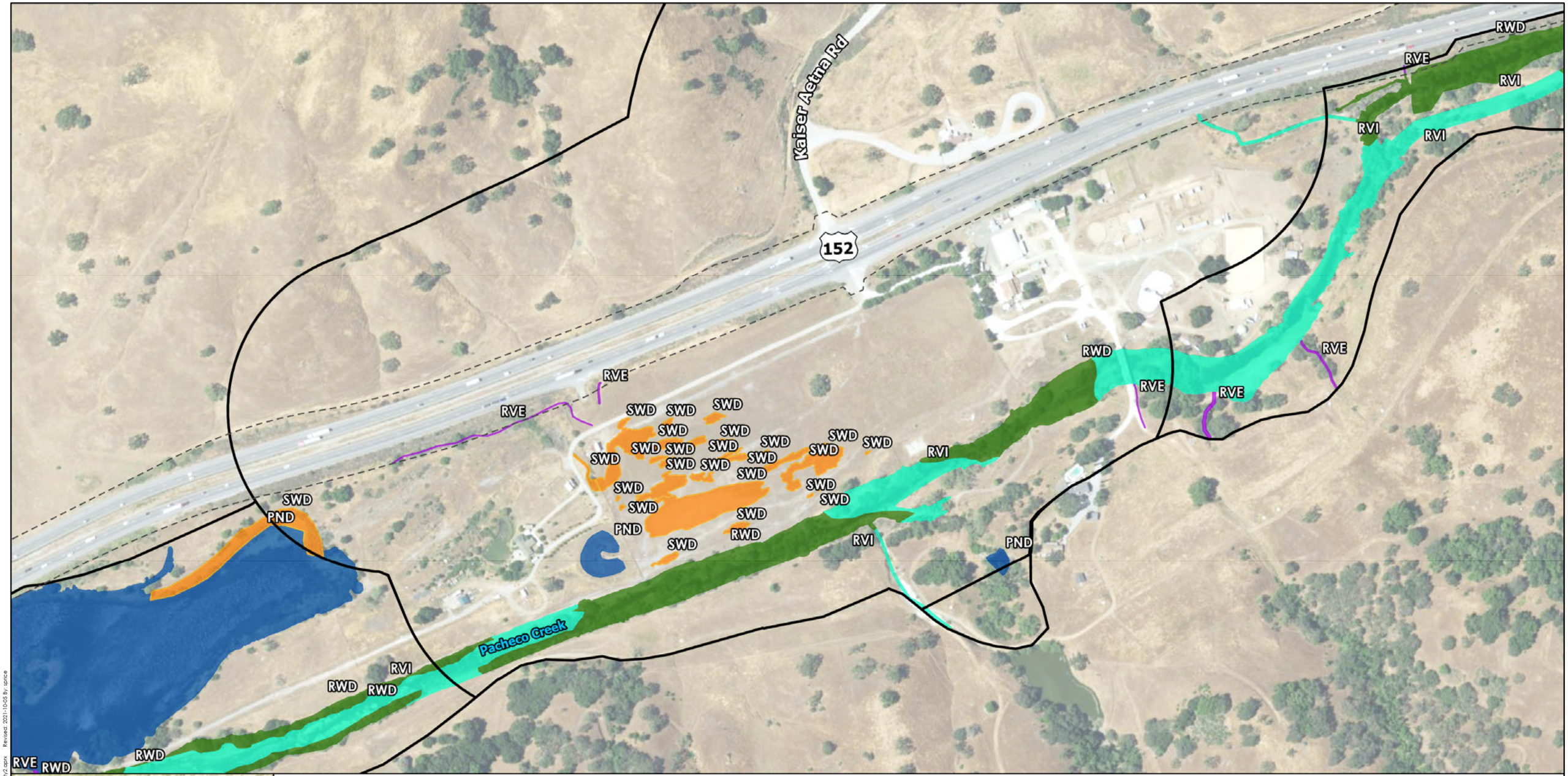

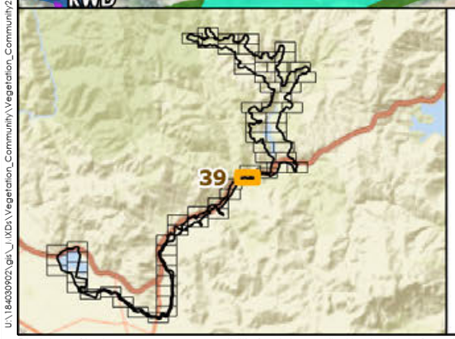

Pacheco Reservoir Expansion Project

Study Area

Caltrans Right-of-way

Aquatic Resource

- Pond (PND)
- Riparian Wetland (RWD)
- Riverine Ephemeral (RVE)
- Riverine Intermittent (RVI)
- Seasonal Wetland (SWD)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 39 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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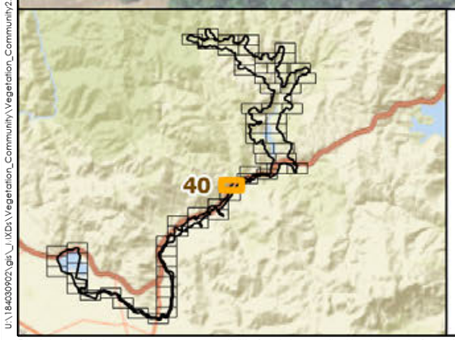

Pacheco Reservoir Expansion Project

Study Area

Caltrans Right-of-way

Aquatic Resource

- Pond (PND)
- Riparian Wetland (RWD)
- Riverine Ephemeral (RVE)
- Riverine Intermittent (RVI)
- Seasonal Wetland (SWD)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 40 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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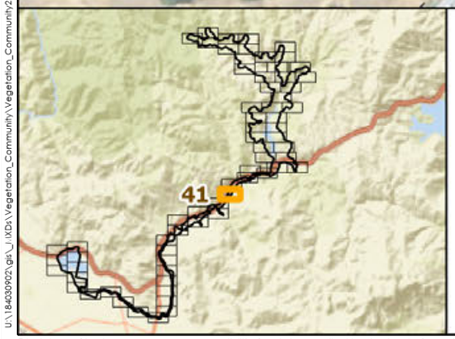

Pacheco Reservoir Expansion Project

Study Area

Caltrans Right-of-way

Aquatic Resource

Pond (PND)

Riparian Wetland (RWD)

Riverine Intermittent (RVI)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 41 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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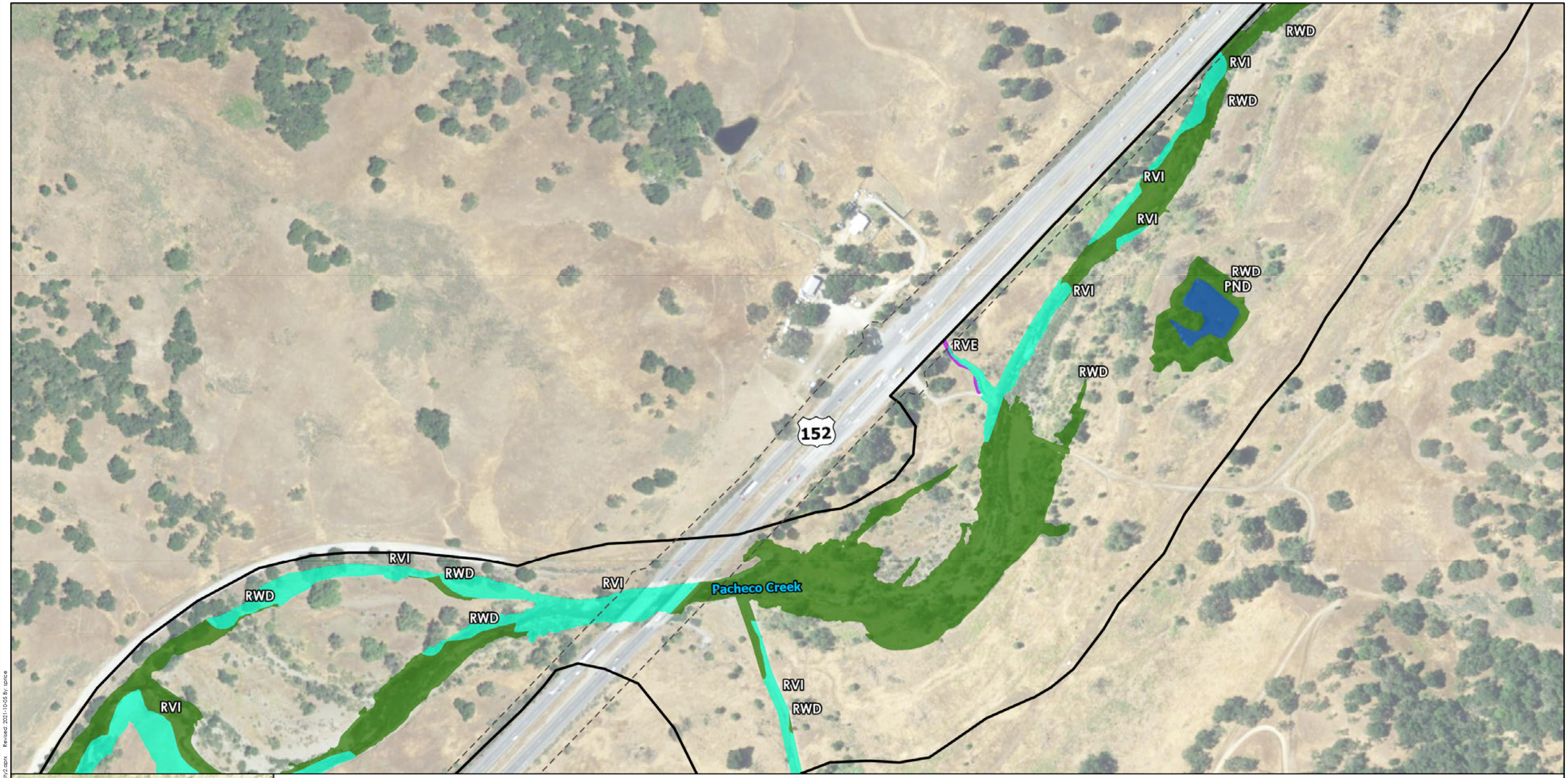

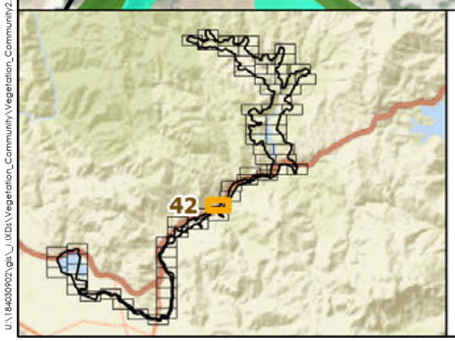

Pacheco Reservoir Expansion Project

Study Area

Caltrans Right-of-way

Aquatic Resource

- Pond (PND)
- Riparian Wetland (RWD)
- Riverine Ephemeral (RVE)
- Riverine Intermittent (RVI)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 42 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

U:\184309925.gis_U_IXDs\Vegetation_Community\Vegetation_Community2.aprx Revised: 2021-10-05 By: sprice

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RWD
RWD
RVI
152
RWD
RVI
RVE
RVE
43

Pacheco Reservoir Expansion Project

Study Area
Caltrans Right-of-way

Aquatic Resource

Riparian Wetland (RWD)
Riverine Ephemeral (RVE)
Riverine Intermittent (RVI)

Valley Water
AECOM
Stantec
GEI

N

0 300 600 Feet
1 in = 300 Feet

Appendix A : Aquatic Resources (Page 43 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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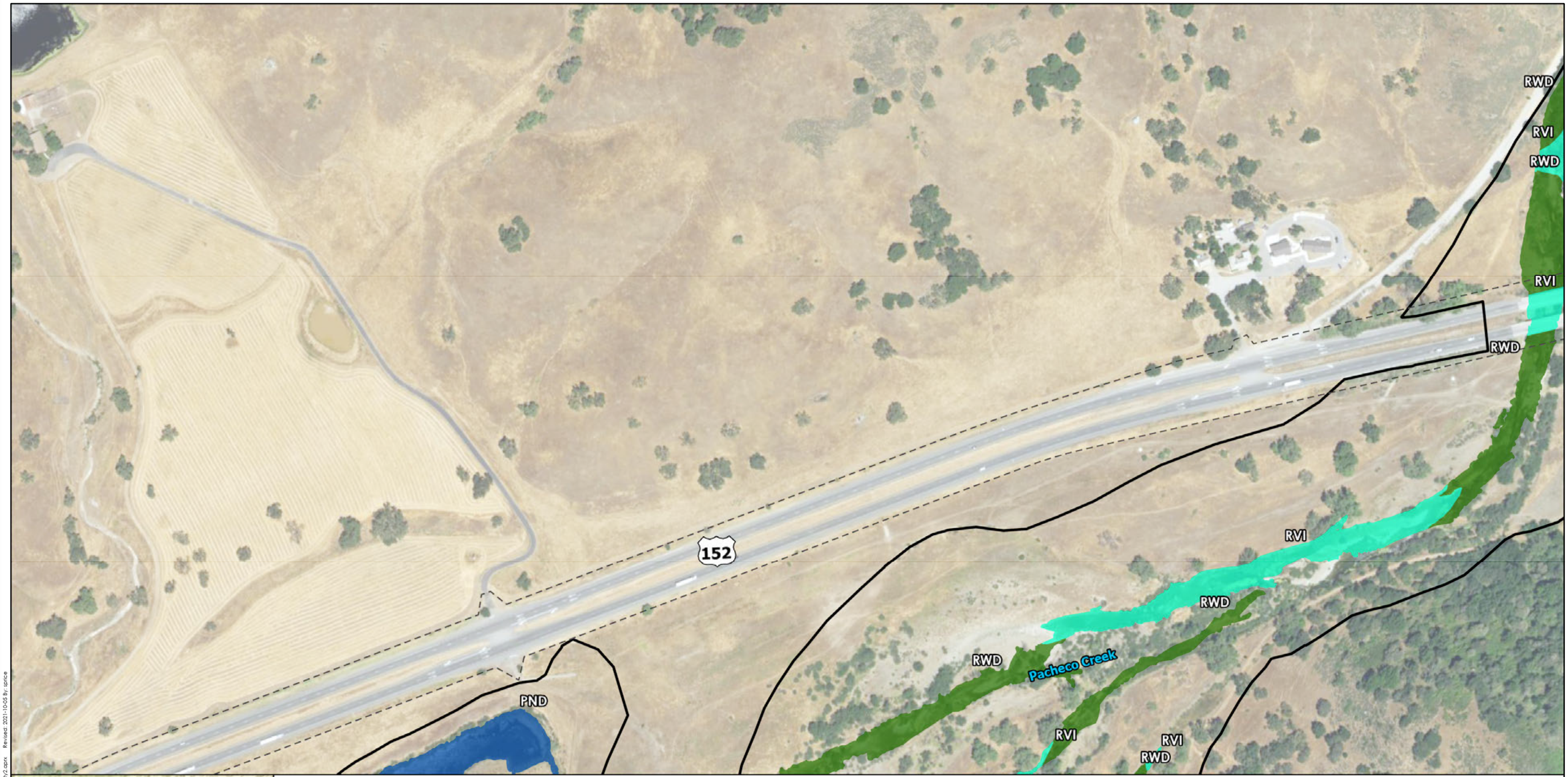

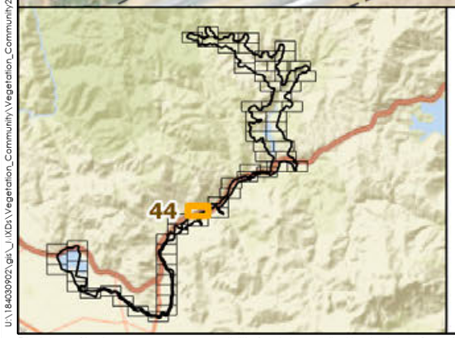

Pacheco Reservoir Expansion Project

- Study Area
- Caltrans Right-of-way

Aquatic Resource

- Pond (PND)
- Riparian Wetland (RWD)
- Riverine Intermittent (RVI)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 44 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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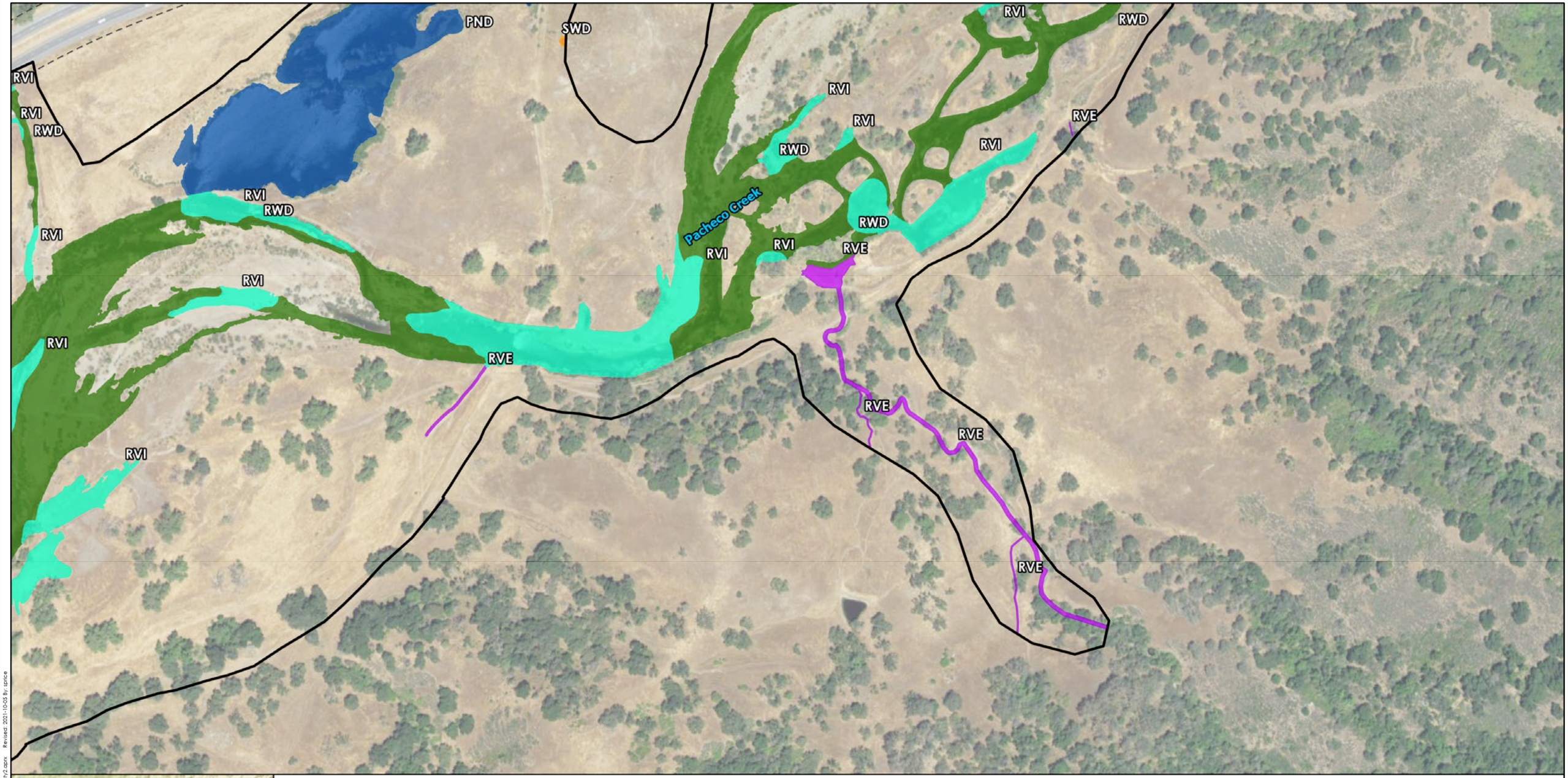

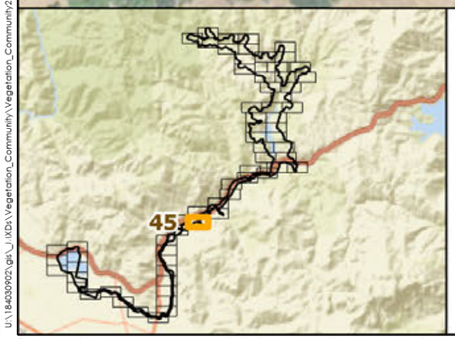

Pacheco Reservoir Expansion Project

Study Area

Caltrans Right-of-way

Aquatic Resource

- Pond (PND)
- Riparian Wetland (RWD)
- Riverine Ephemeral (RVE)
- Riverine Intermittent (RVI)
- Seasonal Wetland (SWD)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 45 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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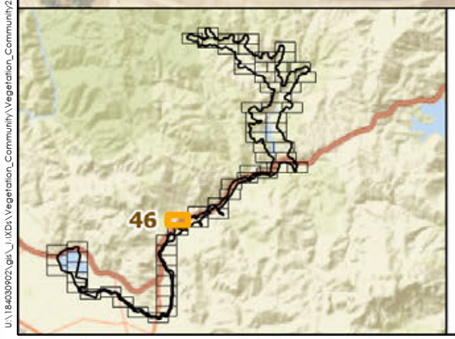

Pacheco Reservoir Expansion Project

Study Area

Caltrans Right-of-way

Aquatic Resource

Pond (PND)

Riparian Wetland (RWD)

Riverine Intermittent (RVI)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 46 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

U:\185403902\gis_MXDs\Vegetation_Community\Vegetation_Community2.mxd Revised: 2021-10-05 By: spruce

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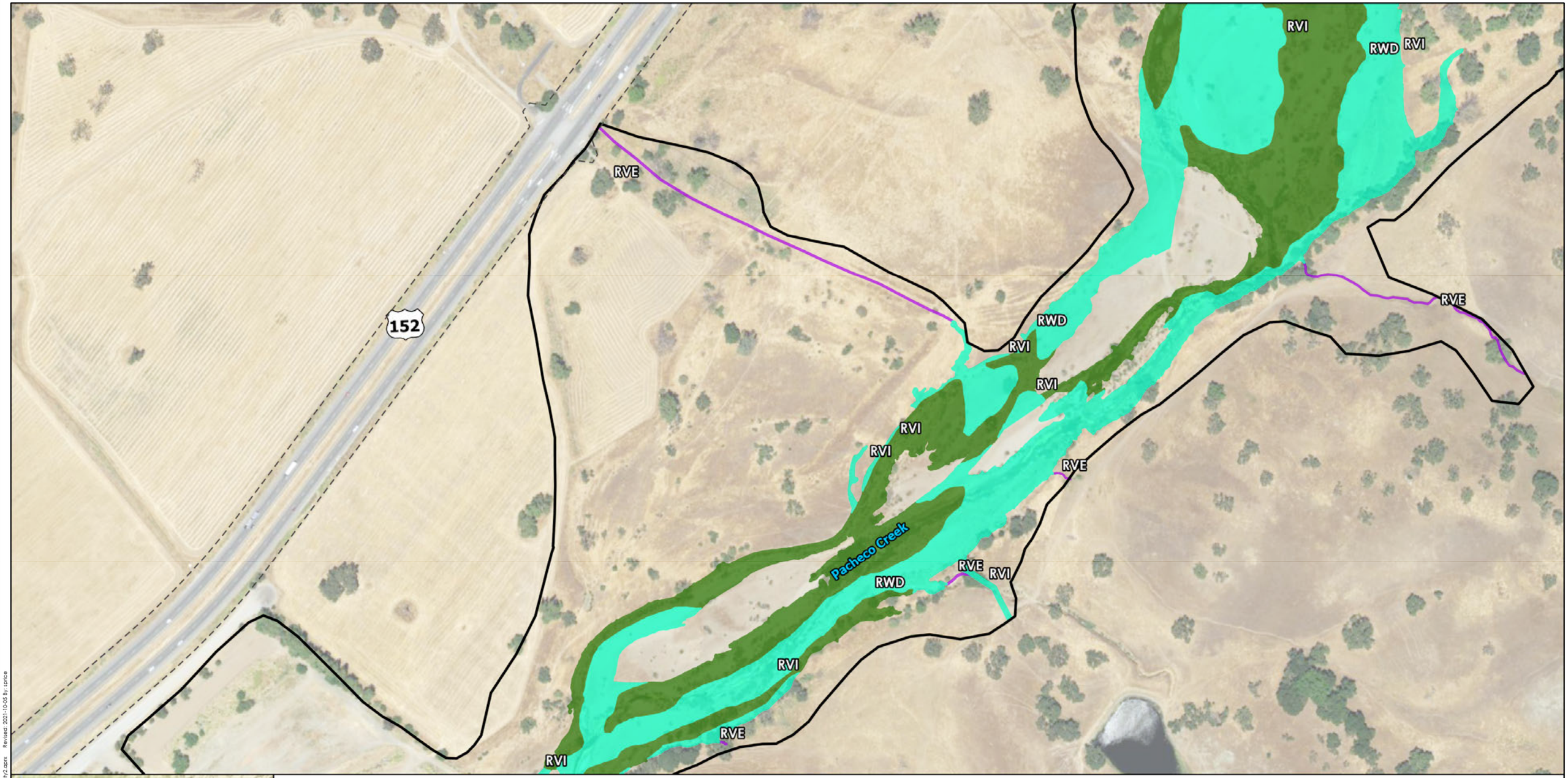

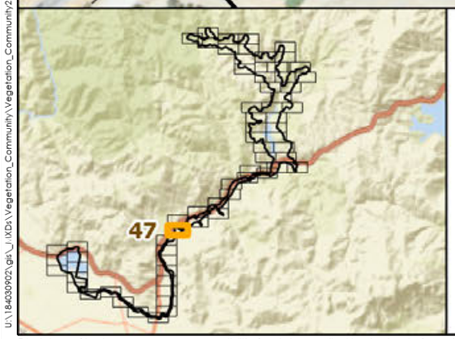

Pacheco Reservoir Expansion Project

Study Area

Caltrans Right-of-way

Aquatic Resource

Riparian Wetland (RWD)

Riverine Ephemeral (RVE)

Riverine Intermittent (RVI)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 47 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

U:\18430922\gis_l\MXD\Vegetation_Community\2.aprx Revised: 2021-10-05 By: sprice

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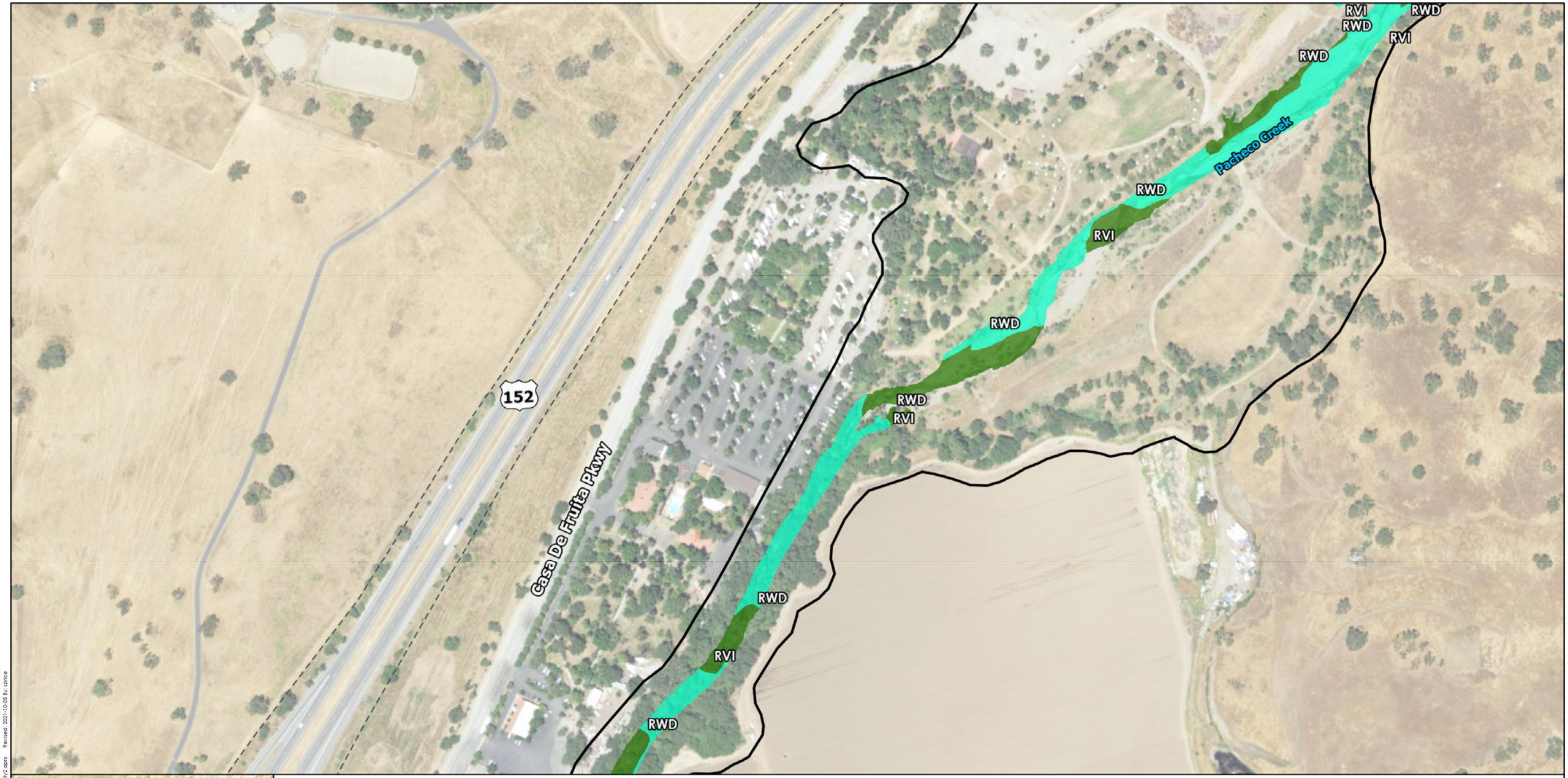

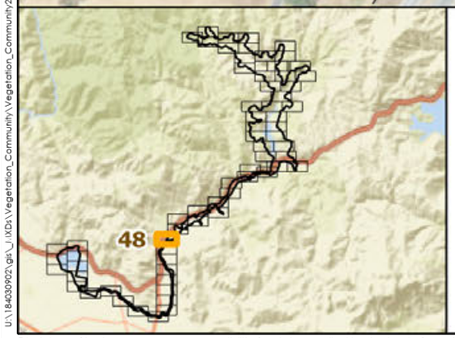

Pacheco Reservoir Expansion Project

Study Area

Caltrans Right-of-way

Aquatic Resource

Riparian Wetland (RWD)

Riverine Intermittent (RVI)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 48 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

U:\185403902\gis_MXDs\Vegetation_Community\Vegetation_Community2.aprx Revised: 2021-10-05 By: sprice

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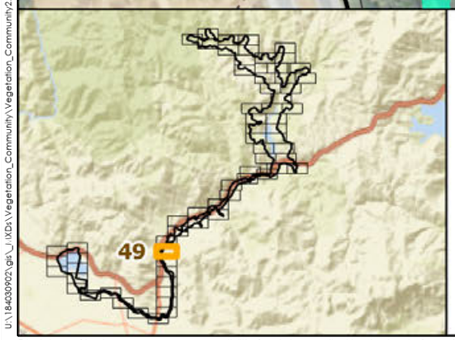

Pacheco Reservoir Expansion Project

Study Area

Caltrans Right-of-way

Aquatic Resource

- Pond (PND)
- Riparian Wetland (RWD)
- Riverine Intermittent (RVI)
- Seasonal Wetland (SWD)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 49 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

U:\184030923.gis_LXDs\Vegetation_Community\Vegetation_Community2.aprx Revised: 2021-10-05 By: spice

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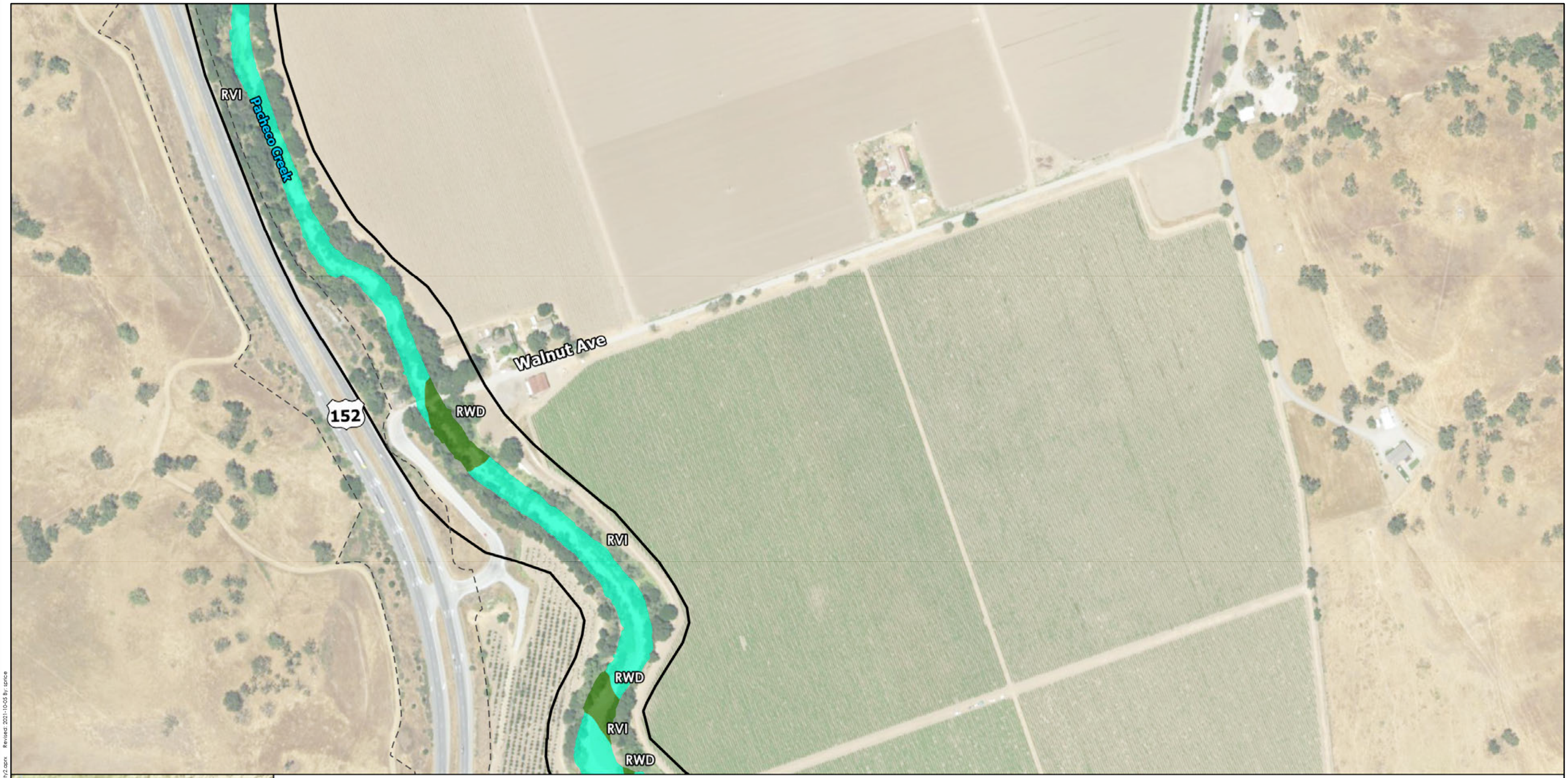

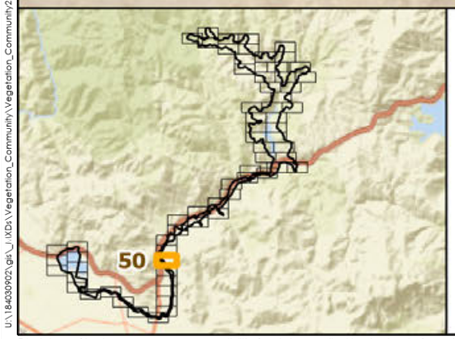

Pacheco Reservoir Expansion Project

Study Area

Caltrans Right-of-way

Aquatic Resource

Riparian Wetland (RWD)

Riverine Intermittent (RVI)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources
(Page 50 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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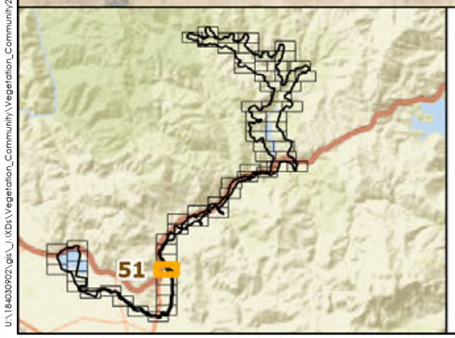

Pacheco Reservoir Expansion Project

Study Area

Caltrans Right-of-way

Aquatic Resource

Riparian Wetland (RWD)

Riverine Intermittent (RVI)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 51 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

U:\184309921\gis_MXDs\Vegetation_Community\Vegetation_Community2.aprx Revised: 2021-10-05 By: sprice

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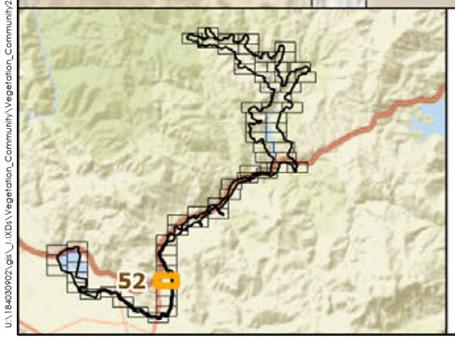

Pacheco Reservoir Expansion Project

Study Area

Caltrans Right-of-way

Aquatic Resource

Riparian Wetland (RWD)

Riverine Intermittent (RVI)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 52 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

U:\186439923.gis_LXDs\Vegetation_Community\Vegetation_Community2.aprx Revised: 2021-10-05 By: spice

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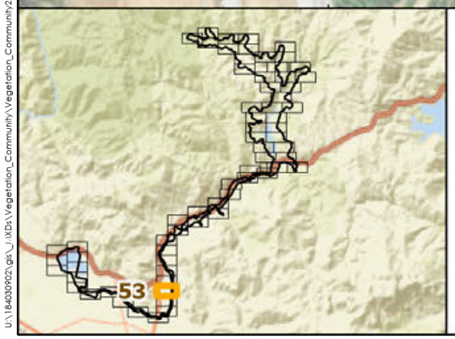

Pacheco Reservoir Expansion Project

Study Area

Caltrans Right-of-way

Aquatic Resource

Riparian Wetland (RWD)

Riverine Intermittent (RVI)

Seasonal Wetland (SWD)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 53 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

U:\185630922\gis_MXDs\Vegetation_Community\Vegetation_Community2.aprx Revised: 2021-10-05 By: spruce

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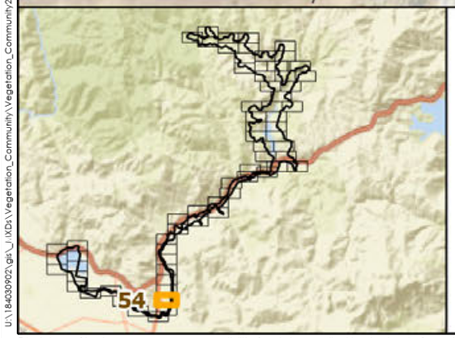

Pacheco Reservoir Expansion Project

Study Area

Caltrans Right-of-way

Aquatic Resource

Riparian Wetland (RWD)

Riverine Intermittent (RVI)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 54 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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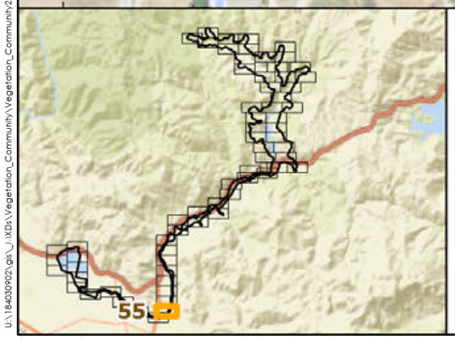

Pacheco Reservoir Expansion Project

Study Area

Caltrans Right-of-way

Aquatic Resource

Riparian Wetland (RWD)

Riverine Intermittent (RVI)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 55 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

U:\18453892\gis_MXDs\Vegetation_Community\Vegetation_Community2.aprx Revised: 2021-10-05 By: spice

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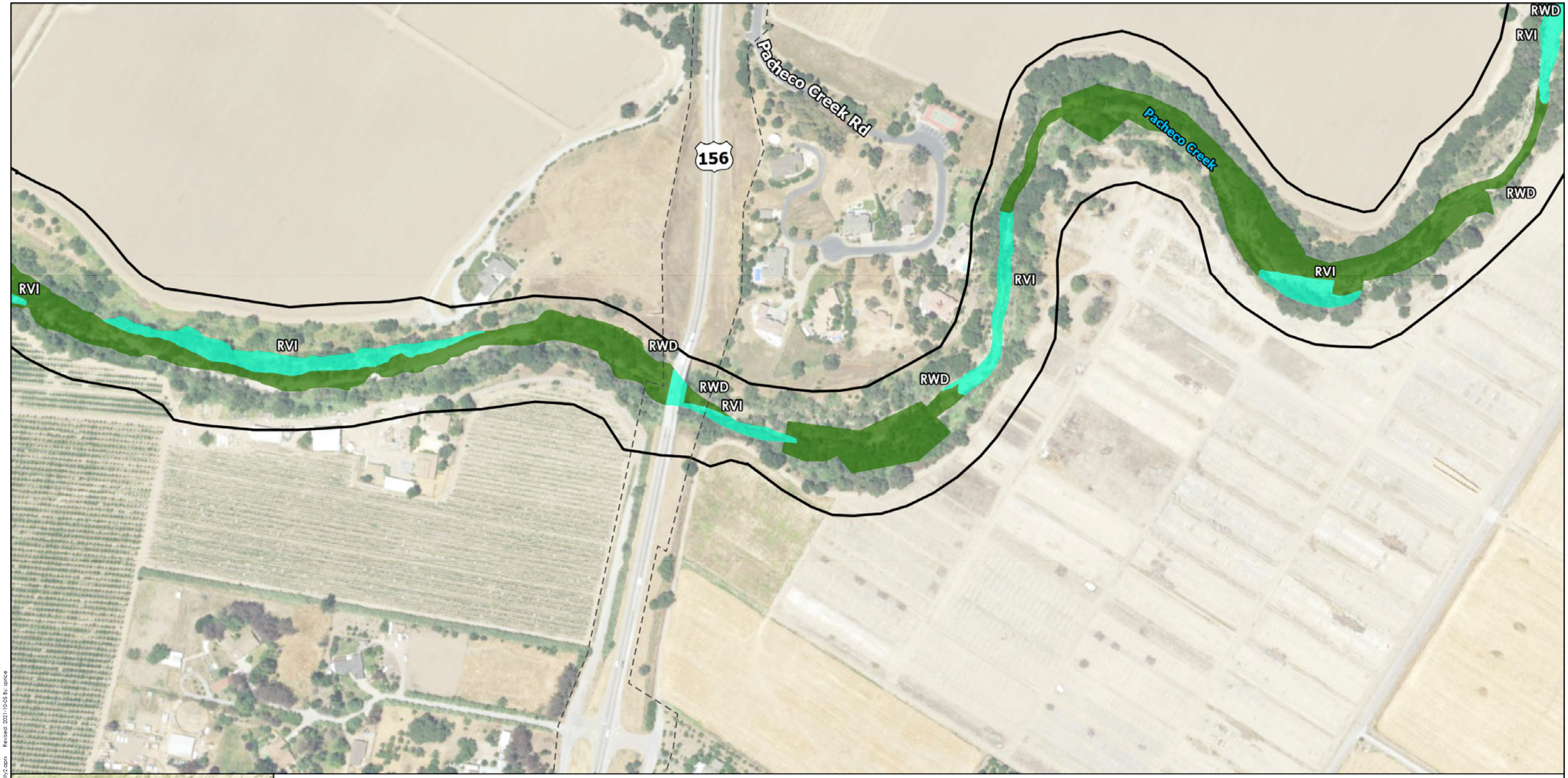

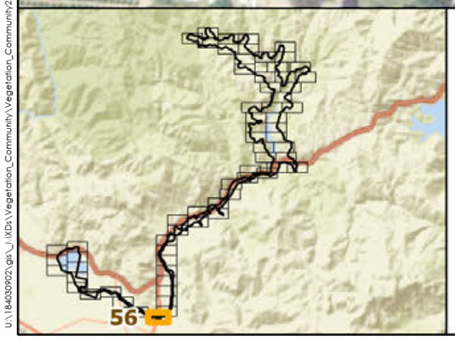

Pacheco Reservoir Expansion Project

Study Area

Caltrans Right-of-way

Aquatic Resource

Riparian Wetland (RWD)

Riverine Intermittent (RVI)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 56 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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Pacheco Creek

RWD

RVE

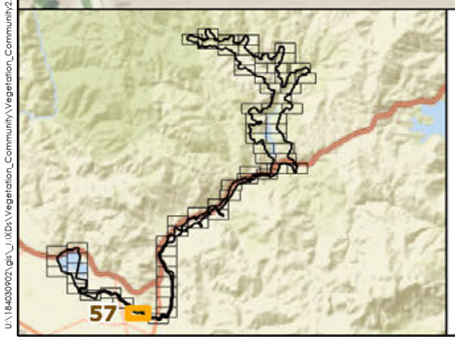
RWD

RVI

RWD

RWD

RWD



Pacheco Reservoir Expansion Project

Study Area

Aquatic Resource

- Riparian Wetland (RWD)
- Riverine Ephemeral (RVE)
- Riverine Intermittent (RVI)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 57 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

U:\185403902\gis_UXDs\Vegetation_Community\Vegetation_Community2.aprx - Revised: 2021-10-05 By: spruce

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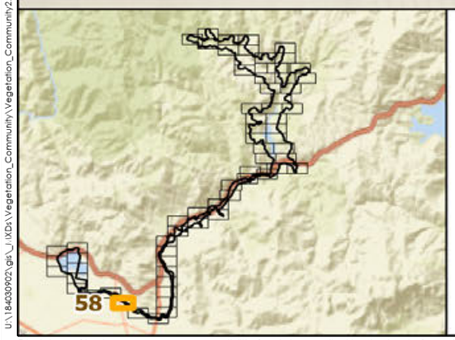

Pacheco Reservoir Expansion Project

Study Area

Aquatic Resource

Riparian Wetland (RWD)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 58 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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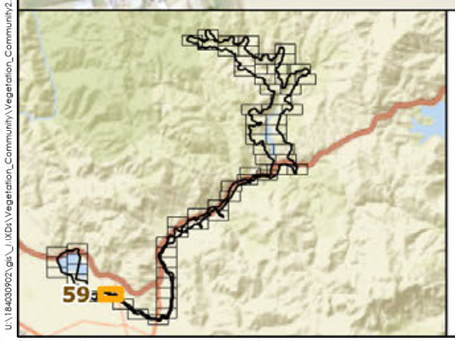
RVI
RWD
RVI
SANTA CLARA
SAN BENITO
San Felipe Rd
RVI
Pacheco Creek
RWD
Lovers Ln
59



Pacheco Reservoir Expansion Project

Study Area

Aquatic Resource

- Riparian Wetland (RWD)
- Riverine Intermittent (RVI)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 59 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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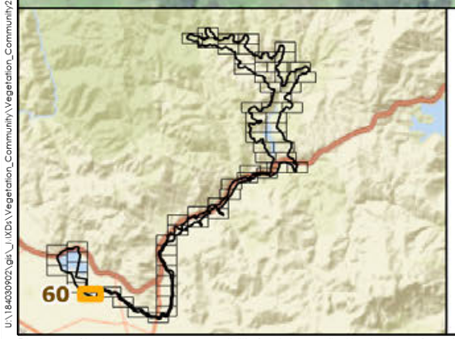

Pacheco Reservoir Expansion Project

Study Area

Aquatic Resource

- Riparian Wetland (RWD)
- Riverine Intermittent (RVI)
- Seasonal Wetland (SWD)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 60 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

U:\185439921\gis_MXDs\Vegetation_Community\2.aprx Revised: 2021-10-05 By: sprice

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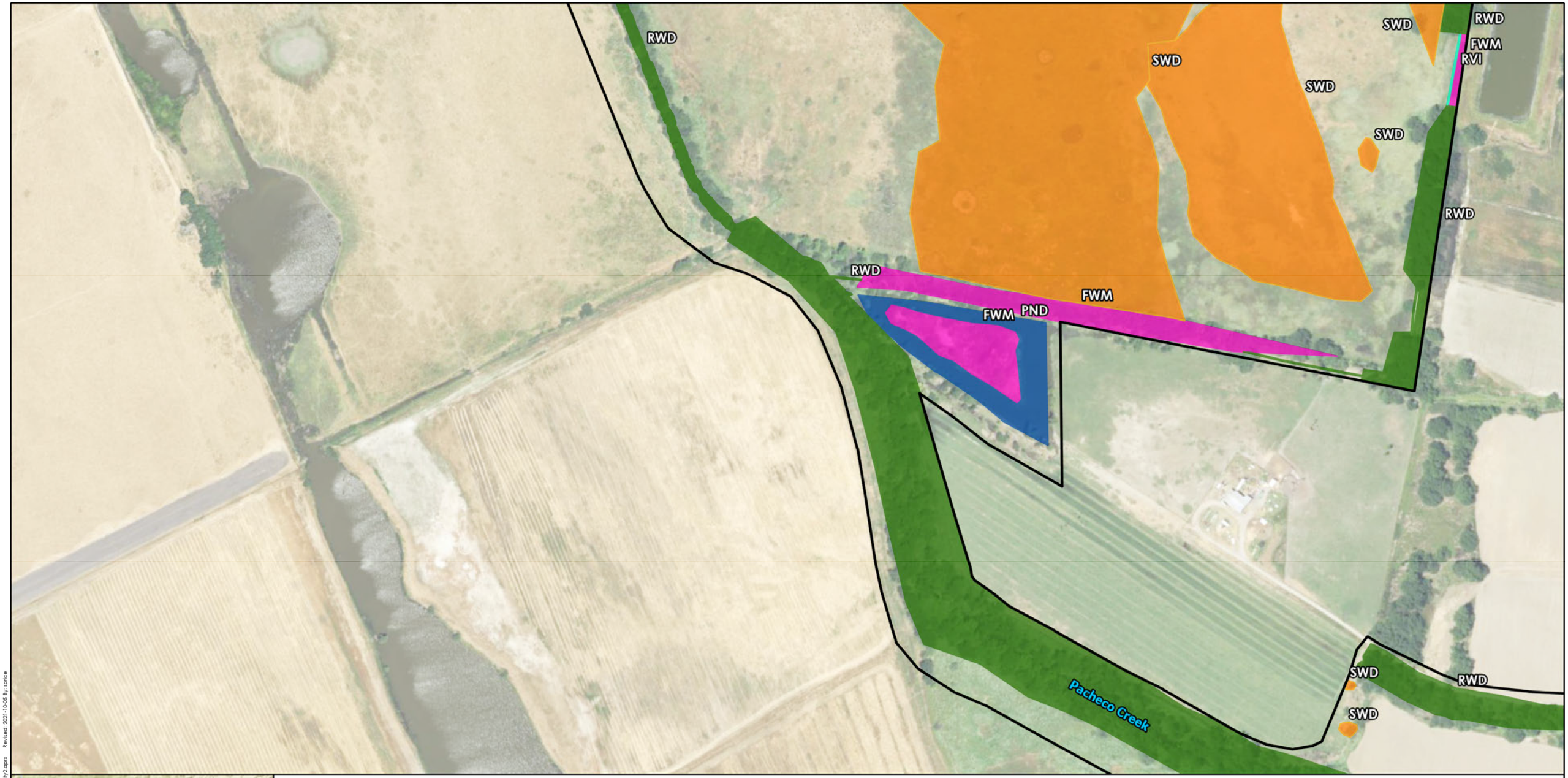

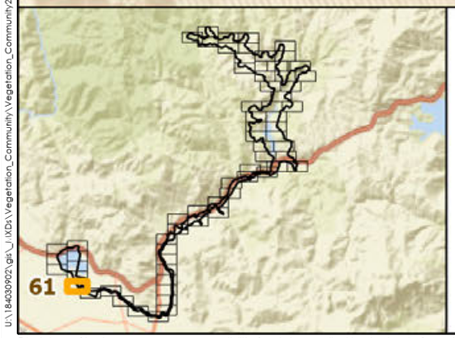

Pacheco Reservoir Expansion Project

Study Area

Aquatic Resource

- Freshwater Marsh
- Pond (PND)
- Riparian Wetland (RWD)
- Riverine Intermittent (RVI)
- Seasonal Wetland (SWD)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources
(Page 61 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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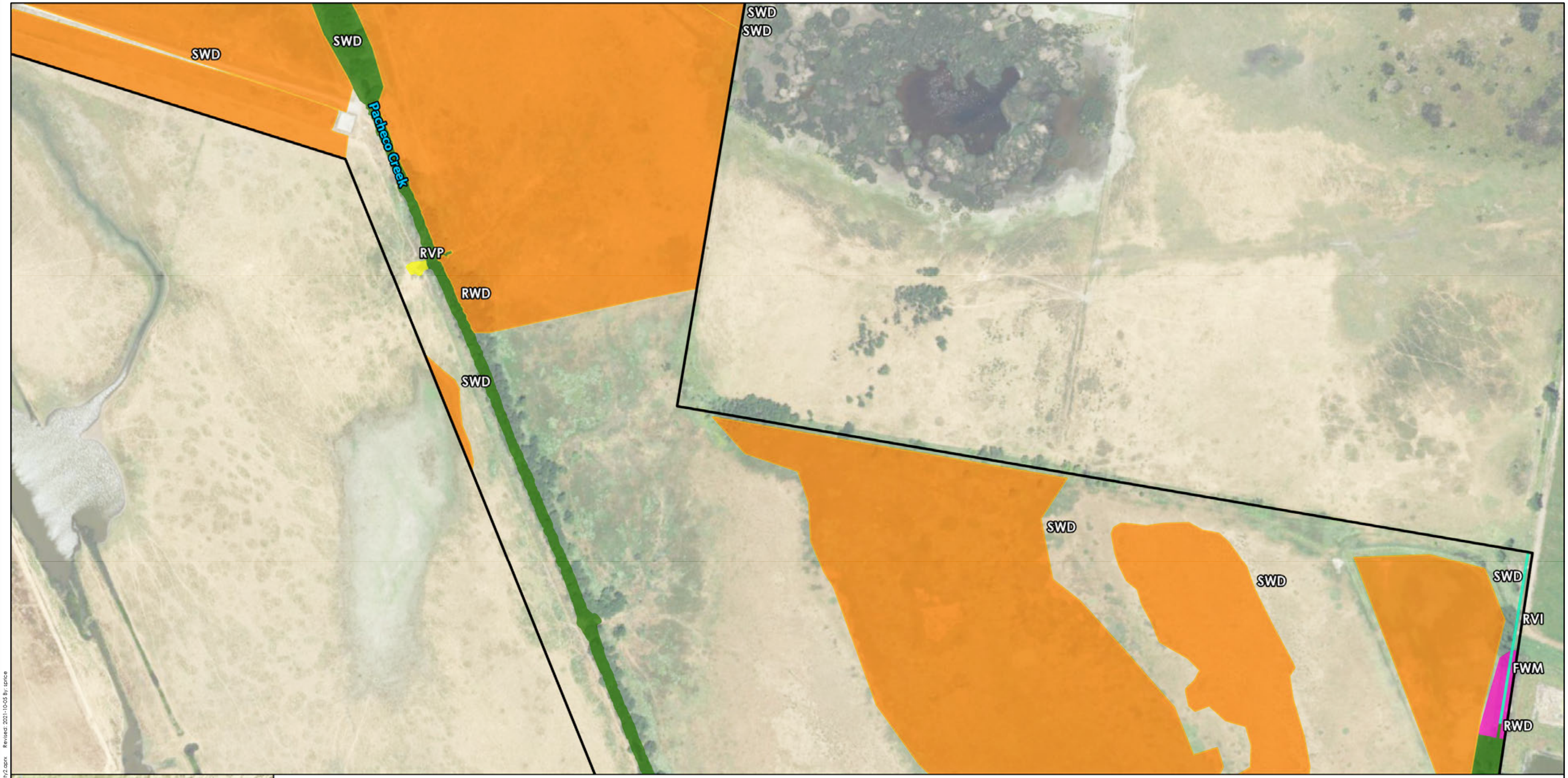

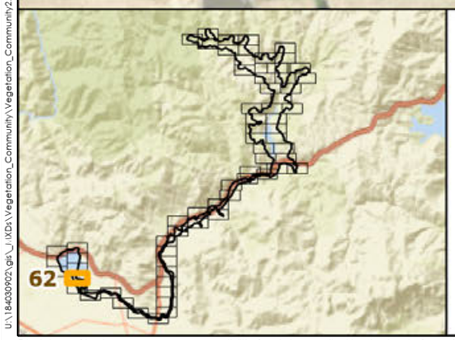

Pacheco Reservoir Expansion Project

Study Area

Aquatic Resource

- Freshwater Marsh
- Riparian Wetland (RWD)
- Riverine Intermittent (RVI)
- Riverine Perennial (RVP)
- Seasonal Wetland (SWD)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources
(Page 62 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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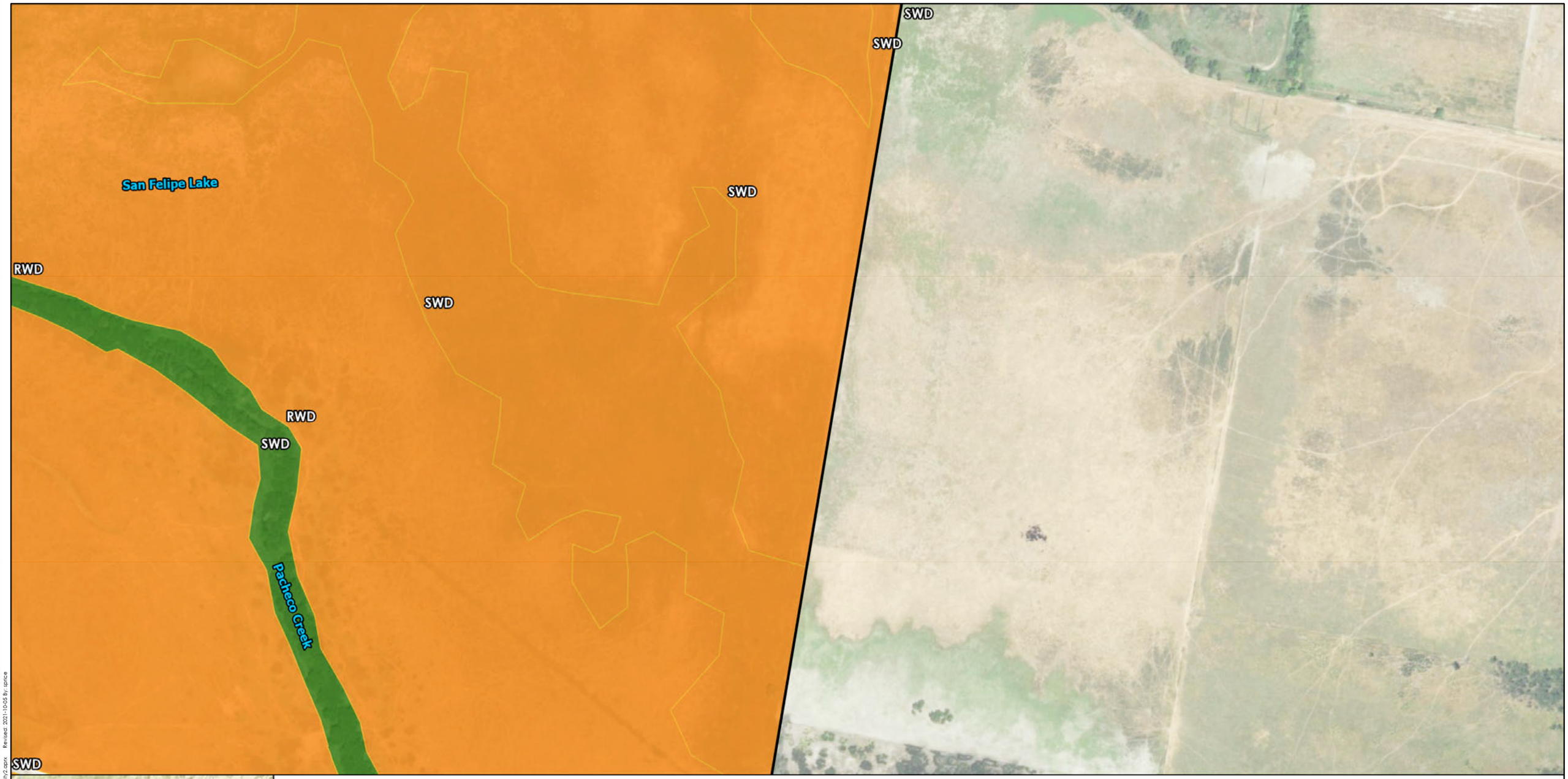

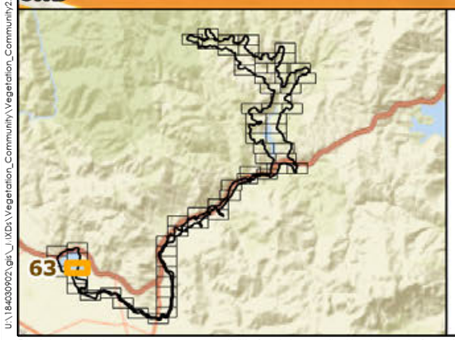

Pacheco Reservoir Expansion Project

Study Area

Aquatic Resource

Riparian Wetland (RWD)

Seasonal Wetland (SWD)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 63 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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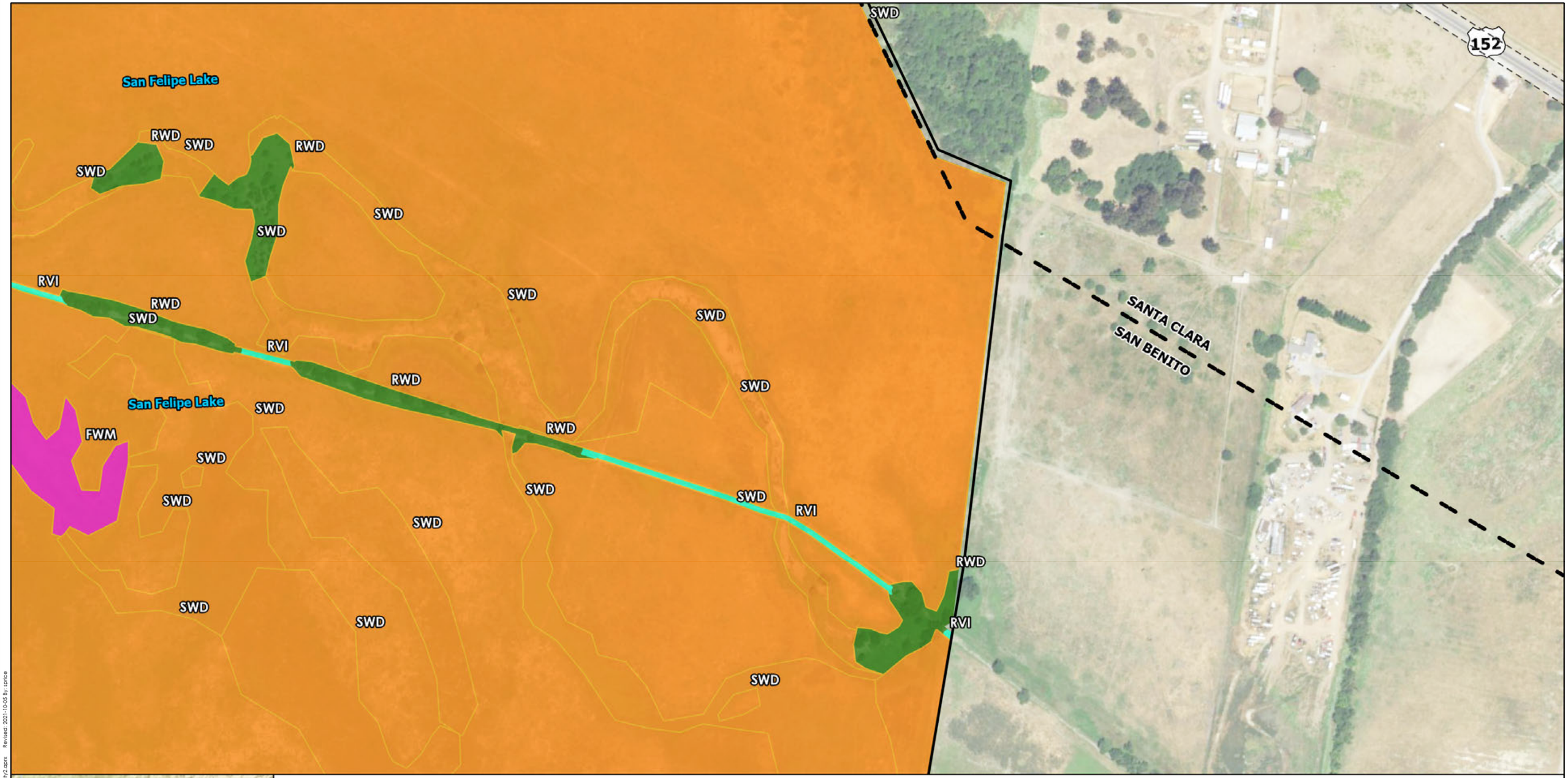

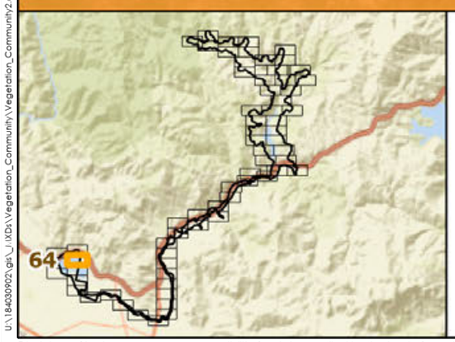

Pacheco Reservoir Expansion Project

Study Area

Caltrans Right-of-way

Aquatic Resource

- Freshwater Marsh
- Riparian Wetland (RWD)
- Riverine Intermittent (RVI)
- Seasonal Wetland (SWD)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 64 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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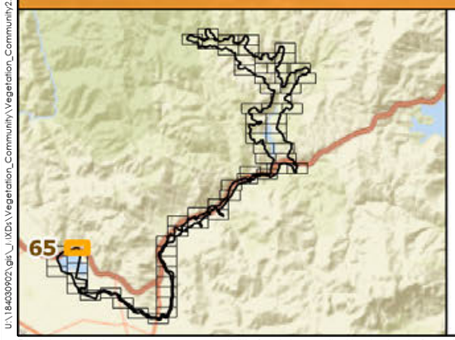
SWD

SANTA CLARA

SAN BENITO

152

RWD



Pacheco Reservoir Expansion Project

Study Area

Caltrans Right-of-way

Aquatic Resource

Riparian Wetland (RWD)

Seasonal Wetland (SWD)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 65 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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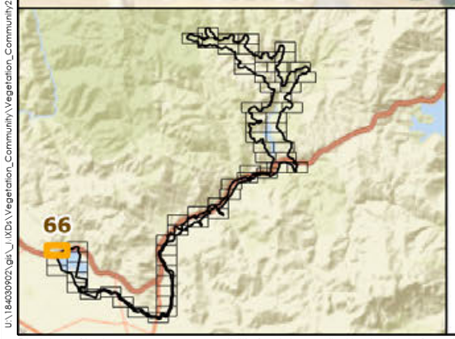

Pacheco Reservoir Expansion Project

Study Area

Caltrans Right-of-way

Aquatic Resource

- Freshwater Marsh
- Reservoir (RES)
- Riparian Wetland (RWD)
- Riverine Intermittent (RVI)
- Seasonal Wetland (SWD)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 66 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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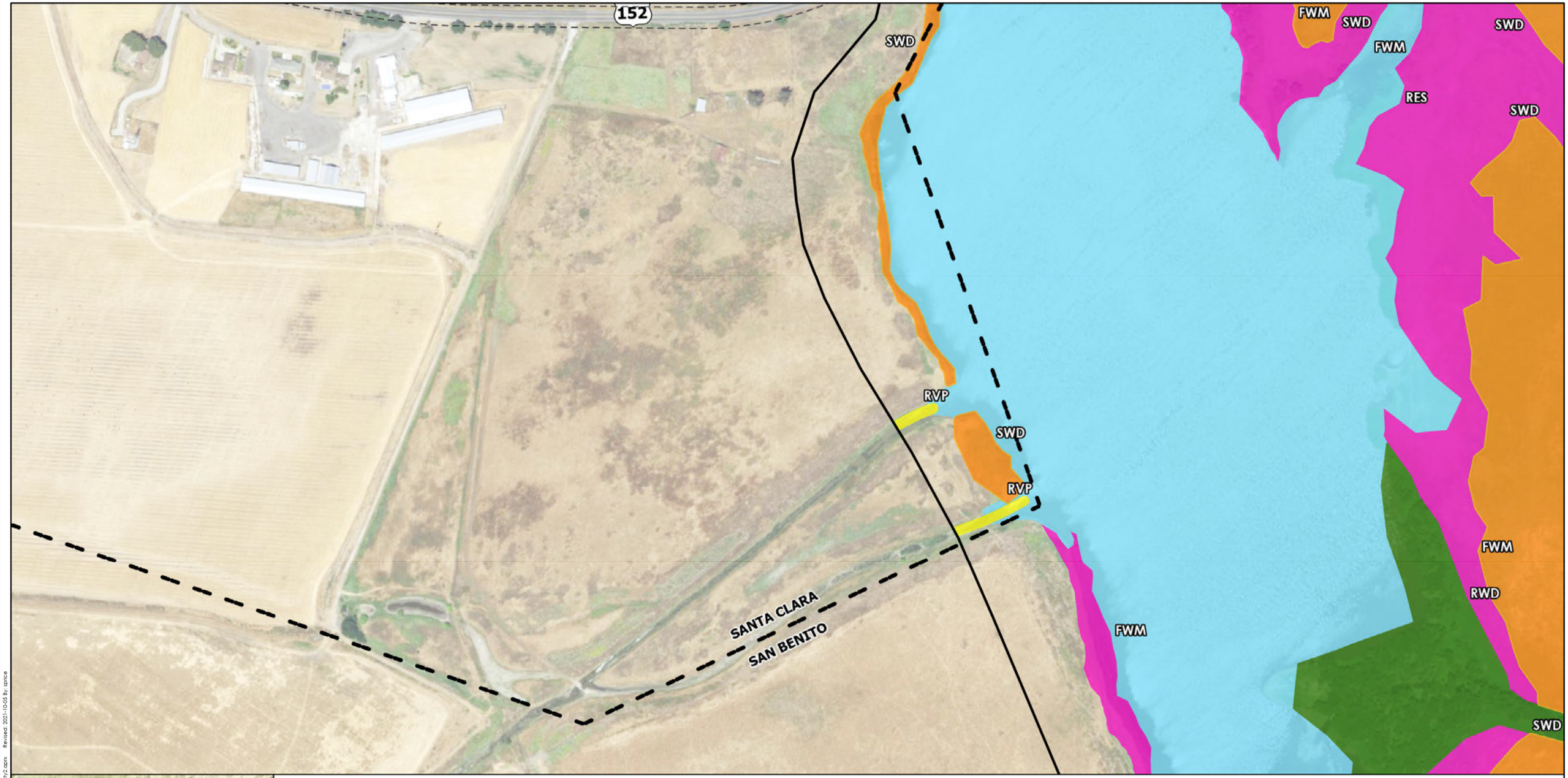

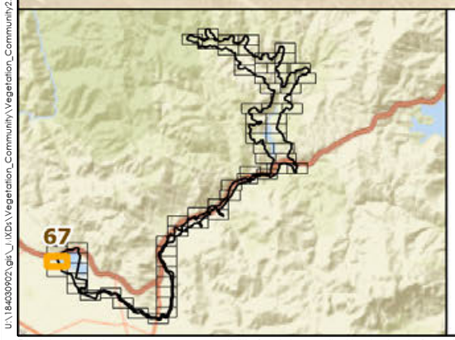

Pacheco Reservoir Expansion Project

Study Area

Caltrans Right-of-way

Aquatic Resource

- Freshwater Marsh
- Reservoir (RES)
- Riparian Wetland (RWD)
- Riverine Perennial (RVP)
- Seasonal Wetland (SWD)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix A : Aquatic Resources (Page 67 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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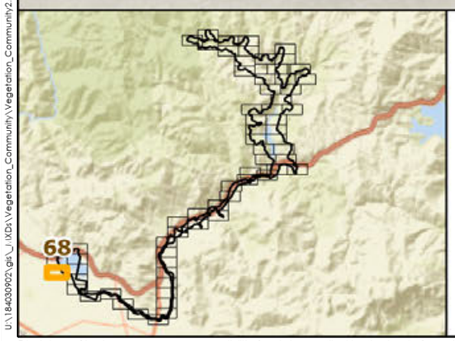

Pacheco Reservoir Expansion Project

Study Area

Aquatic Resource

- Freshwater Marsh
- Reservoir (RES)
- Riparian Wetland (RWD)
- Riverine Perennial (RVP)
- Seasonal Wetland (SWD)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

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Appendix A : Aquatic Resources
(Page 68 of 68)

Prepared by SCP: October 05, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

U:\186439902\gis_MXDs\Vegetation_Community\Vegetation_Community2.mxd Revised: 2021-10-05 By: sprice

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Appendix

Biological Resources – Botanical/Wildlife

Attachment C

Aquatic Resources Delineation

Exhibit B

Photos

Pacheco Reservoir Expansion Project

November 2021



Source: Ascent Environmental

Photo 1. Representative photo of North Fork Pacheco Creek facing upstream (DP PC2). Photo taken October 29, 2019.



Source: Ascent Environmental

Photo 2. Representative photo of North Fork Pacheco Creek facing downstream (DP NFPC3). Photo taken September 24, 2019.



Source: Ascent Environmental

Photo 3. Representative photo of Pacheco Creek near Casa de Fruta facing downstream (DP PC8). Photo taken December 2, 2019.



Source: Ascent Environmental

Photo 4. Representative photo of Pacheco Creek's low flow channel facing downstream (DP PC10a). Photo taken December 4, 2019.



Source: Ascent Environmental

Photo 5. Representative photo of a side channel of Pacheco Creek facing upstream (DP PC10d). Photo taken December 4, 2019.



Source: Ascent Environmental

Photo 6. Representative photo of East Fork Pacheco Creek facing upstream (DP EFPC2b). Photo taken February 11, 2020.



Source: Ascent Environmental

Photo 7. Representative photo of Pine Canyon Creek facing upstream (DP PSCC). This intermittent drainage is tributary to Pacheco Creek. Photo taken September 25, 2019.



Source: Ascent Environmental

Photo 8. Representative photo of Bullhead Canyon Creek facing downstream (DP BCC1). This intermittent drainage is tributary to Pacheco Creek. Photo taken September 9, 2019.



Source: Ascent Environmental

Photo 9. Representative photo of Cow Canyon Creek facing upstream (DP CCC). This intermittent drainage is tributary to Pacheco Creek. Photo taken September 24, 2019.



Source: Ascent Environmental

Photo 10. Representative photo of Coon Creek facing downstream (DP Coon Creek 202). This intermittent drainage is tributary to Pacheco Creek. Photo taken September 10, 2019.



Source: Ascent Environmental

Photo 11. Representative photo of an unnamed ephemeral drainage (RVE-49) facing upstream (DP 70). The unnamed drainage is tributary to North Fork Pacheco Creek. Photo taken September 18, 2019.



Source: Ascent Environmental

Photo 12. Unnamed outlet (RVI-5) of O'Connor Ranch Reservoir facing upstream (DP 100). Photo taken September 17, 2019.



Source: Ascent Environmental

Photo 13. Representative photo of an unnamed intermittent drainage (RVI-13) facing upstream (DP 224). The unnamed drainage is tributary to North Fork Pacheco Creek. Photo taken September 10, 2019.



Source: Ascent Environmental

Photo 14. Representative photo of an unnamed intermittent drainage (RVI-39) facing downstream (DP 499). The unnamed drainage is tributary to East Fork Pacheco Creek and contains freshwater emergent wetland within the OHWM. Photo taken February 11, 2020.



Source: Ascent Environmental

Photo 15. Representative photo of an unnamed ephemeral drainage (RVE-266) facing downstream (DP 485). The unnamed drainage is tributary to East Fork Pacheco Creek. Photo taken February 11, 2020.



Source: Ascent Environmental

Photo 16. Representative photo of a riparian wetland (RWD-11) along Ortega Creek within the San Felipe Lake floodplain, facing north (DP 6008-W). Photo taken December 11, 2019.



Source: Ascent Environmental

Photo 17. Representative photo of a riparian wetland (RWD-13) along an unnamed canal south of Ortega Creek, facing northwest (DP 320). Photo taken December 11, 2019.



Source: Ascent Environmental

Photo 18. Representative photo of an unnamed freshwater pond (PND-21) adjacent to Pacheco Creek (DP 371). The pond contains an island in the middle that supports freshwater marsh (FWM-1; DP 6001-W). Photo taken December 10, 2019.



Source: Ascent Environmental

Photo 19: Representative photo of a riparian wetland (RW-3) adjacent to Pacheco Creek. Wetland DP 6 and upland DP 7 are shown in the photo. Photo taken facing east on May 21, 2019.



Source: Ascent Environmental

Photo 20 . Photo of a suspect area confirmed to be non-wetland. Photo taken facing northeast on May 8, 2020.



Source: Ascent Environmental

Photo 21. Representative photo of a seasonal wetland (SWD-64) south of Highway 152 (DP 6013-W). Photo taken facing east on December 12, 2019.



Source: Ascent Environmental

Photo 22. Representative photo of Tequisquita Slough with San Felipe Lake in the background facing northwest (DP 4006-W). Photo taken October 31, 2019.



Source: Ascent Environmental

Photo 23 . Representative photo of a seasonal wetland (SWD-96) adjacent to San Felipe Lake facing north (DP 3002-W). Photo taken October 28, 2019.



Source: Ascent Environmental

Photo 24. Representative seasonal wetland soil pit within the San Felipe Lake area (DP 3002-W). Photo taken October 28, 2019.



Source: Ascent Environmental

Photo 24. Representative photo of Pacheco Reservoir. Cocklebur wetland (SWD-32) occurs along the margins of Pacheco Reservoir in the foreground (DP 7017). Photo taken facing southwest April 1, 2020.



Source: Ascent Environmental

Photo 25. Representative photo of a freshwater emergent wetland within the OHWM of an unnamed intermittent drainage (RVI-10; DP 2004-W). Photo taken September 11, 2019.



Source: Ascent Environmental

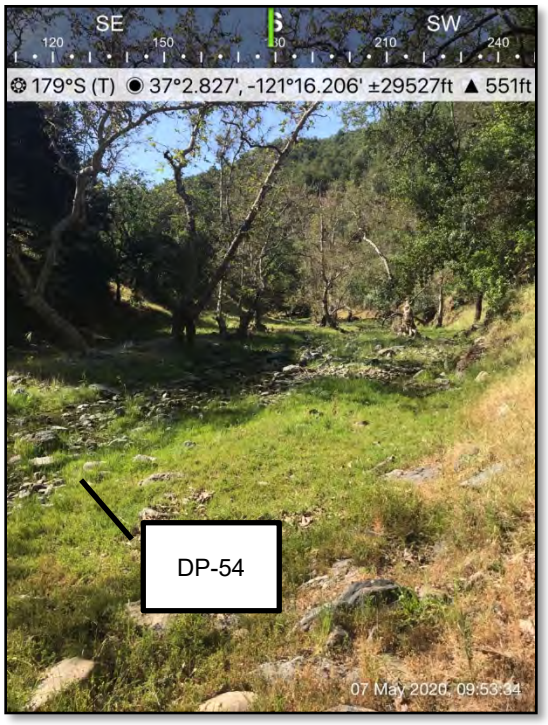
Photo 26. Representative photo of a seasonal wetland (SWD-80) dominated by pickleweed (*Salicornia* sp.) within the San Felipe Lake area. Photo taken facing southeast on December 11, 2019.



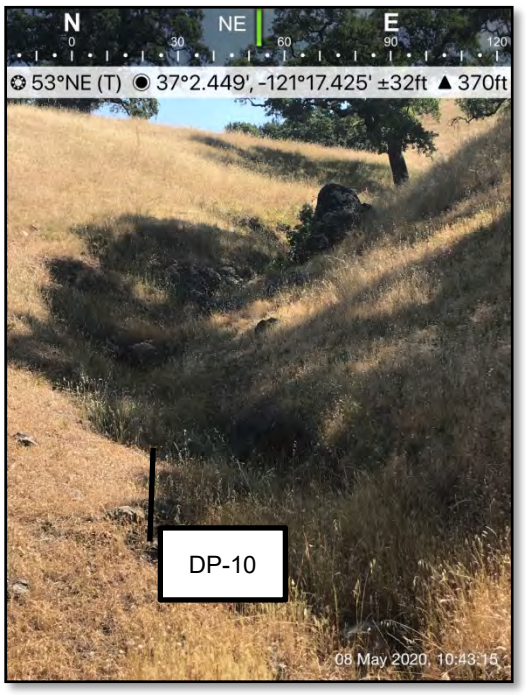
Source: Ascent Environmental

Photo 27. Example of a stock pond (SWD-7) that dries out seasonally in the Pacheco Pass portion of the study area (DP 1009-W). Photo taken September 12, 2019.

Pacheco Reservoir Project Photo Log



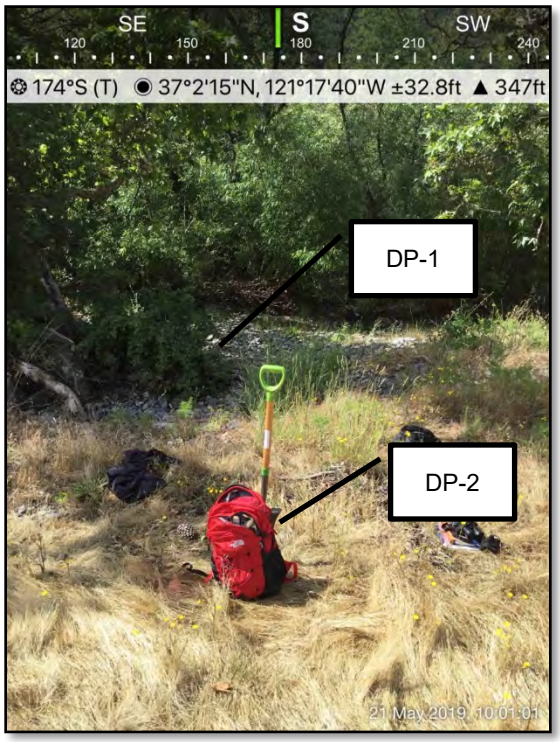
Photograph 1: DP-54 documents the OHMW of PS-1(Pacheco Creek). Photograph facing south.



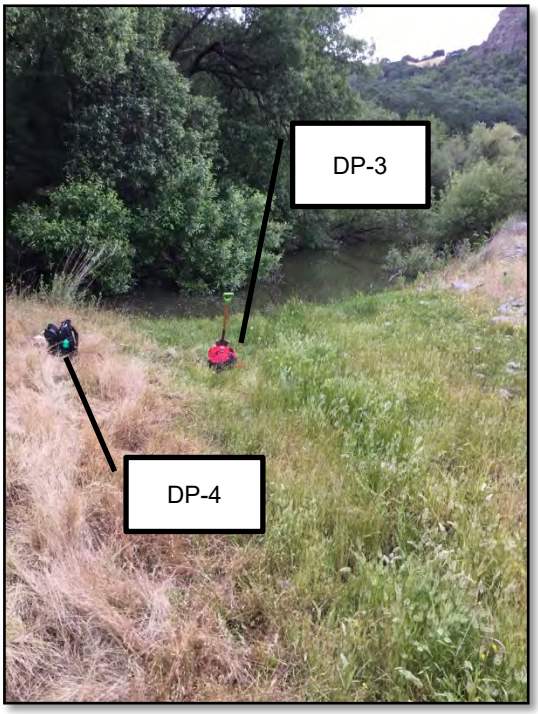
Photograph 2: DP-10 documents the OHWM of ES-1. Photograph facing northeast.



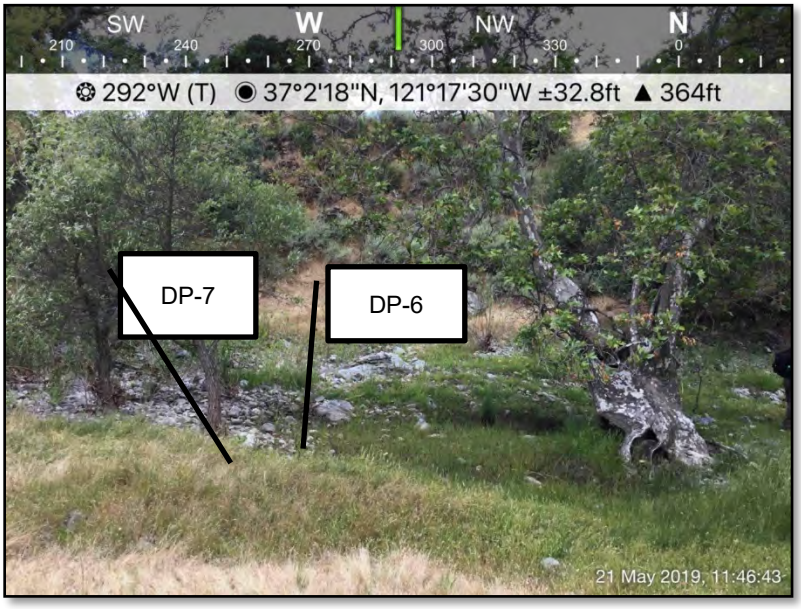
Photograph 3: DP-50 documents the OHWM of ES-50. Photograph facing northeast.



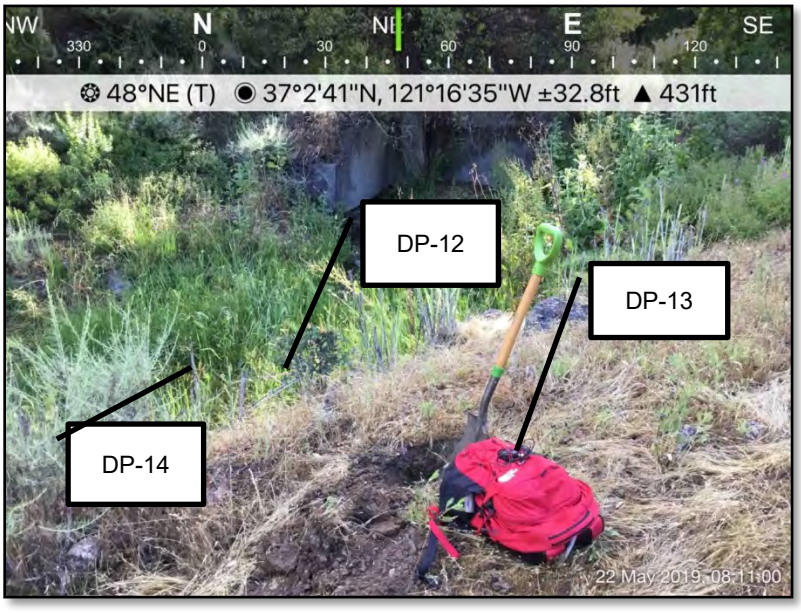
Photograph 4: DP-1 documents the riparian wetland (RW-1) adjacent to Pacheco Creek (PS-1) and DP-2 documents the upland pair point DP1. Photograph facing south.



Photograph 5: DP-3 documents the herbaceous riparian wetland (RW-2) adjacent to Pacheco Creek (PS-1) and DP-4 documents the upland pair point to DP-3. Photograph facing east.



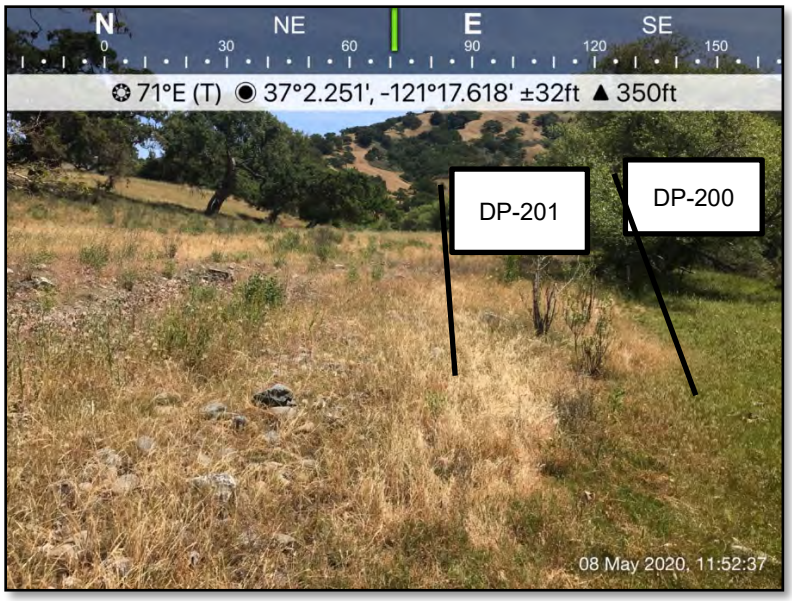
Photograph 6: DP-6 documents the riparian wetland (RW-3) adjacent to Pacheco Creek and DP-7 documents the upland pair point to RW-3. Orientation: East.



Photograph 7: DP-14 documents the OHWM of IS-1. DP-12 documents riparian wetland (RW-4) adjacent to IS–1 and DP-13 documents the upland pair point to DP-12. Photograph facing southwest.



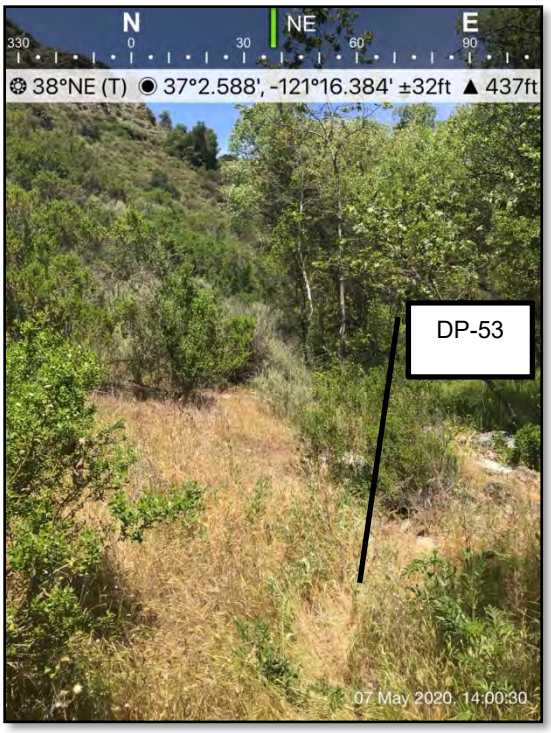
Photograph 8: DP-101 documents the riparian wetland (RW-5) adjacent to Pacheco Creek and DP-102 documents the upland pair point to DP-101. Photograph facing southwest.



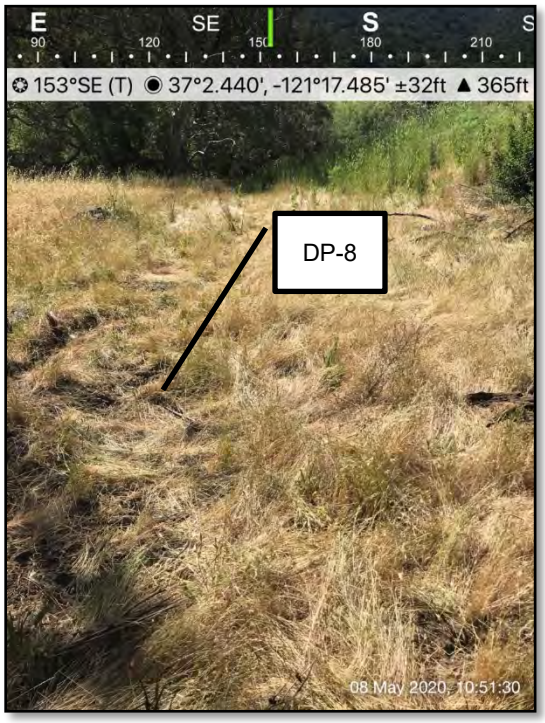
Photograph 9: DP-200 documents herbaceous riparian wetland (RW-6) adjacent to Pacheco Creek and DP-201 documents the upland pair point to DP-200. Photograph facing east.



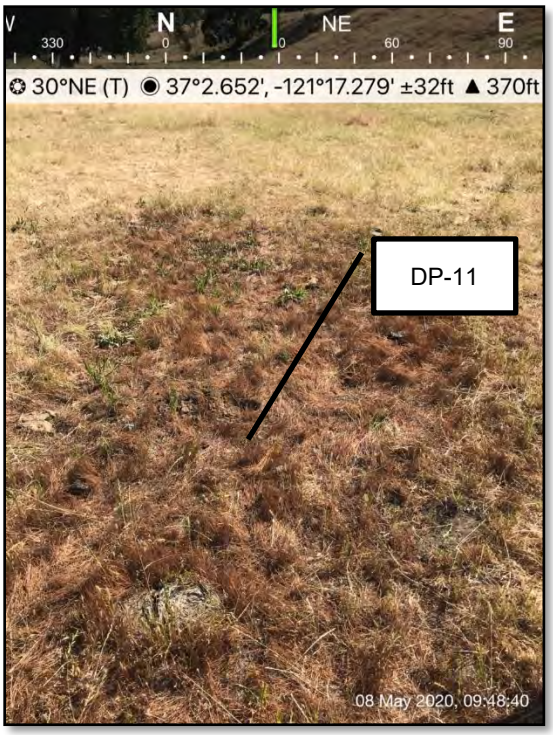
Photograph 10: DP-52 documents the riparian wetland (RW-50) adjacent to Pacheco Creek. Photograph facing southwest.



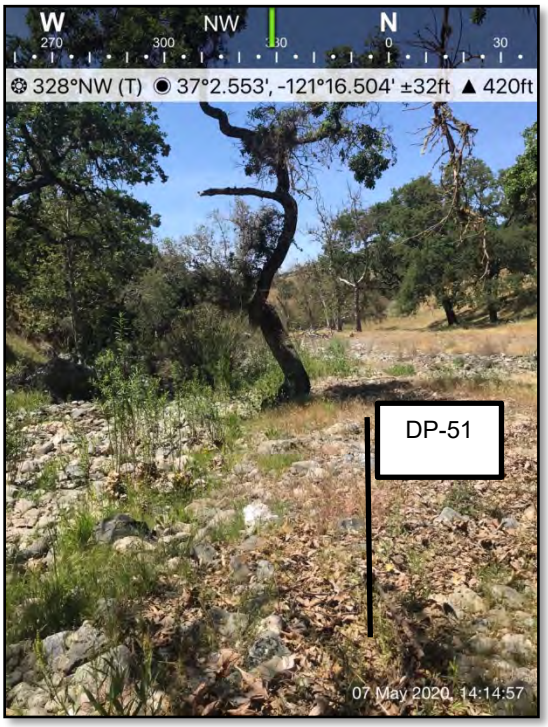
Photograph 11: DP-53 documents the upland pair point to DP-52 (RW-52) near the toeslope of the hill. Photograph facing northeast.



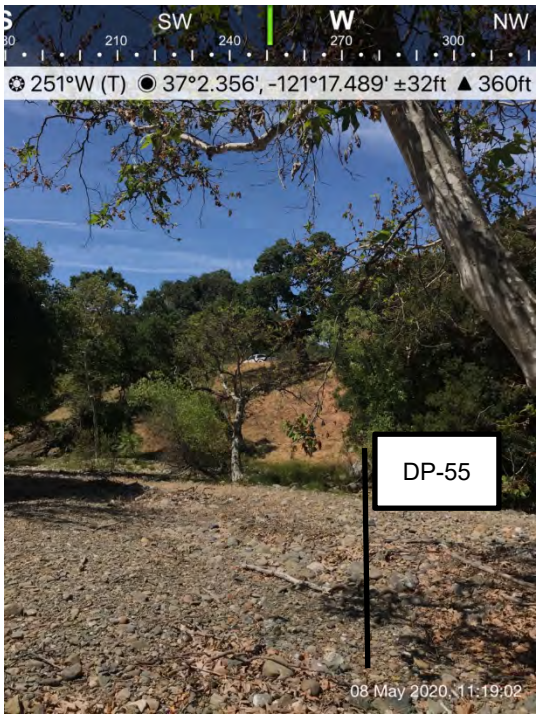
Photograph 12: DP-8 documents a suspect area that was confirmed as non-wetland (NW-1). Photograph facing southeast.



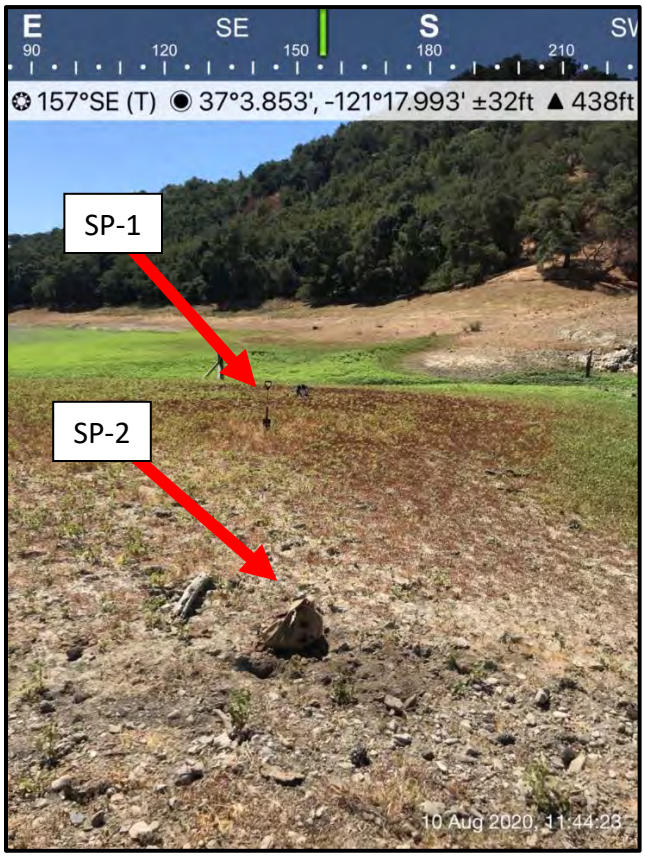
Photograph 13: DP-11 documents a suspect area that was confirmed as a non-wetland (NW-2). Photograph facing northeast.



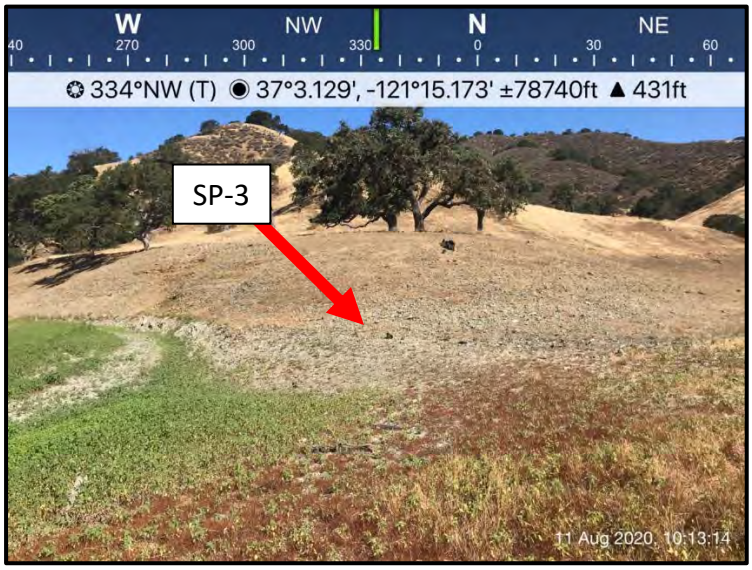
Photograph 14: DP-51 documents suspect riparian area adjacent to Pacheco Creek that was confirmed as a non-wetland (NW-50). Photograph facing northwest.



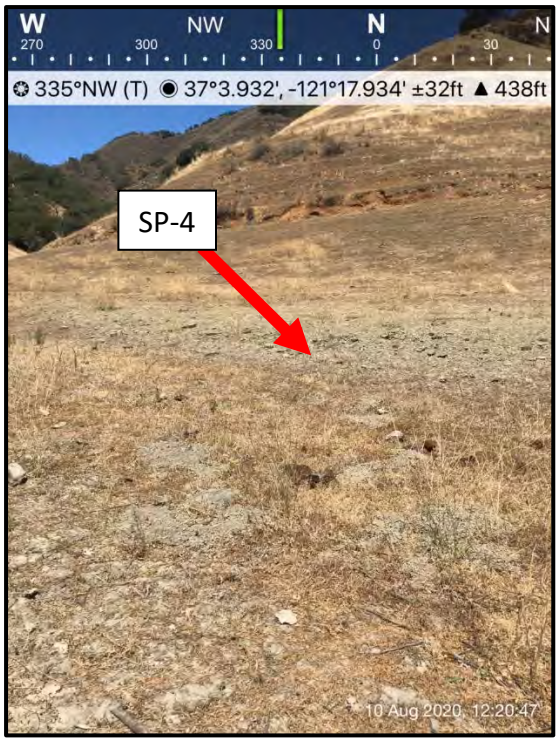
Photograph 15: DP-55 documents suspect riparian area adjacent to Pacheco Creek that was confirmed as a non-wetland (NW-51). Photograph facing southwest.



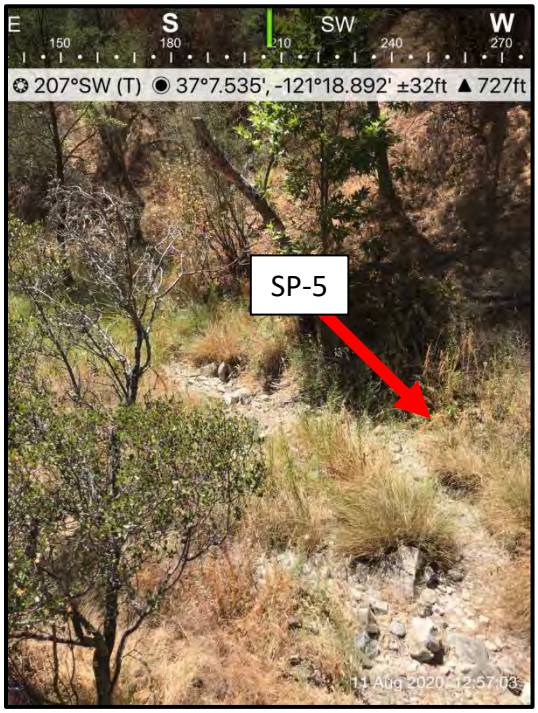
Photograph 16: SP-1 documents seasonal wetland SWD-26 and SP-2 documents the upland pair point. Photograph facing southeast.



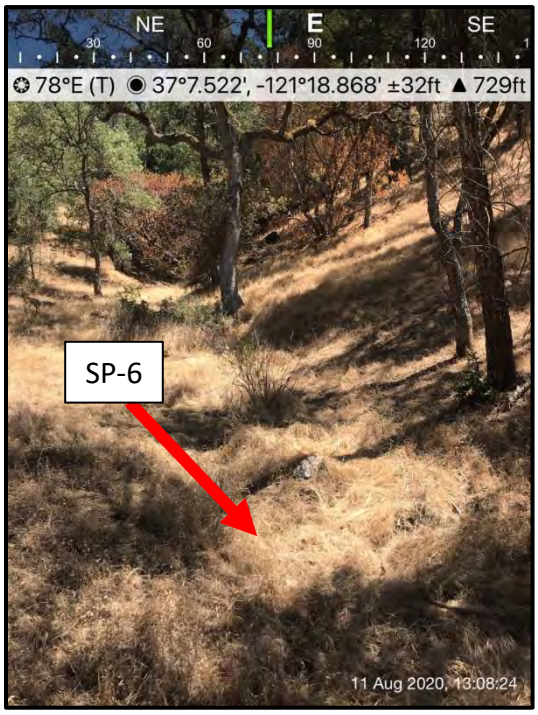
Photograph 17: SP-3 documents the OHWM of Pacheco Reservoir. Photograph facing northwest.



Photograph 18: SP-4 documents the OHWM of intermittent stream RVI-42. Photograph facing northwest.



Photograph 19: SP-5 documents the OHWM of Bullhead Canyon Creek. Photograph facing southwest.



Photograph 20: SP-6 documents the OHWM of ephemeral stream RVE-118. Photograph facing east.

Draft Environmental Impact Report

Appendix

Biological Resources – Botanical/Wildlife Appendix

Attachment D

Final Eagle Survey Results

Pacheco Reservoir Expansion Project

November 2021

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Table 2. Ground-Based and Aerial-Based Eagle Survey Eagle Observations 3-1

Appendices

Exhibit A – Figures

Acronyms and Abbreviations

CDFW	California Department of Fish and Wildlife
Draft Workplan	Draft Workplan for Nesting Bald and Golden Eagles Surveys
Project	Pacheco Reservoir Expansion Project
Summary	Bald and Golden Eagle Surveys- 2020 Breeding Season Summary
USFWS	United States Fish and Wildlife Service
Valley Water	Santa Clara Valley Water District

Chapter 1. Introduction

This Bald and Golden Eagle Surveys- 2020 Breeding Season Summary (Summary) has been prepared in support of the Santa Clara Valley Water District's (Valley Water) Pacheco Reservoir Expansion Project (Project). This Summary summarizes the results of bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*) surveys conducted during the 2020 breeding season in the Project area and vicinity (see Exhibit A, Figures 1 and 2). The review of background literature, including a query of natural resources databases and existing literature was performed prior to initiation of surveys. The survey efforts consisted of three ground-based and three aerial-based surveys as described in the *Draft Workplan for Nesting Bald and Golden Eagles Surveys* (Draft Workplan). The survey effort was conducted to support environmental compliance and permitting efforts for geotechnical investigations and cultural resources evaluations necessary to support design of Project facilities and for the overall Project.

Chapter 2. Methods

2.1 Project Location

The existing Pacheco Reservoir is located in unincorporated Santa Clara County, approximately 17 miles northeast of the City of Gilroy and about 0.4 mile north of State Route 152 as shown in Figure 1 (Exhibit A). Pacheco Reservoir is situated on the North Fork of Pacheco Creek. The headwaters of Pacheco Creek are in the Diablo Range, northeast of the city of Hollister. Downstream of Pacheco Reservoir, Pacheco Creek continues to flow west until it reaches San Felipe Lake, draining approximately 168 square miles in Santa Clara and San Benito counties. San Felipe Lake is drained by Miller Canal, which joins the Pajaro River and flows southwest until it drains into Monterey Bay.

2.2 Methods

Prior to field surveys, published agency guidance and relevant published literature (e.g., Pagel et al. 2010, Jackman and Jenkins 2004, Wiens et al. 2015, Wiens et al. 2018) were reviewed and a desktop query of relevant databases (e.g., California Natural Diversity Database, California Academy of Sciences archives, eBird, U.S. Geologic Survey breeding bird survey data, and iNaturalist) was performed to identify previously documented eagle nesting locations within the survey area.

The survey area consists of a 1-mile buffer around the existing Pacheco Reservoir and upstream areas (i.e., generally north of the existing North Fork Dam) surrounding the reservoir up to the expanded reservoir boundary plus an approximately 500-foot buffer, and approximately 17 miles of Pacheco Creek along the 100-year floodplain from the North Fork Dam downstream to San Felipe Lake (see Exhibit A, Figure 2). In total, the survey area encompasses approximately 50,000 acres (i.e., about 78 square miles).

Following the literature review and desktop query, a combination of ground-based eagle surveys and aerial surveys were conducted based on U.S. Fish and Wildlife Service (USFWS) guidance and California Department of Fish and Wildlife (CDFW) instructions (e.g., USFWS 2012, 2013; CDFW 2017). The surveys were conducted during important detection intervals: eagle courtship and breeding, early breeding, incubation, early nesting, and late nesting (Table 1). Surveys were conducted when visibility was excellent (i.e., 1-mile or greater) and during suitable weather conditions (i.e., times of rain, high winds, and fog were avoided to the extent practicable). During the surveys, the locations of all eagles observed were mapped and information on the species, age class, and behavior of the eagle or eagles (e.g., flying, perching, nesting, territorial displays, reproductive displays) was collected. Eagle nest forms were completed for any eagle nests observed. Incidental observations of other raptor species were also recorded to help inform Project planning efforts including geotechnical investigations and cultural resources evaluations.

Ground-based surveys were conducted using two survey techniques: survey point method and focused area surveys. Surveys at each of the 15 survey points lasted approximately 4 hours to adequately document the presence or absence of eagles (Wiens et al. 2018), their behavior, and possible roost locations (USFWS 2013). For locations of survey points, see Figure 2 (Exhibit A). The Draft Workplan provided in Exhibit B, provides further details regarding the rationale and placement of the survey points b. Focused area surveys were conducted around the existing Pacheco Reservoir and suitable downstream riparian areas (e.g., San Felipe Lake) to locate nests, further inspect suitable nesting substrates (e.g., trees, cliffs), and look for eagle behaviors that may indicate the possibility of nests. Meandering transects were the primary

method; however, kayaks were also used to survey around the existing Pacheco Reservoir. See Table 1 for ground-based survey dates and weather conditions.

Aerial-based surveys were conducted using a McDonnell Douglas model MD500 and Bell 407 helicopters and consisted of flying transects through the entire survey area. In areas with steep canyons, multiple passes at varying elevations were made to achieve greater coverage. Helicopter survey speeds ranged from 10 to 45 knots. Cruising speeds between the survey area and airport ranged from 90 to 110 knots. The survey methods followed those described in the Draft Workplan (Exhibit B), and a total of 20 hours and 59 minutes of survey time was conducted. See Table 1 for aerial-based survey dates and weather conditions.

Table 1. Ground-Based and Aerial-Based Eagle Survey Dates and Weather Conditions

Survey Type	Survey Visit	Eagle Breeding Period	Survey Dates	Weather Conditions		
				Air Temperature (Degrees Fahrenheit)	Sky Condition	Wind Speed
Ground	1	Early breeding/ courtship	January 8, 9, and 10, 2020	41–59	Clear or a few clouds to cloudy (high ceiling). Light rain showers on January 9	Calm (0-1 mph) to light breeze (4-7 mph)
Ground	2	Incubation/ nesting	February 10, 11, 19, and 20, 2020 March 6, 2020[1]	41–74	Clear to a few clouds (high ceiling)	Calm (0-1 mph) to light breeze (4-7 mph)
Aerial	1	Incubation/ nesting	March 3 and 4, 2020	41–70	Clear	Calm (0-1 mph) to light breeze (4-7 mph)
Ground	3	Incubation/ nesting	March 11, 12, and 13, 2020	42 – 74	Clear to cloudy or overcast (high ceiling)	Calm (0-1 mph) to light breeze (4-7 mph)
Aerial	2	Nesting	April 28 and 29, 2020	65-90	Clear	Calm (0-1 mph) to light breeze (4-7 mph) occasional gusts (20-30 mph)
Aerial	3	Nest outcomes	June 2 and 3, 2020	55-95	Clear	Calm (0-1 mph) to light breeze (4-7 mph)

Note:
[1] Survey points 7 and 15 were not surveyed in February due to access constraints and were therefore surveyed on March 6, 2020.

Chapter 3. Results

Numerous bald eagle and golden eagle observations were made during the surveys, and incidentally; there was a total of 68 observations of bald eagles and 142 observations of golden eagles. The total number of observed eagles by species and survey visit, and the survey points eagles were observed from, are provided in Table 2. It is important to note that numbers of eagle observations are not indicative of population size as some eagles were observed more than once during a survey, and others were likely observed on more than one survey point or survey visit. Three active eagle nests (two bald eagle and one golden eagle) and four inactive eagle nests were observed during the surveys. One of the active bald eagle nests was located along Pacheco Creek 4.5 miles downstream of Pacheco Reservoir and the other in the foothills approximately 1.25 miles to the east of San Felipe Lake. Both nests had one fledgeling in the nest during the last aerial survey in June. One of the inactive nests located along Pacheco Creek upstream of Pacheco Reservoir was presumed to be a bald eagle nest given its location adjacent to the creek. The one active and three inactive golden eagle nests were all located in the northern portion of the study area in foothill pines located on fairly steep slopes. One golden eagle fledgling was present during the last aerial survey. It is presumed that all fledglings would be successful barring any unforeseen circumstances.

Table 2. Ground-Based and Aerial-Based Eagle Survey Eagle Observations

Survey Type	Survey Visit	Bald Eagle		Golden Eagle	
		Total Number of Observations	Survey Points with Observations	Total Number of Observations	Survey Points with Observations
Ground	1	14	1, 2, 8, 10, 12, and 13	48	1, 4, 5, 6, 7, 8, 10, 12, 13, 14, and 15
Ground	2	20	1, 2, 5, 8, 9, 10, and 14	41	2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 13, and 14
Ground	3	18	6, 7, 8, 10, 11, 12, and 14	33	1, 3, 4, 6, 7, 8, 9, 10, 11, 12, 14, and 15
Aerial	1	4	n/a	6	n/a
Aerial	2	6	n/a	9	n/a
Aerial	3	6	n/a	5	n/a

Ten other raptor species were observed during the surveys, including American kestrel (*Falco sparverius*), Cooper's hawk (*Accipiter cooperii*), northern harrier (*Circus cyaneus*), peregrine falcon (*Falco peregrinus*), prairie falcon (*Falco mexicanus*), red-shouldered hawk (*Buteo lineatus*), red-tailed hawk (*Buteo jamaicensis*), sharp-shinned hawk (*Accipiter striatus*), turkey vulture (*Cathartes aura*), and white-tailed kite (*Elanus leucurus*).

One active white-tailed kite nest and six active red-tailed hawk nests were observed in the study area during the survey. In addition to these nests, AECOM as part of the geotechnical pre-activity clearances identified a seventh active red-tailed hawk nest near Pacheco Reservoir.

Chapter 4. Discussion

Total numbers of eagle observations are not indicative of population size, but location, frequency, and behaviors observed during eagle observations can indicate what habitats eagles are utilizing and in what capacity. In general, fewer bald and golden eagles were observed during the later field surveys in comparison to the earlier survey efforts, suggesting eagles were actively on nests during the later surveys.

Bald eagle use of the survey area appears to be closely tied to Pacheco Reservoir, Pacheco Creek, and San Felipe Lake, though upland habitats in the vicinity were also utilized. Based on nest locations and observations of bald eagles, the survey area appears to support, at least to some extent, three bald eagle pairs; two active nests were observed during the 2020 nesting season, and the inactive nest in the floodplain of Pacheco Creek is also likely a bald eagle nest.

Golden eagle use of the survey area is more difficult to discern than bald eagle use primarily due to the broader range of habitats used by golden eagles; the extent and availability of those habitats in the survey area; and golden eagles typically have a larger territorial ranges than bald eagles. Based on nest locations and observations of golden eagles, the upland habitat upstream of the North Fork Dam appears to support, at least to some extent, three golden eagle pairs. One active golden eagle nest was observed in that vicinity during the 2020 nesting season, and the nearest inactive nest is likely an alternate nest for that pair. The inactive nest in Henry Coe State Park and the inactive nest west of Pacheco Creek are likely within the territories of two additional golden eagle pairs. Golden eagle pairs and individuals also utilized the foothills north of Pacheco Creek and San Felipe Lake.

Based on the survey observations, all three of the active eagle nests detected were expected to succeed given no unforeseen circumstances occurred. Considering both bald and golden eagles typically have alternate nests in their territory, any or all of the eagle nests observed during the 2020 nesting season have the potential to be active in the coming years.

Chapter 5. References

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Draft Environmental Impact Report

Appendix

Biological Resources - Botanical/Wildlife

Attachment D

Final Eagle Survey Results

Exhibit A

Figures

Pacheco Reservoir Expansion Project

November 2021

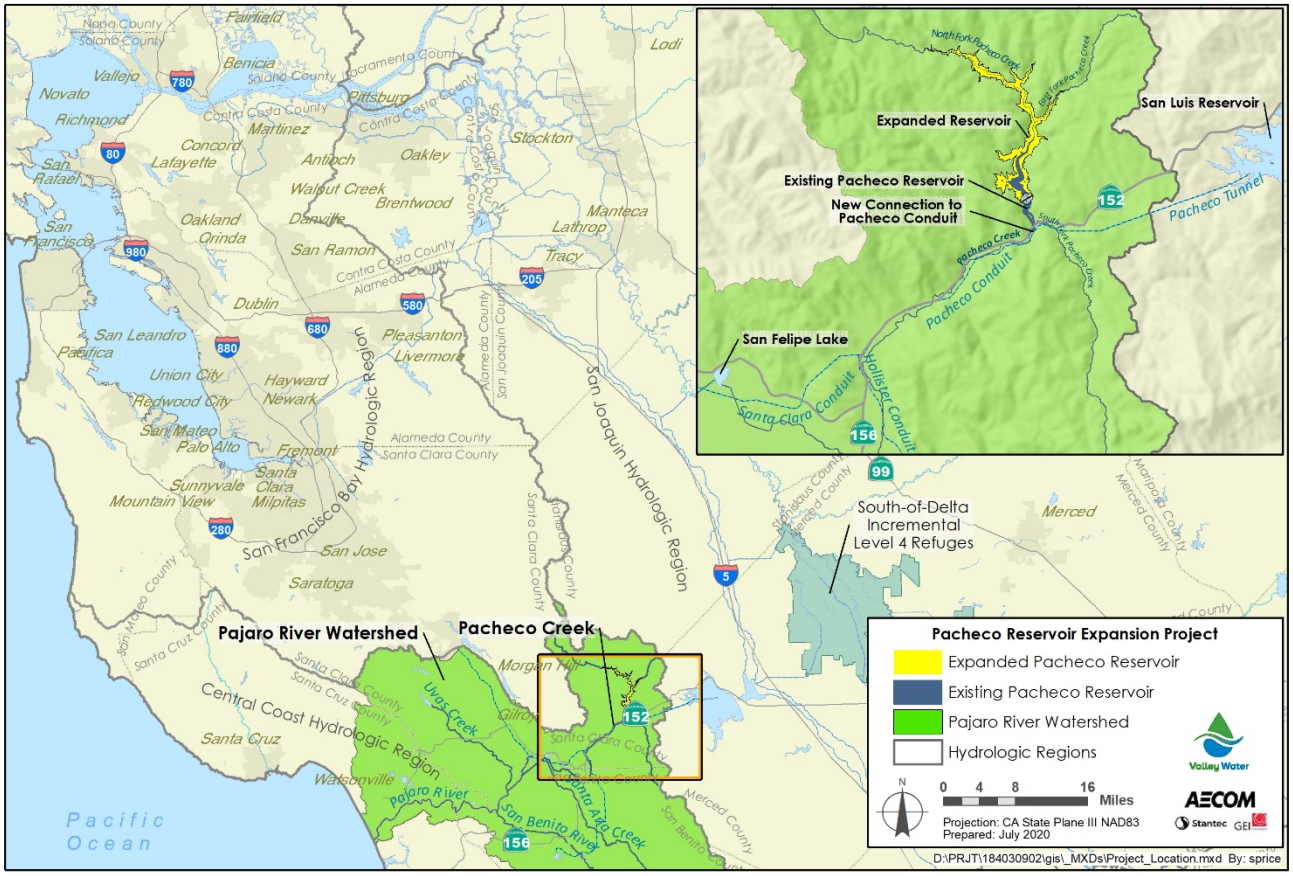


Figure 1. Project Location

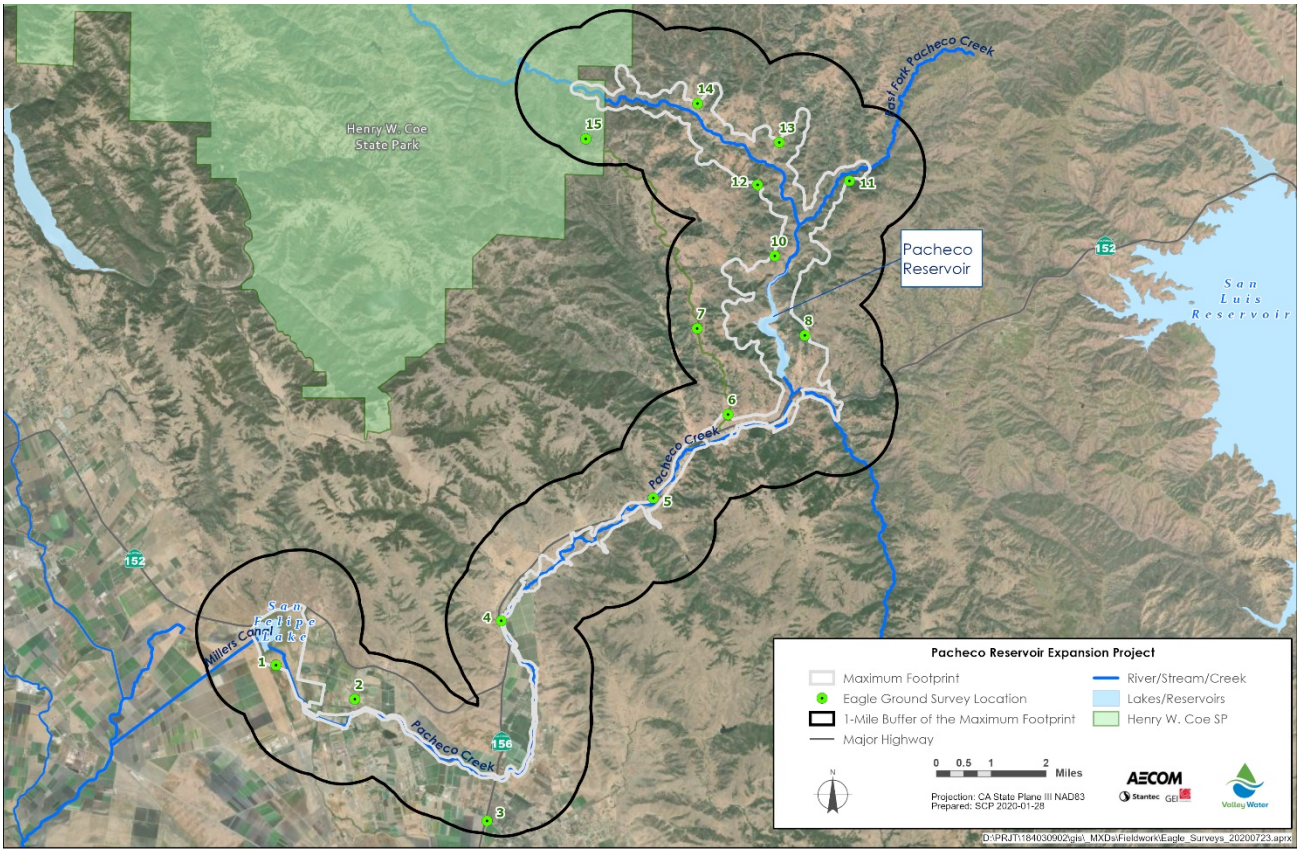


Figure 2. Overview

Draft Environmental Impact Report

Appendix

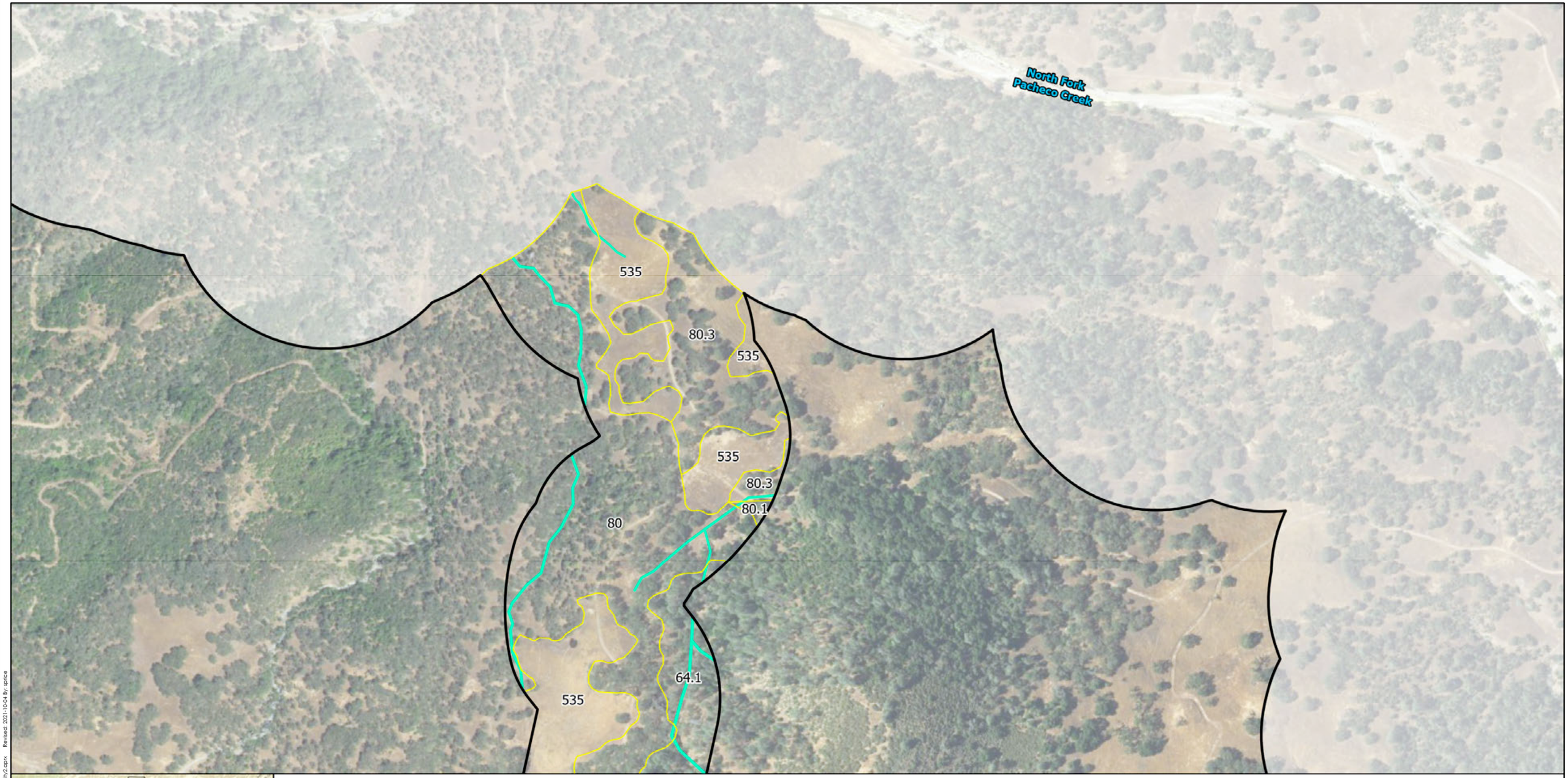
Biological Resources – Botanical/Wildlife

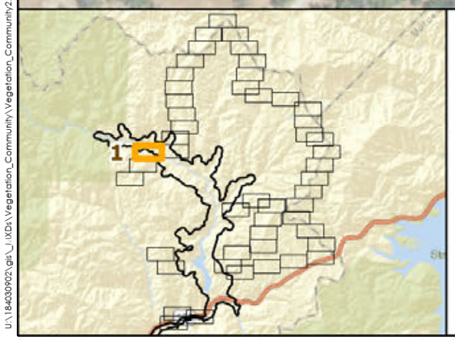
Attachment E

Vegetation Communities and Other Land Cover Types

Pacheco Reservoir Expansion Project

November 2021





Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Aquatic Resource

Pond (9.893 acres)

Riverine Ephemeral (17.132 acres)

Seasonal Wetland (1.116 acre)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix E : Vegetation Communities and Other Land Cover Types (Page 1 of 50)

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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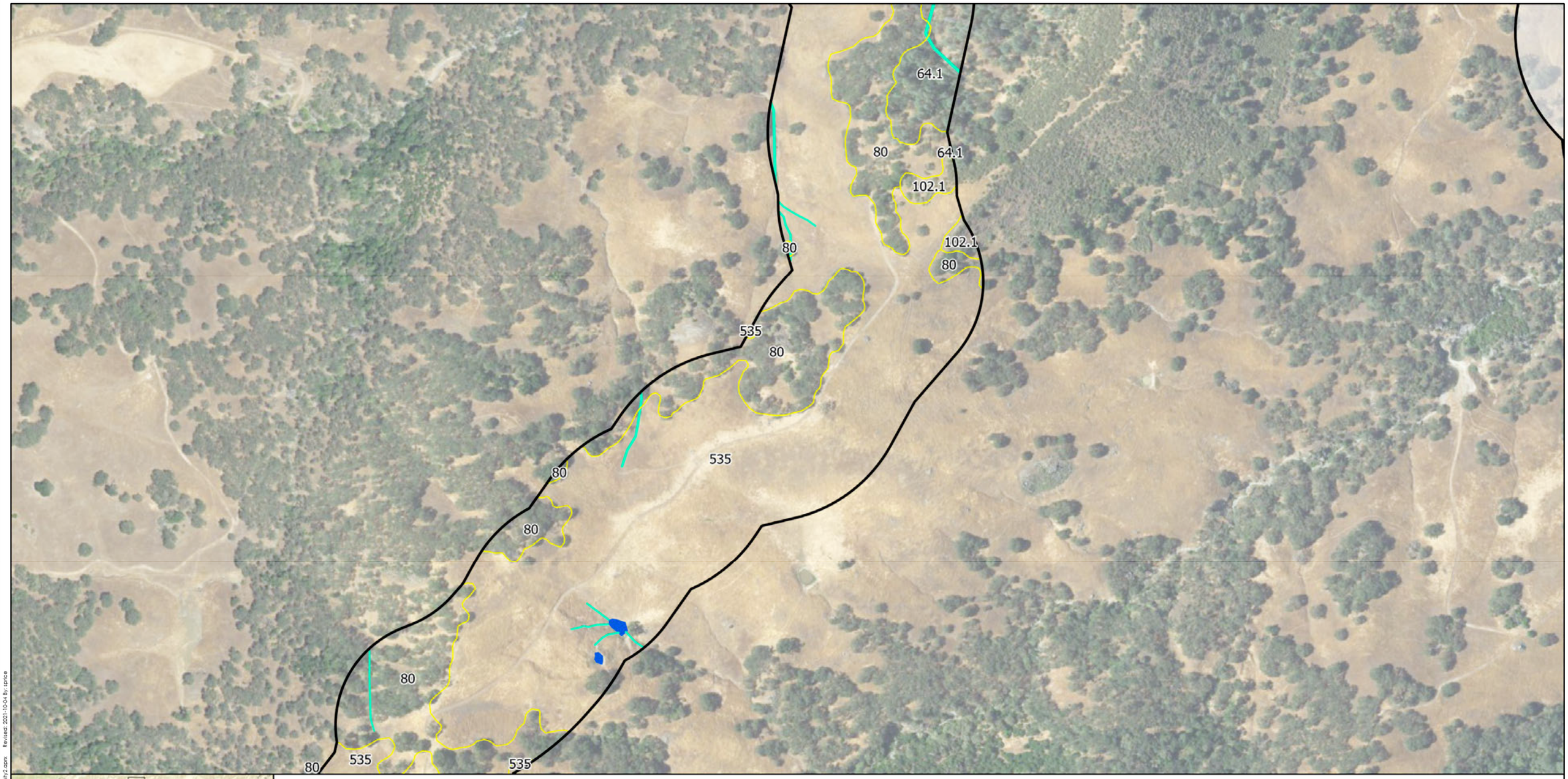

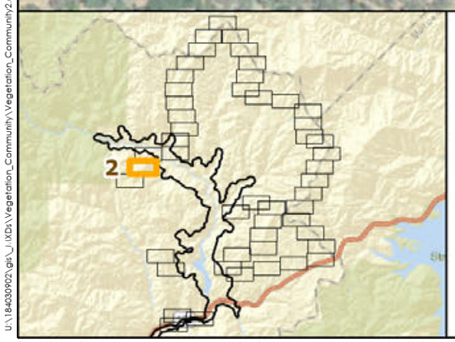

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Appendix E : Vegetation Communities and Other Land Cover Types (Page 2 of 50)

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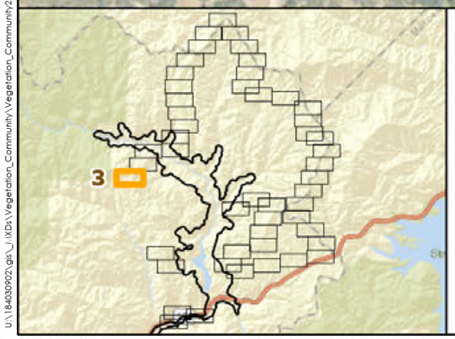

Pacheco Reservoir Expansion Project

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Valley Water

AECOM

Stantec GEI

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Appendix E : Vegetation Communities and Other Land Cover Types (Page 3 of 50)

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1 in = 300 Feet

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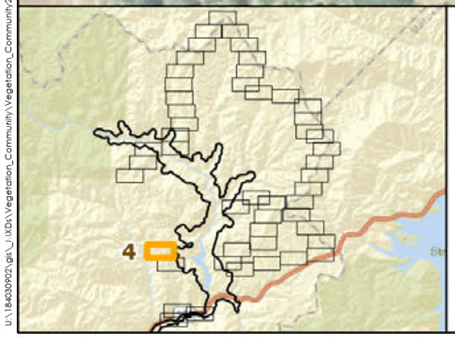

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

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525 Sensitive

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Valley Water

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Appendix E : Vegetation Communities and Other Land Cover Types (Page 4 of 50)

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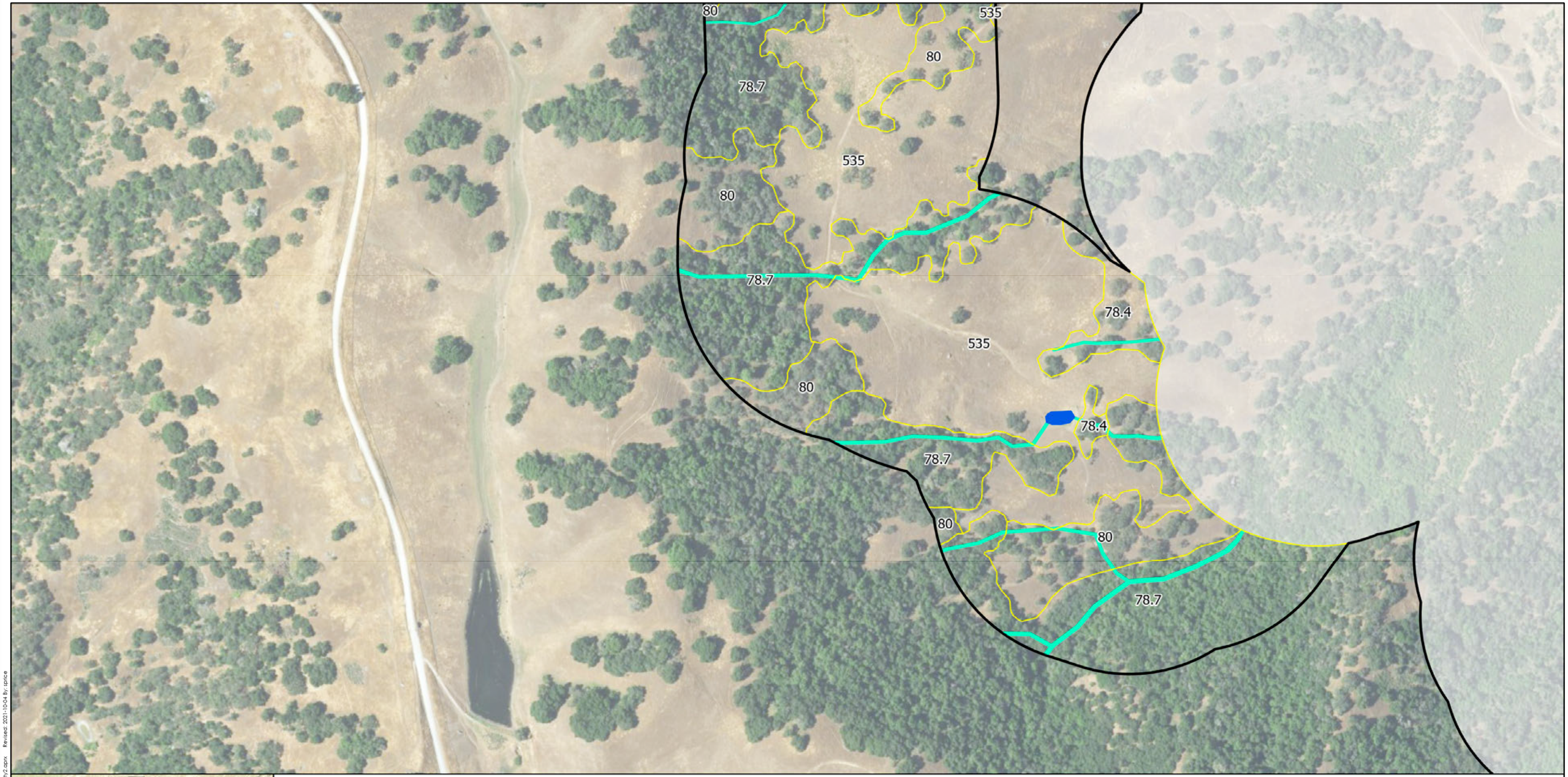

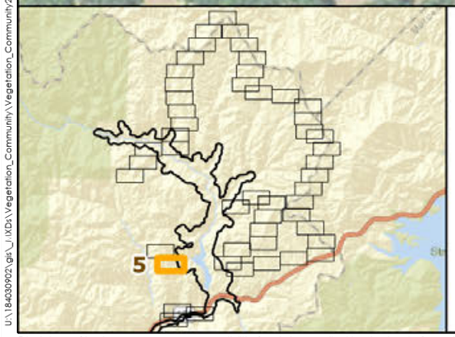

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Appendix E : Vegetation Communities and Other Land Cover Types (Page 5 of 50)

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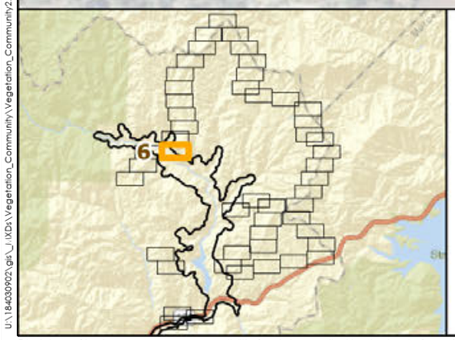
North Fork Pacheco Creek



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Appendix E : Vegetation Communities and Other Land Cover Types (Page 6 of 50)

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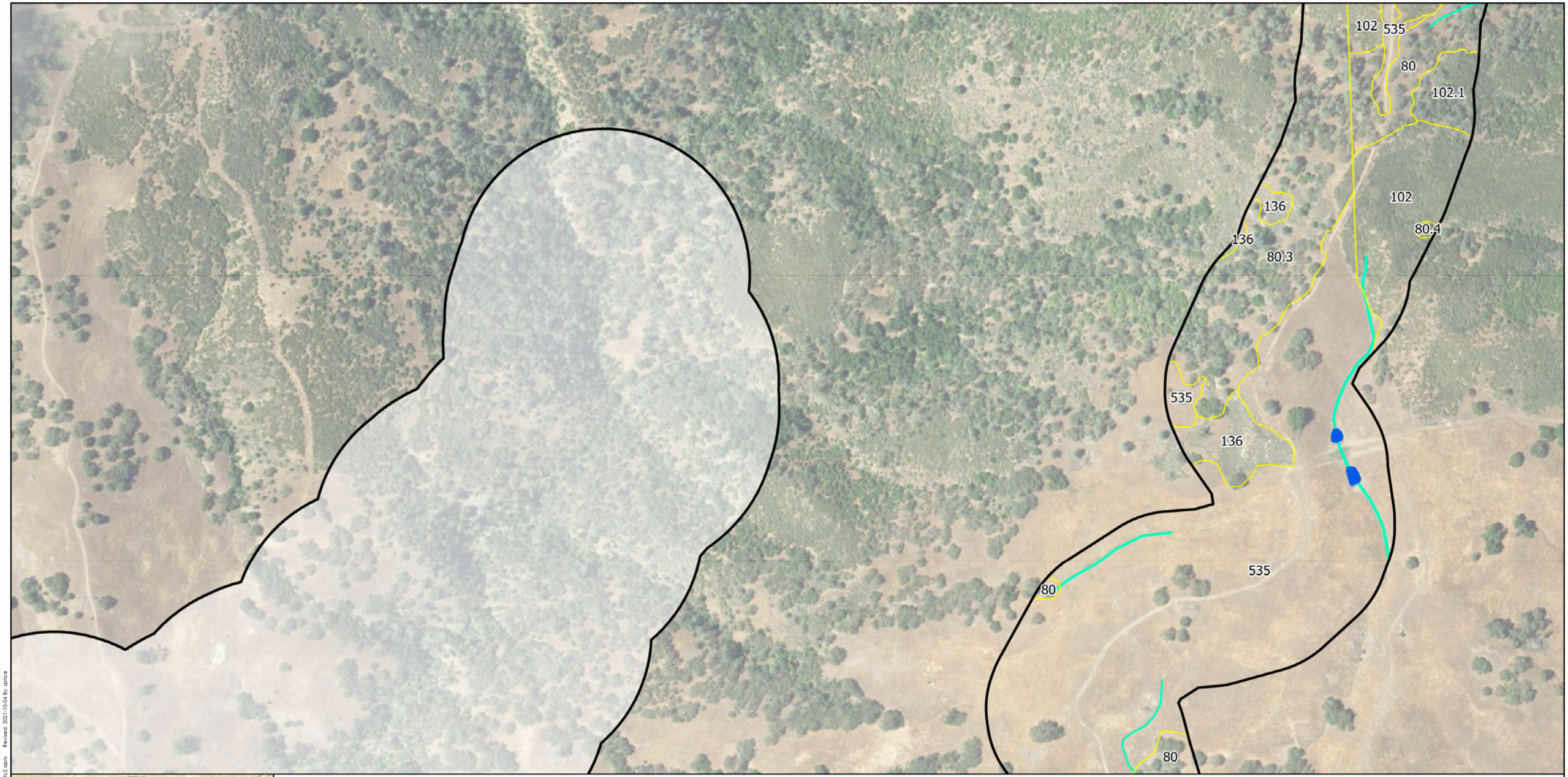

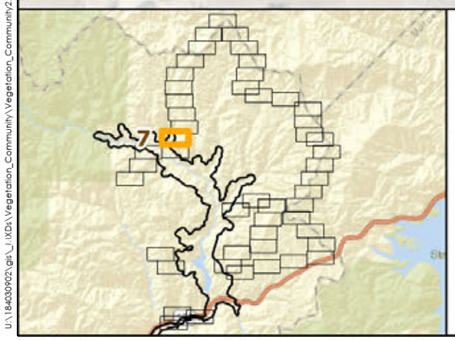

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Appendix E : Vegetation Communities and Other Land Cover Types (Page 7 of 50)

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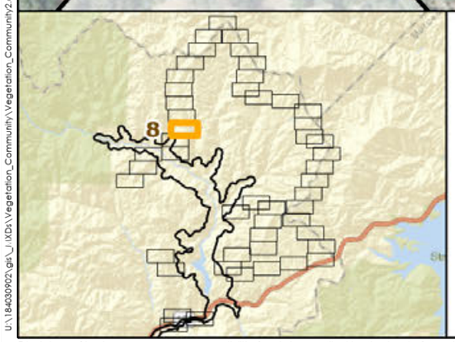

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Appendix E : Vegetation Communities and Other Land Cover Types (Page 8 of 50)

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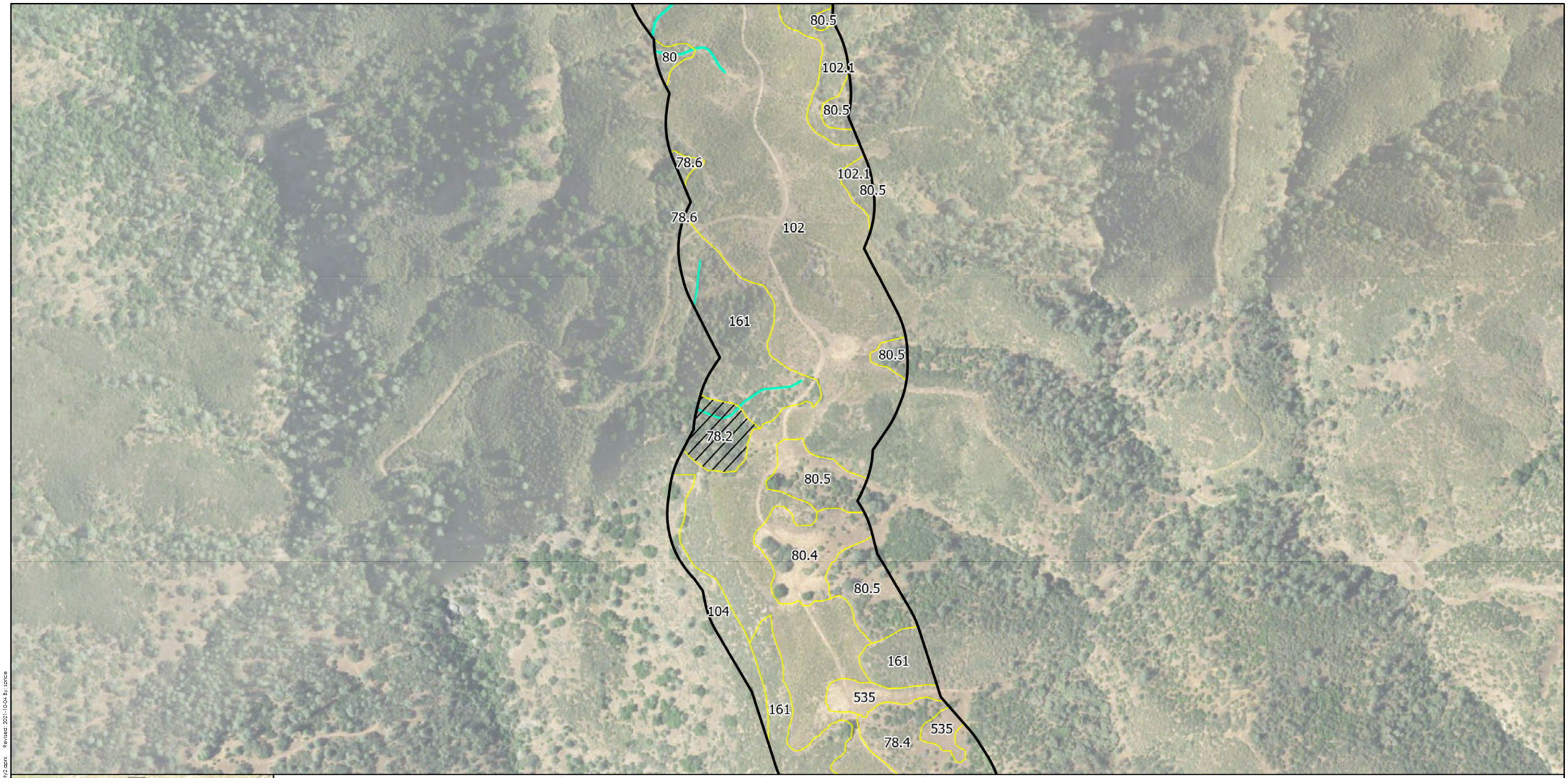

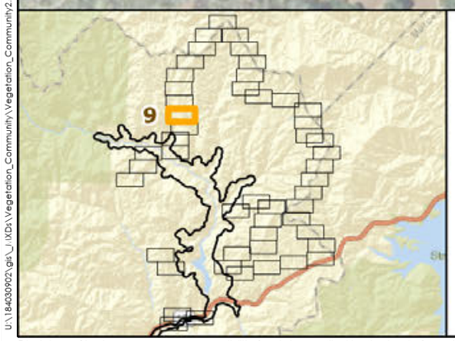

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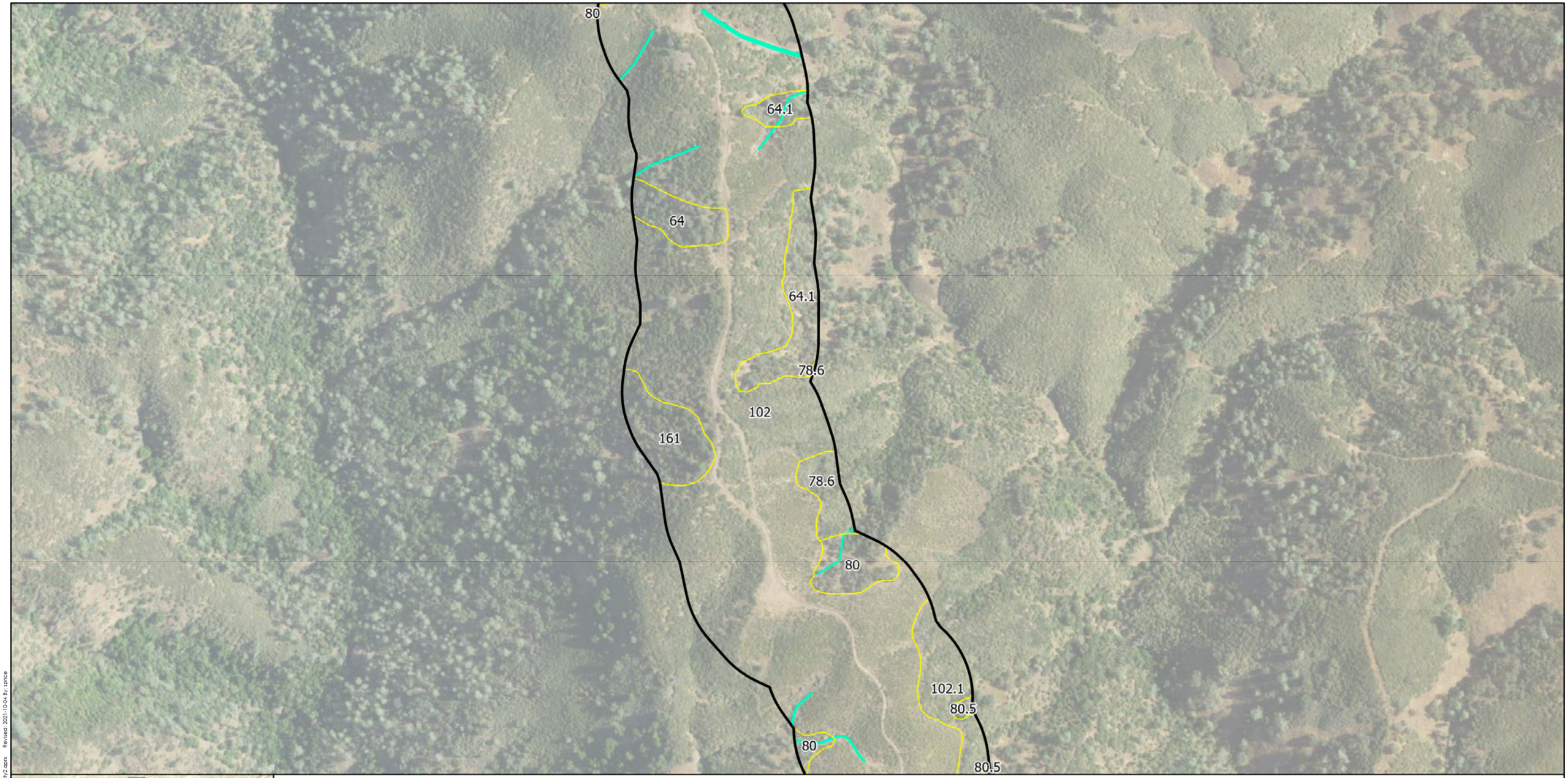

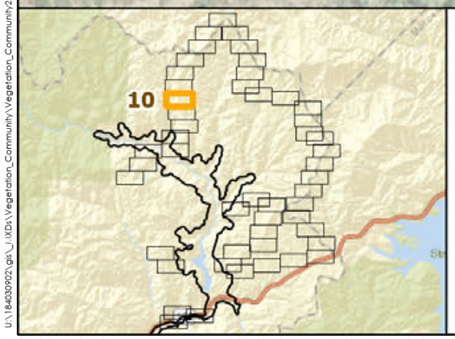

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Aquatic Resource

Pond (9.893 acres)

Riverine Ephemeral (17.132 acres)

Seasonal Wetland (1.116 acre)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix E : Vegetation Communities and Other Land Cover Types (Page 10 of 50)

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

U:\185639\22\gis_MXDs\Vegetation_Community\Vegetation_Community2.aprx Revised: 2021-10-04 By: spice

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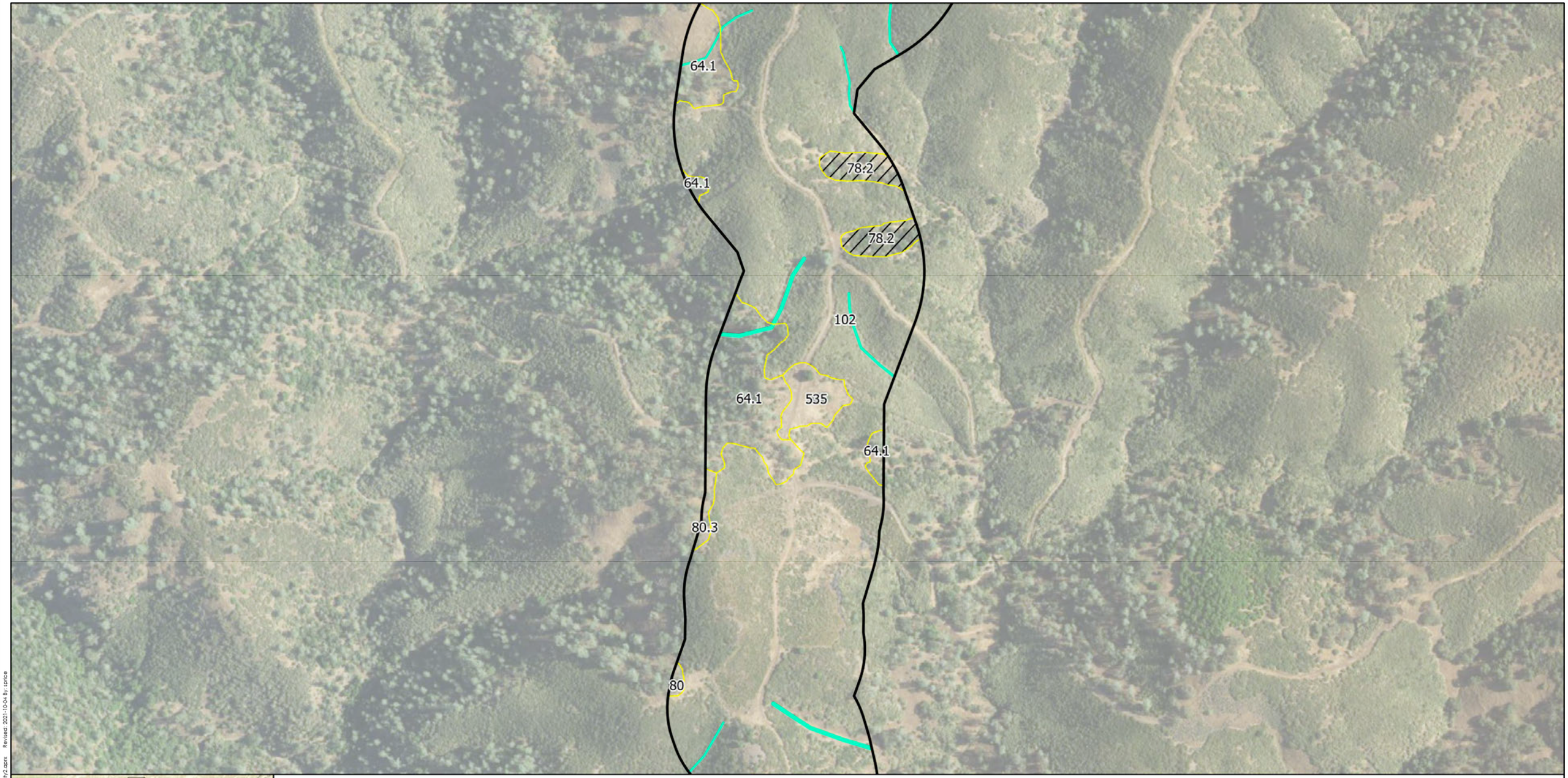

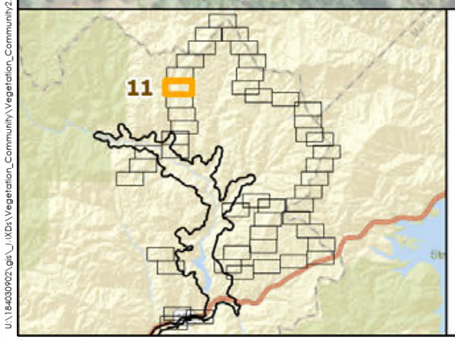

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Aquatic Resource

Pond (9.893 acres)

Riverine Ephemeral (17.132 acres)

Seasonal Wetland (1.116 acre)

Valley Water

AECOM

Stantec GEI

N

Appendix E : Vegetation Communities and Other Land Cover Types (Page 11 of 50)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

U:\18430921.gis_\MXDs\Vegetation_Community\Vegetation_Community2.aprx Revised: 2021-10-04 By: atrice

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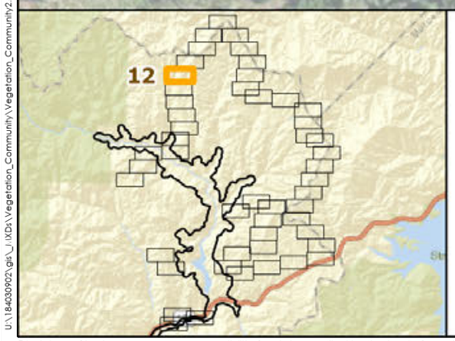

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Aquatic Resource

Pond (9.893 acres)

Riverine Ephemeral (17.132 acres)

Seasonal Wetland (1.116 acre)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix E : Vegetation Communities and Other Land Cover Types (Page 12 of 50)

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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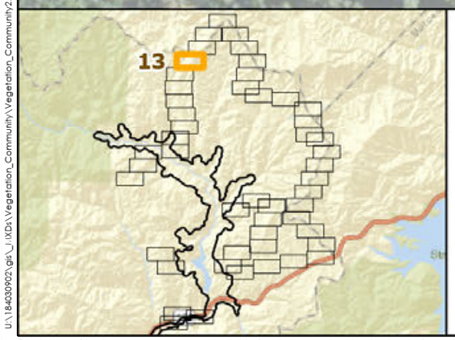

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Aquatic Resource

Pond (9.893 acres)

Riverine Ephemeral (17.132 acres)

Seasonal Wetland (1.116 acre)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix E : Vegetation Communities and Other Land Cover Types (Page 13 of 50)

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

U:\184303902\gis_UX2\Vegetation_Community\Vegetation_Community2.mxd Revised: 2021-10-04 By: spruce

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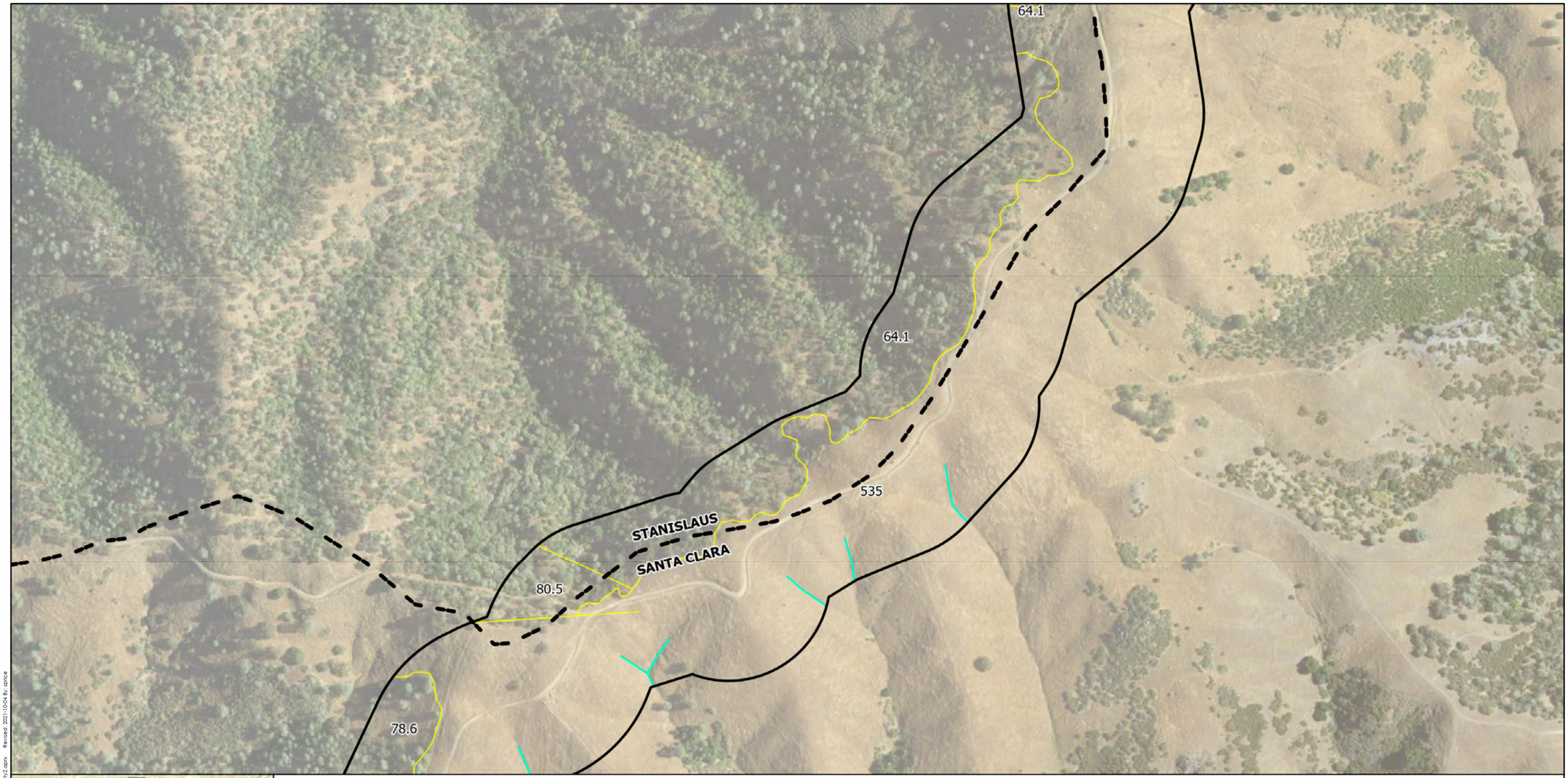

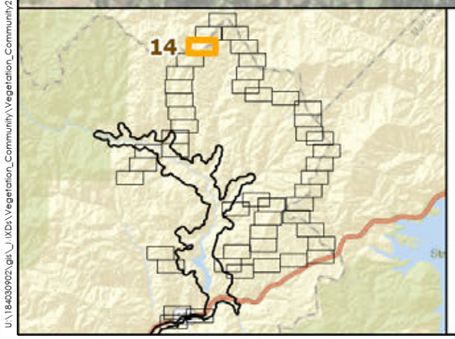

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Aquatic Resource

Pond (9.893 acres)

Riverine Ephemeral (17.132 acres)

Seasonal Wetland (1.116 acre)

Valley Water

AECOM

Stantec GEI

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Appendix E : Vegetation Communities and Other Land Cover Types (Page 14 of 50)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

U:\185439921\gis_MXDs\Vegetation_Community\Vegetation_Community2.aprx Revised: 2021-10-04 By: sprice

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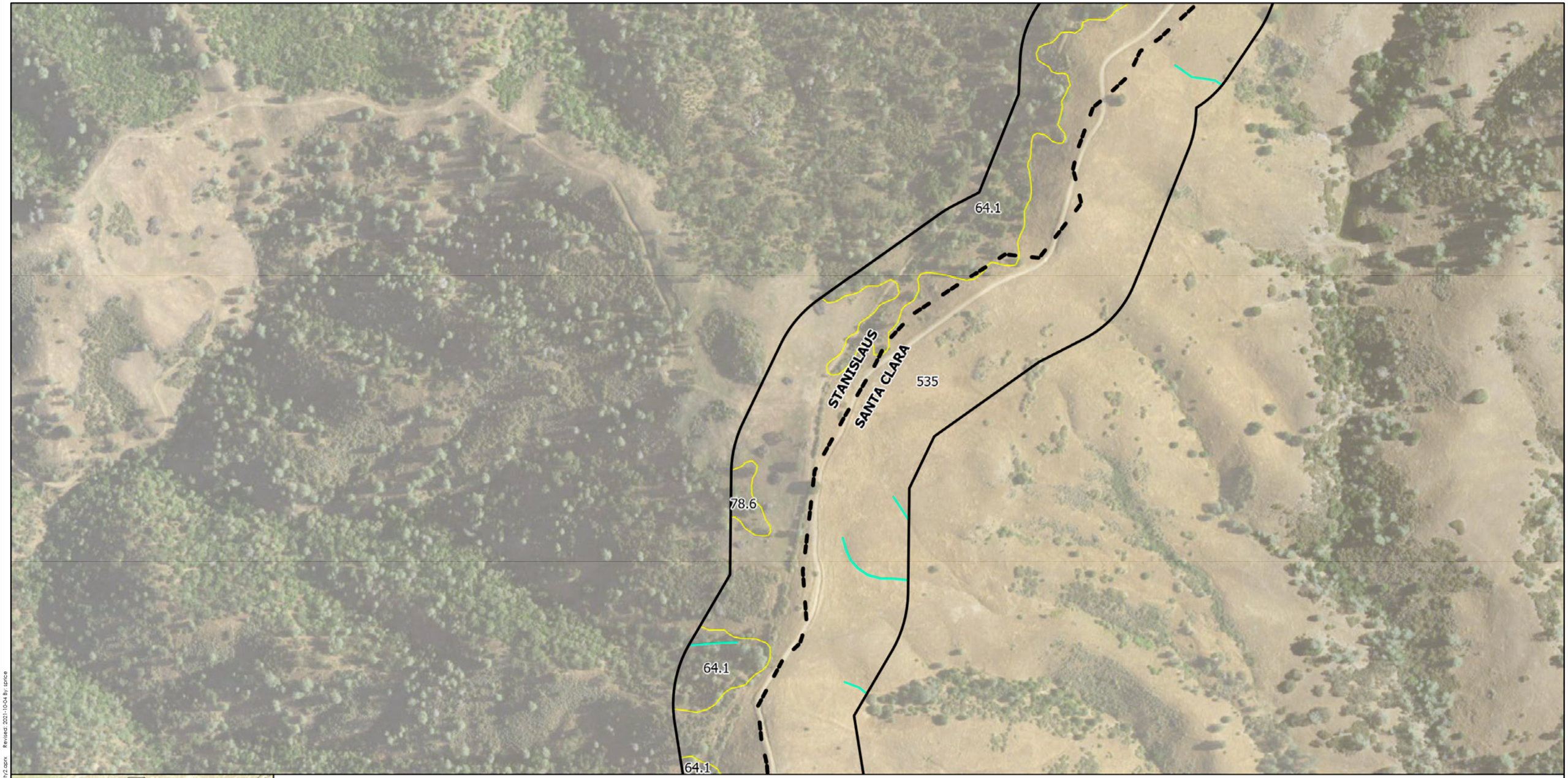

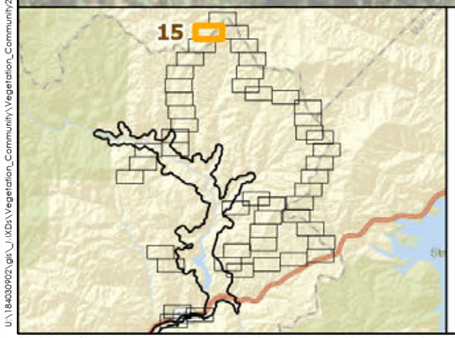

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Aquatic Resource

Pond (9.893 acres)

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Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix E : Vegetation Communities and Other Land Cover Types (Page 15 of 50)

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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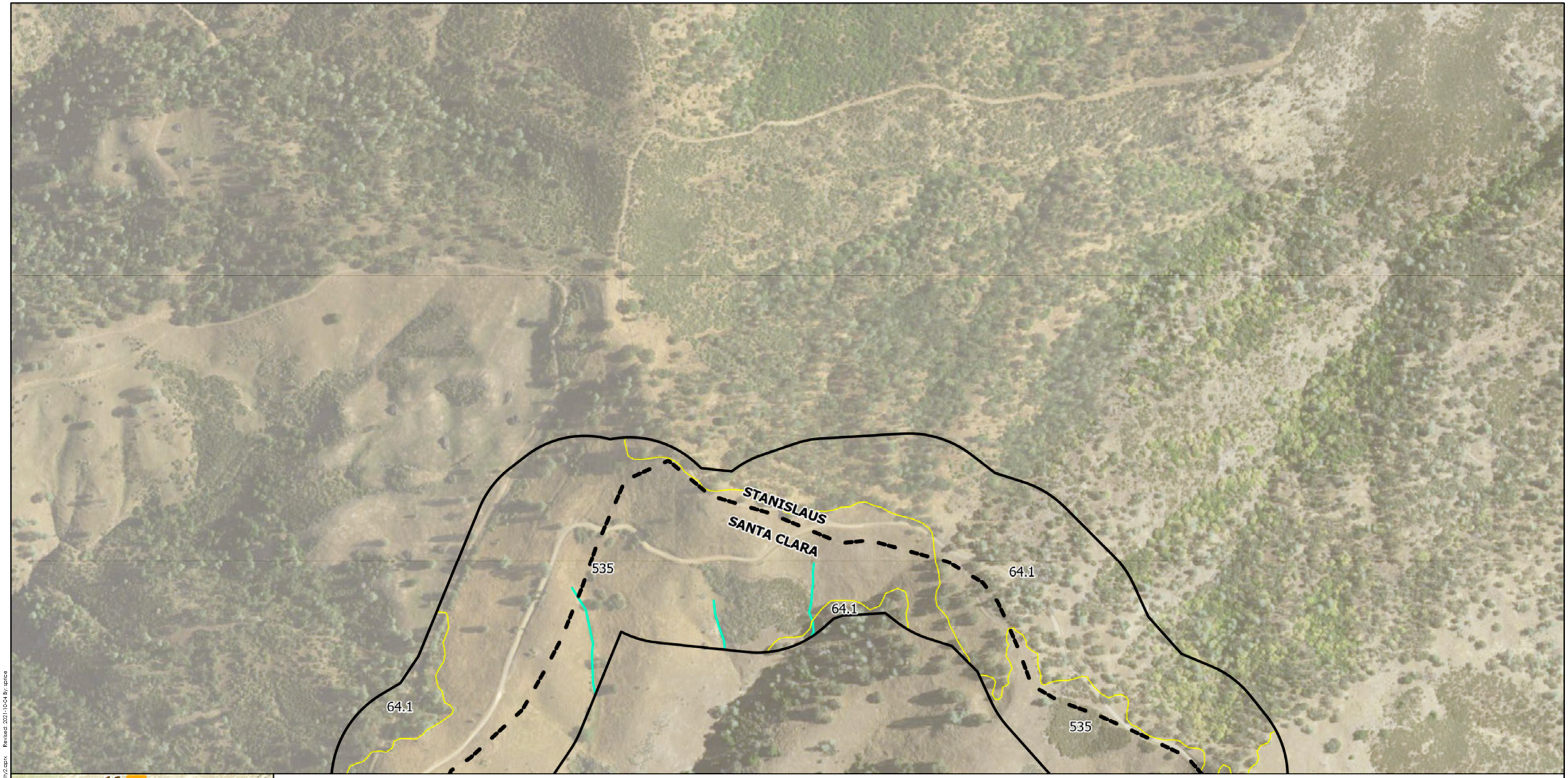

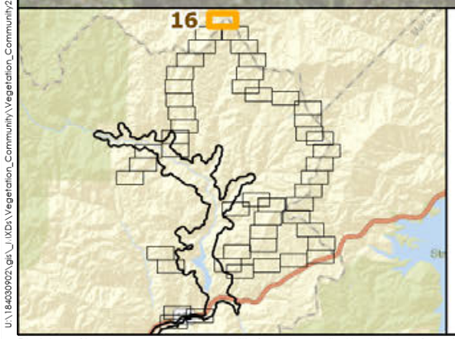

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Aquatic Resource

Pond (9.893 acres)

Riverine Ephemeral (17.132 acres)

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Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix E : Vegetation Communities and Other Land Cover Types (Page 16 of 50)

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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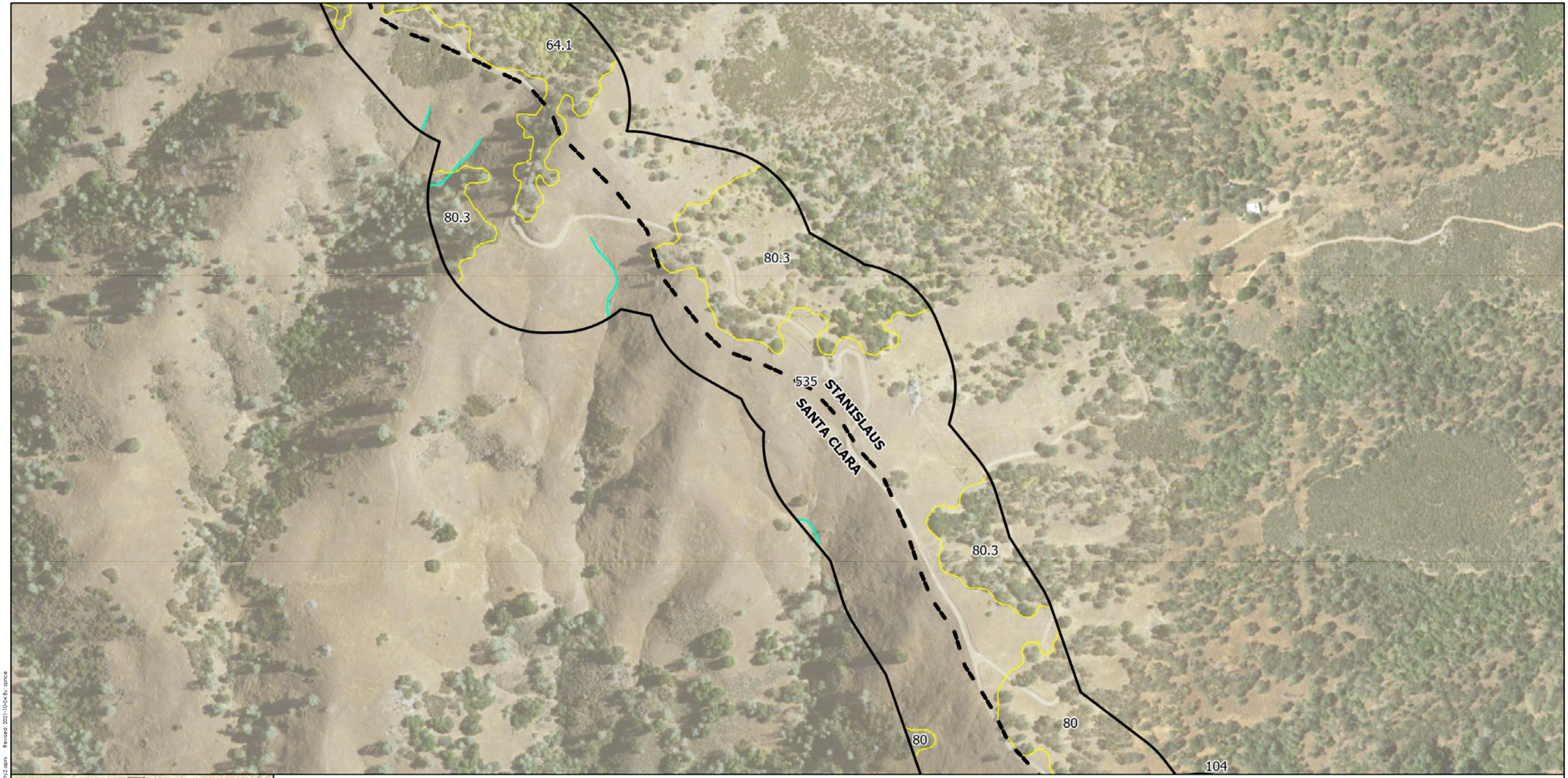

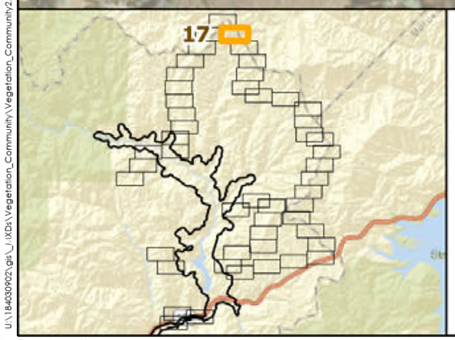

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Aquatic Resource

Pond (9.893 acres)

Riverine Ephemeral (17.132 acres)

Seasonal Wetland (1.116 acre)

Valley Water

AECOM

Stantec GEI

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Appendix E : Vegetation Communities and Other Land Cover Types (Page 17 of 50)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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80
80
104
STANISLAUS
SANTA CLARA
535
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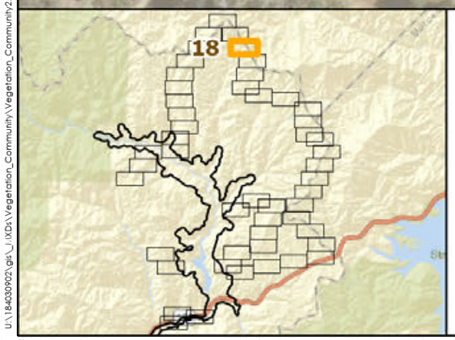

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Aquatic Resource

Pond (9.893 acres)

Riverine Ephemeral (17.132 acres)

Seasonal Wetland (1.116 acre)

Valley Water

AECOM

Stantec GEI

N

Appendix E : Vegetation Communities and Other Land Cover Types (Page 18 of 50)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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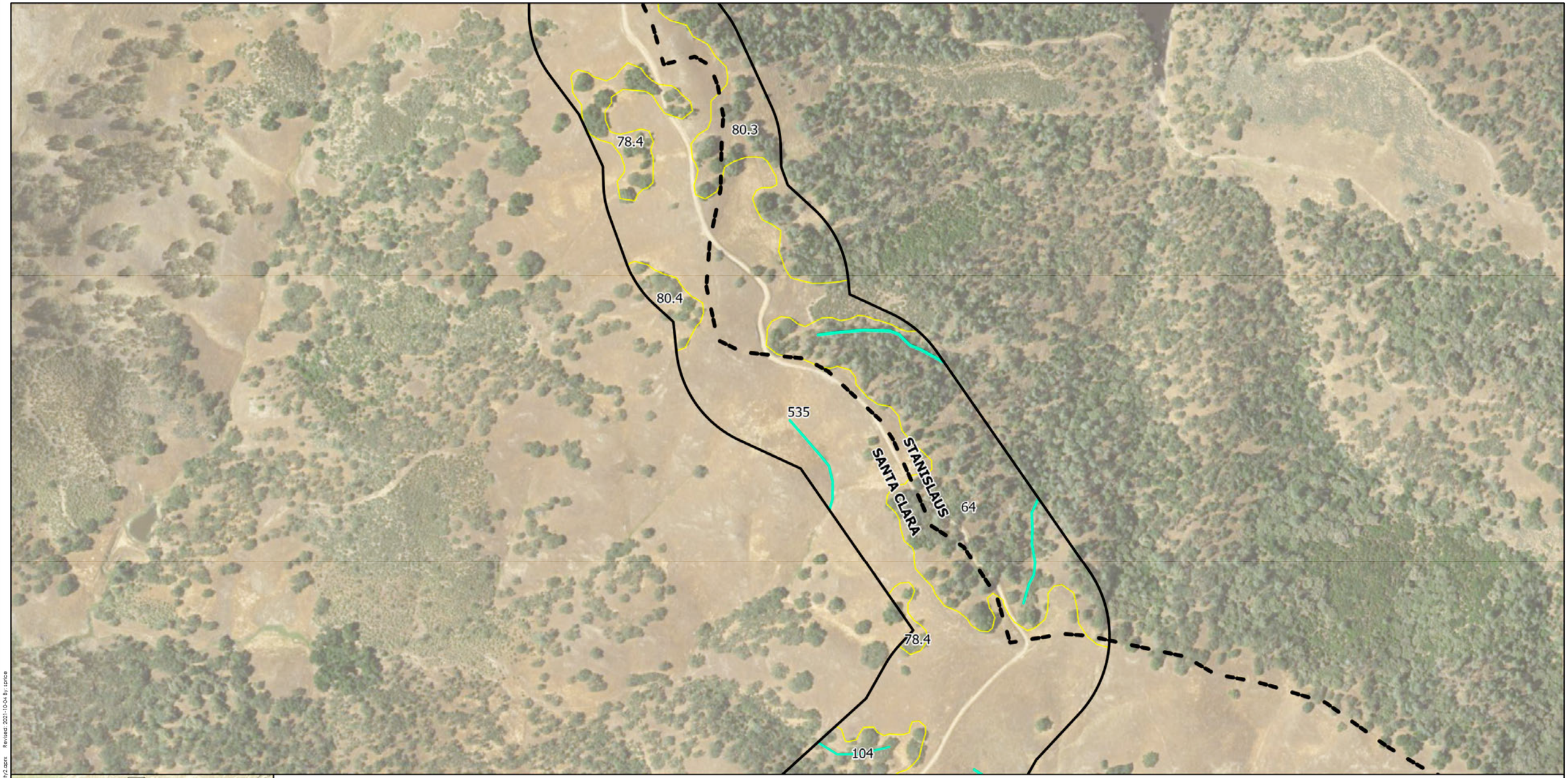

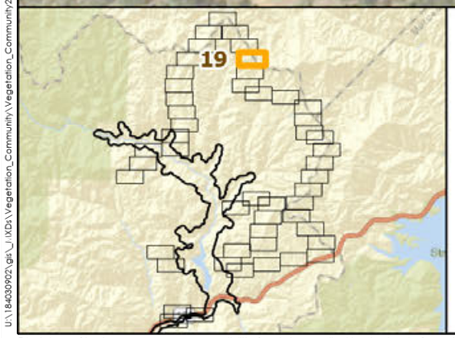

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Aquatic Resource

Pond (9.893 acres)

Riverine Ephemeral (17.132 acres)

Seasonal Wetland (1.116 acre)

Valley Water

AECOM

Stantec GEI

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Appendix E : Vegetation Communities and Other Land Cover Types (Page 19 of 50)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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STANISLAUS
SANTA CLARA

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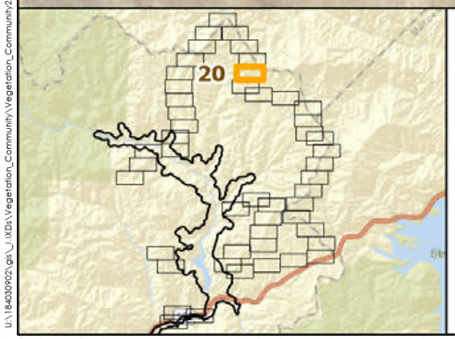

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Aquatic Resource

Pond (9.893 acres)

Riverine Ephemeral (17.132 acres)

Seasonal Wetland (1.116 acre)

Valley Water

AECOM

Stantec GEI

N

Appendix E : Vegetation Communities and Other Land Cover Types (Page 20 of 50)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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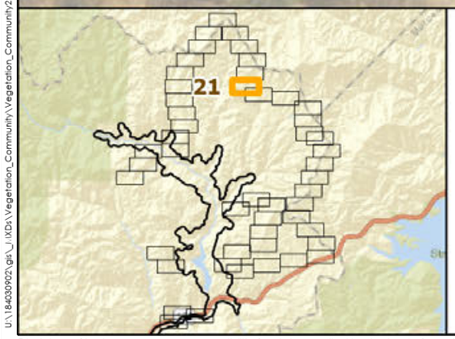

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Aquatic Resource

Pond (9.893 acres)

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Seasonal Wetland (1.116 acre)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix E : Vegetation Communities and Other Land Cover Types (Page 21 of 50)

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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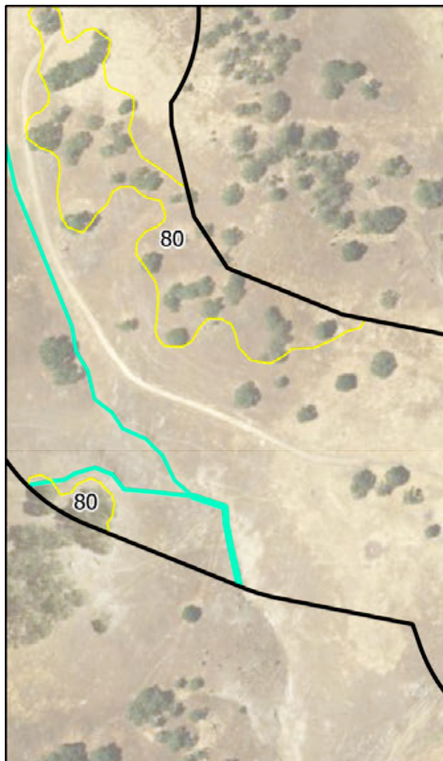

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

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County Line

Aquatic Resource

Pond (9.893 acres)

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Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix E : Vegetation Communities and Other Land Cover Types (Page 22 of 50)

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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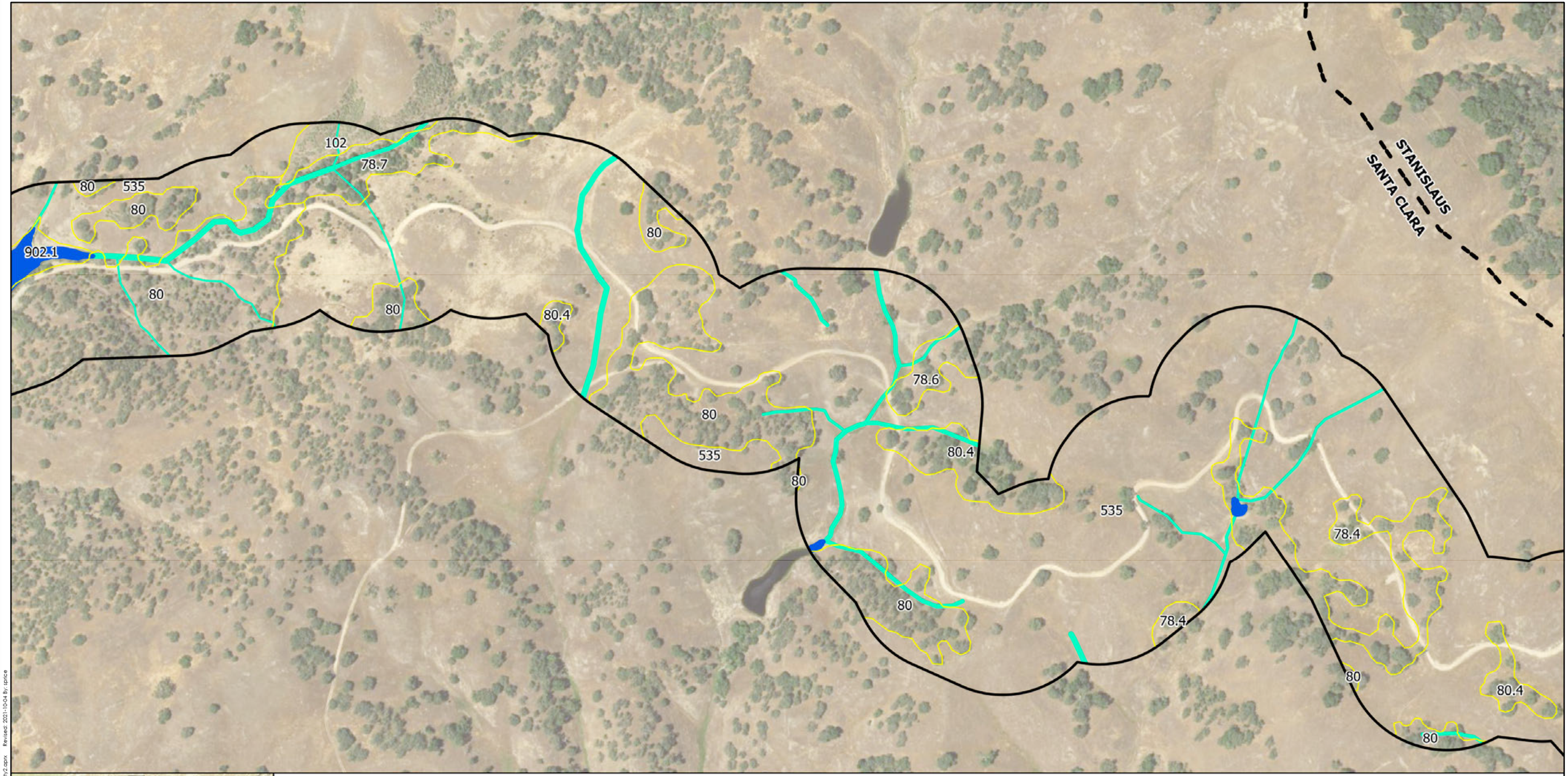

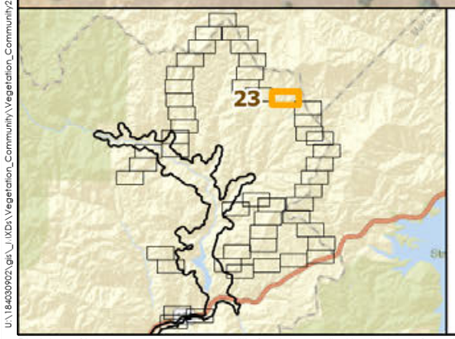

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Aquatic Resource

Pond (9.893 acres)

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Valley Water

AECOM

Stantec GEI

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Appendix E : Vegetation Communities and Other Land Cover Types (Page 23 of 50)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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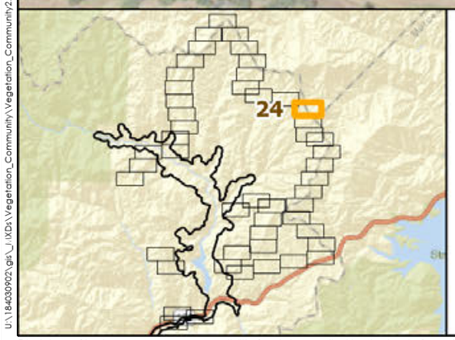
SANTA CLARA
STANISLAUS
MERCED



Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

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N

Appendix E : Vegetation Communities and Other Land Cover Types (Page 24 of 50)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

U:\185403900\gis_UXDs\Vegetation_Community\Vegetation_Community2.aprx Revised: 2021-10-04 By: spruce

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SANTA CLARA
STANISLAUS
STANISLAUS
MERCED
MERCED
SANTA CLARA
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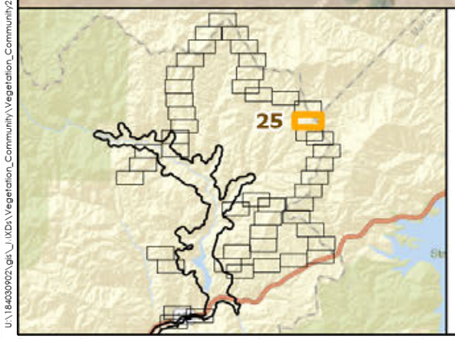

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

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525 Sensitive

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N

Appendix E : Vegetation Communities and Other Land Cover Types (Page 25 of 50)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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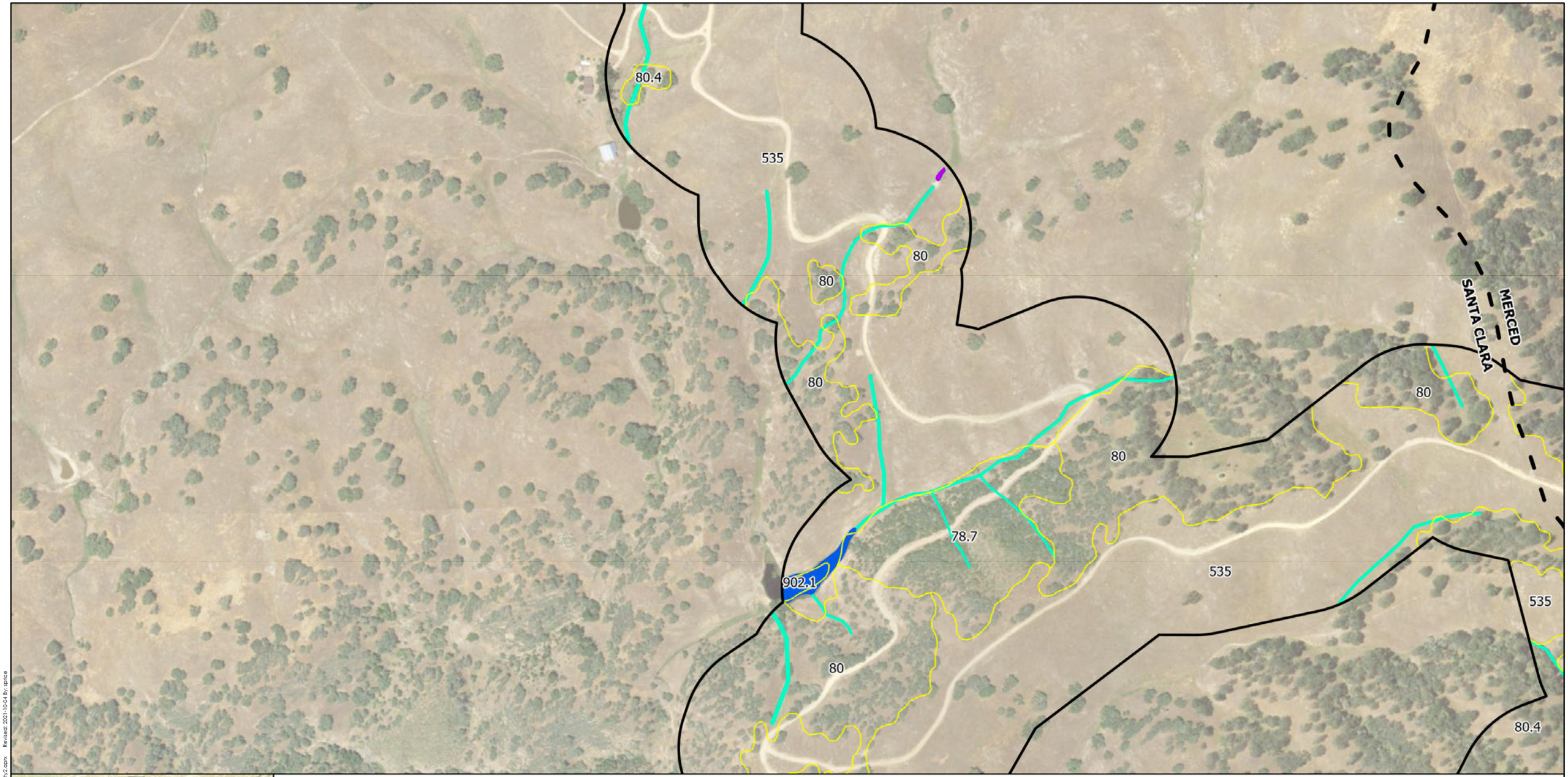

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Aquatic Resource

Pond (9.893 acres)

Riverine Ephemeral (17.132 acres)

Seasonal Wetland (1.116 acre)

Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix E : Vegetation Communities and Other Land Cover Types (Page 26 of 50)

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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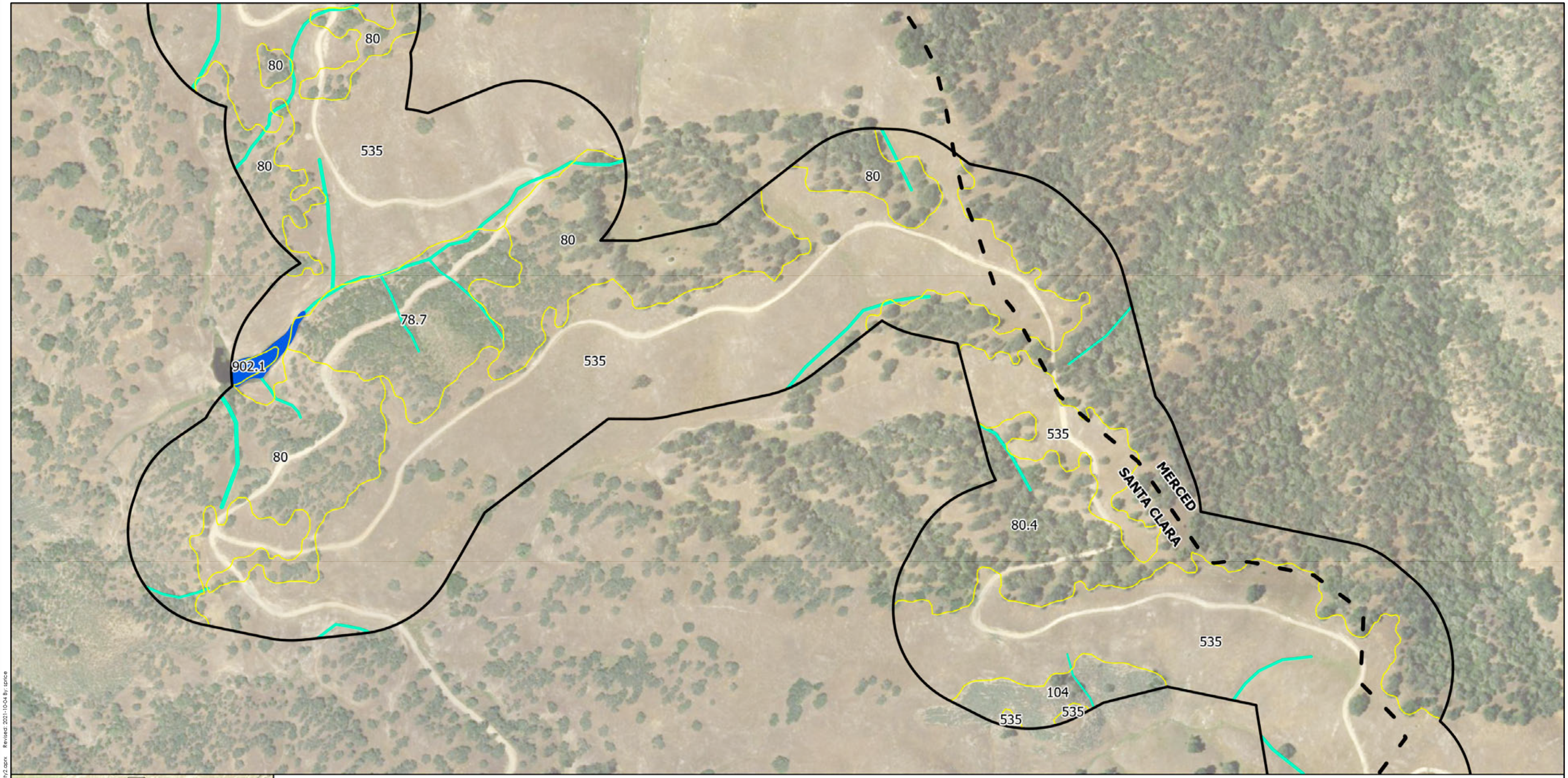

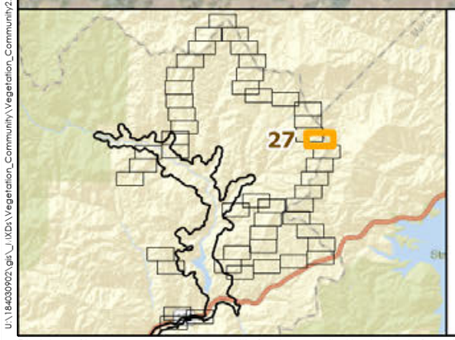

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Aquatic Resource

Pond (9.893 acres)

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Valley Water

AECOM

Stantec GEI

N

Appendix E : Vegetation Communities and Other Land Cover Types (Page 27 of 50)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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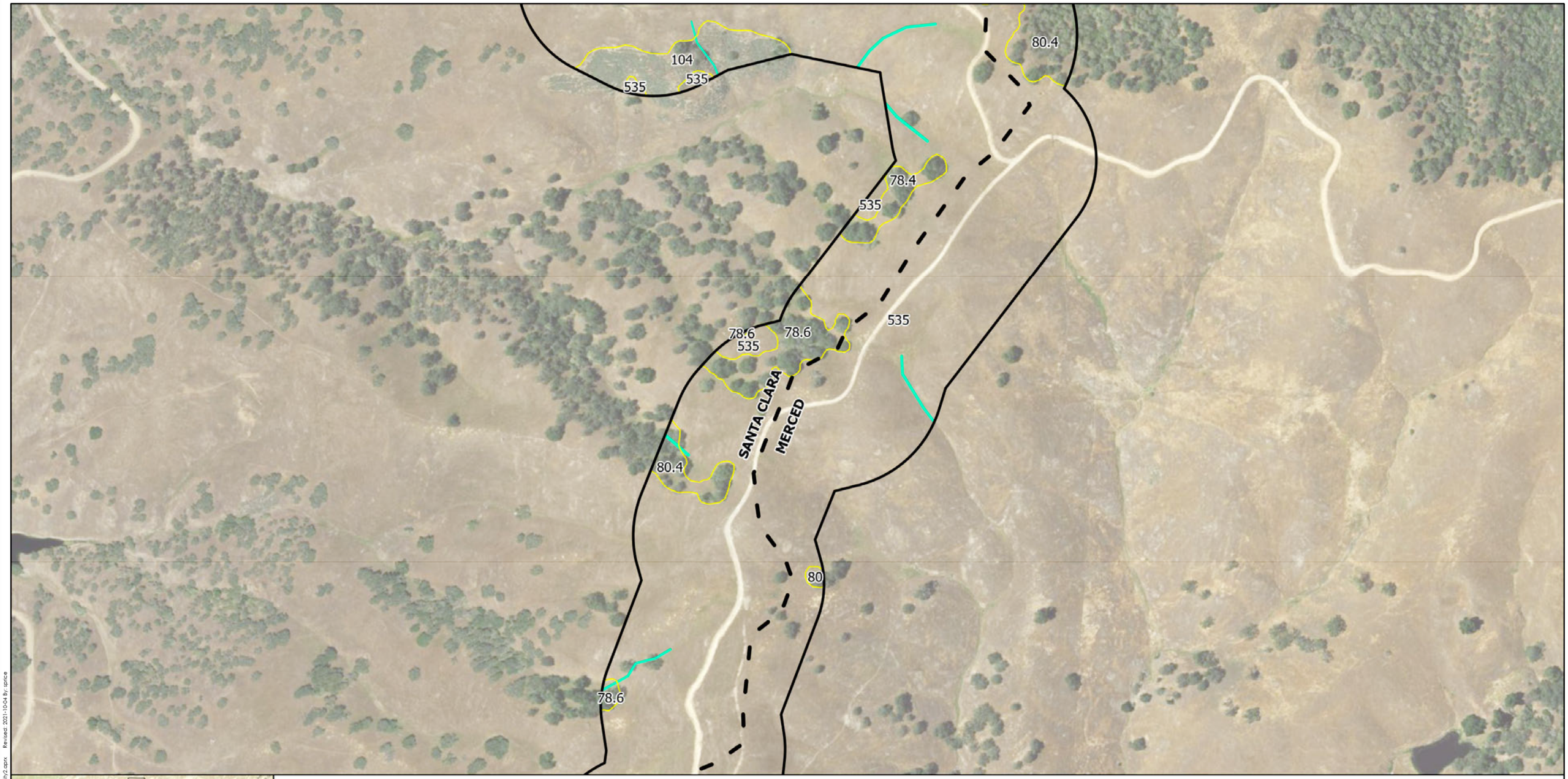

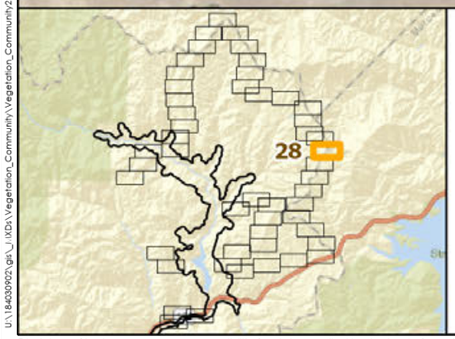

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Aquatic Resource

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Valley Water

AECOM

Stantec GEI

N

Appendix E : Vegetation Communities and Other Land Cover Types (Page 28 of 50)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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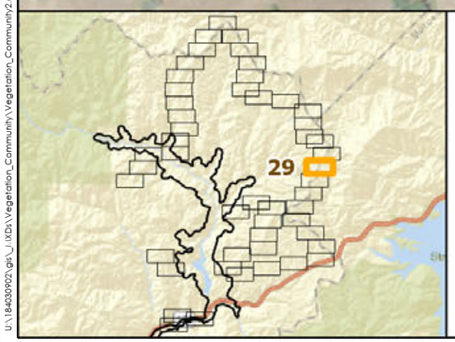

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

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N

Appendix E : Vegetation Communities and Other Land Cover Types (Page 29 of 50)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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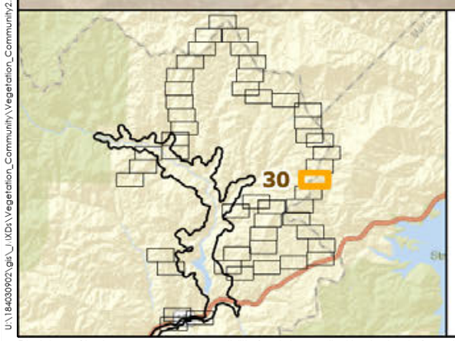

Pacheco Reservoir Expansion Project

Study Area

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0 300 600 Feet

1 in = 300 Feet

Appendix E : Vegetation Communities and Other Land Cover Types (Page 30 of 50)

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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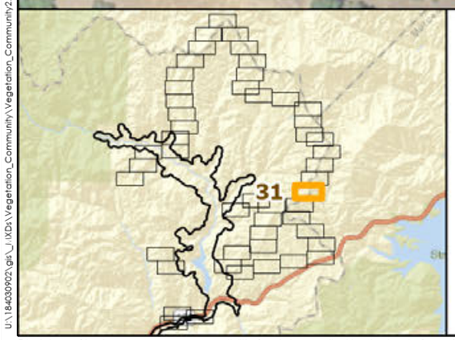

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

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N

Appendix E : Vegetation Communities and Other Land Cover Types (Page 31 of 50)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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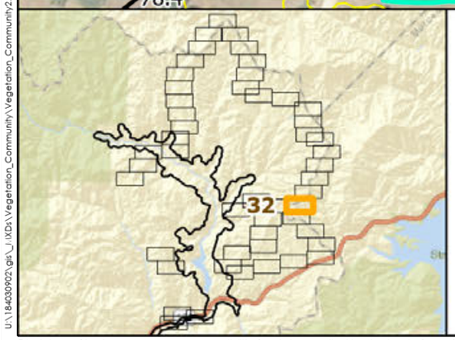

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

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County Line

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Appendix E : Vegetation Communities and Other Land Cover Types (Page 32 of 50)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
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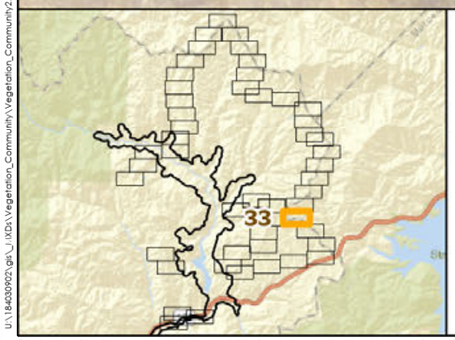

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

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Appendix E : Vegetation Communities and Other Land Cover Types (Page 33 of 50)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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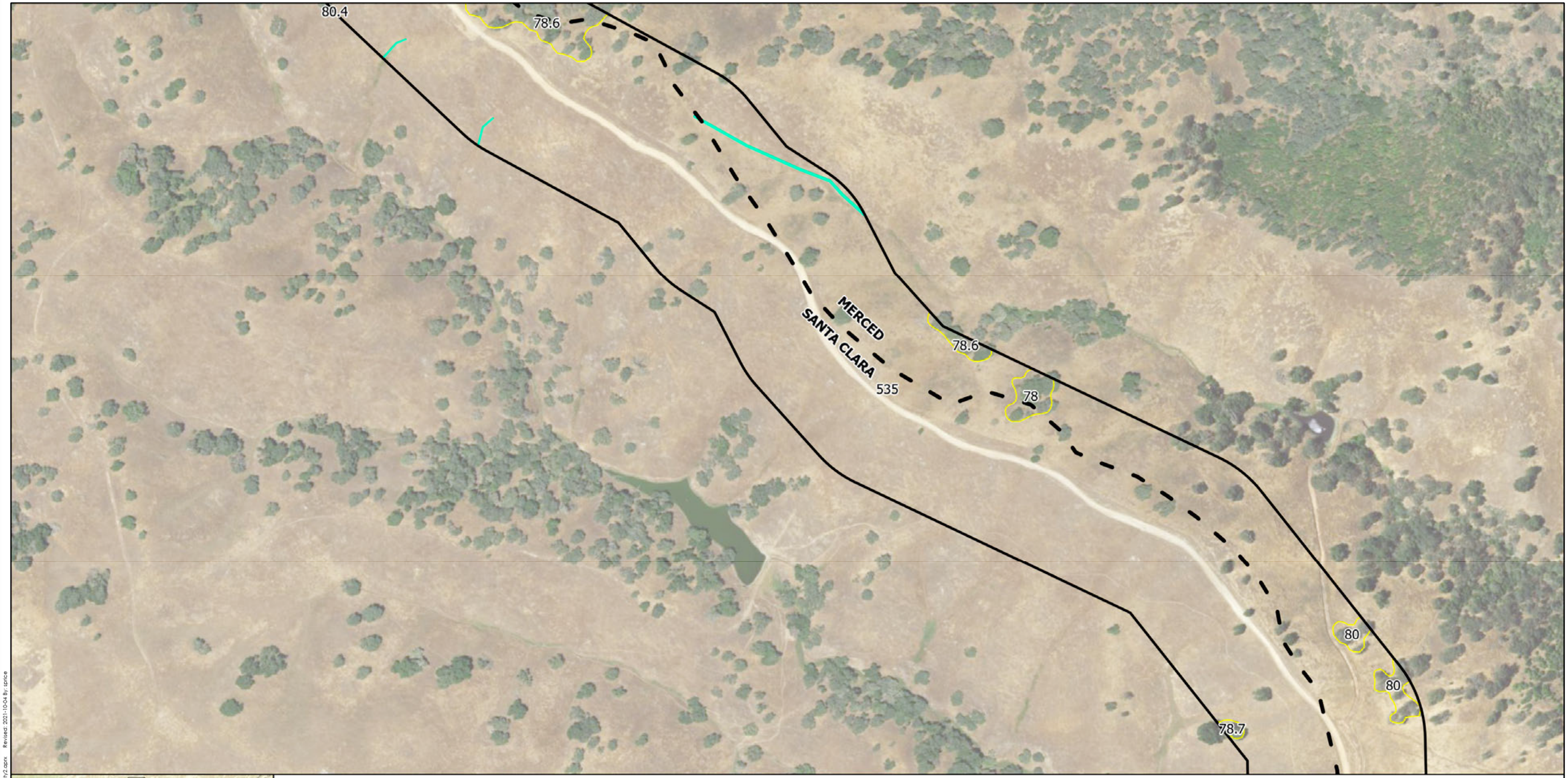

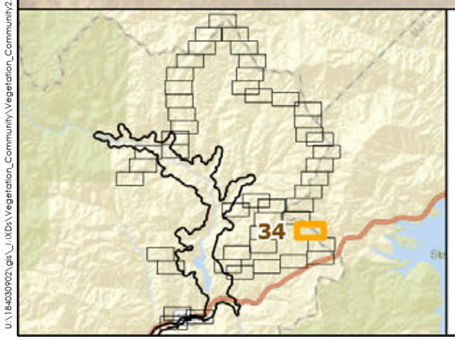

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

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Appendix E : Vegetation Communities and Other Land Cover Types (Page 34 of 50)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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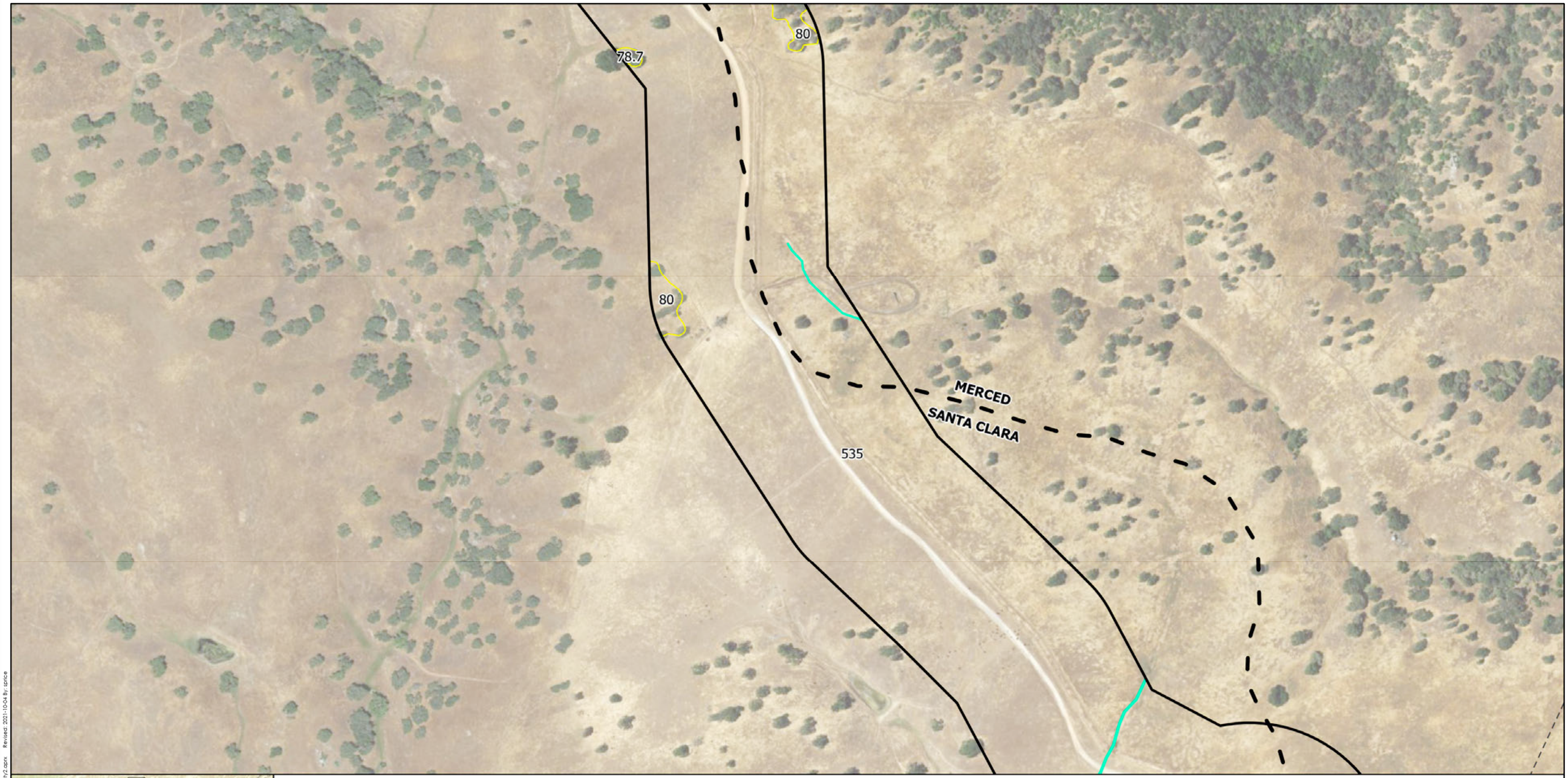

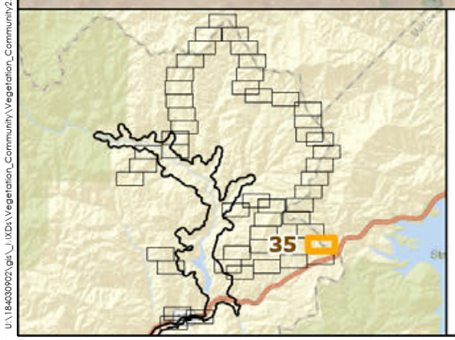

Pacheco Reservoir Expansion Project

Study Area

Caltrans Right-of-way

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Aquatic Resource

Pond (9.893 acres)

Riverine Ephemeral (17.132 acres)

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Valley Water

AECOM

Stantec GEI

N

Appendix E : Vegetation Communities and Other Land Cover Types (Page 35 of 50)

0 300 600 Feet

1 in = 300 Feet

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Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
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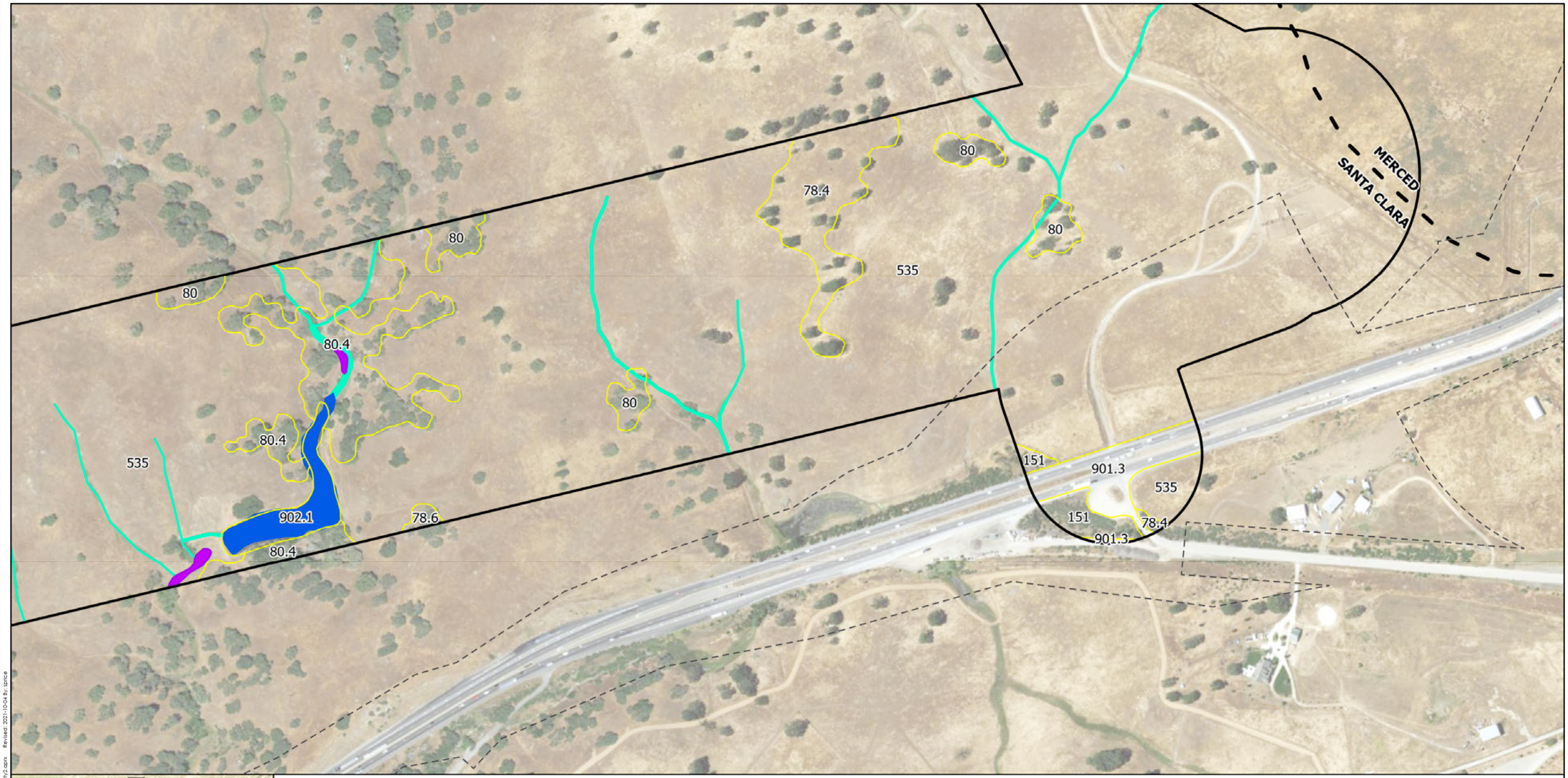

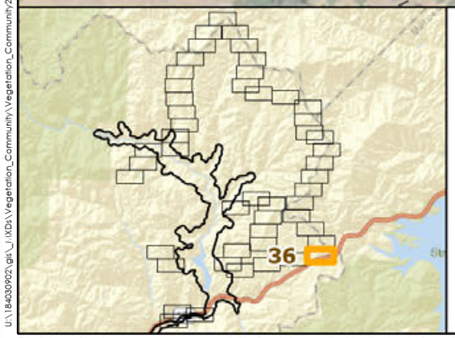

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

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County Line

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N

Appendix E : Vegetation Communities and Other Land Cover Types (Page 36 of 50)

0 300 600 Feet

1 in = 300 Feet

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Background: USGS/NAIP (2016)
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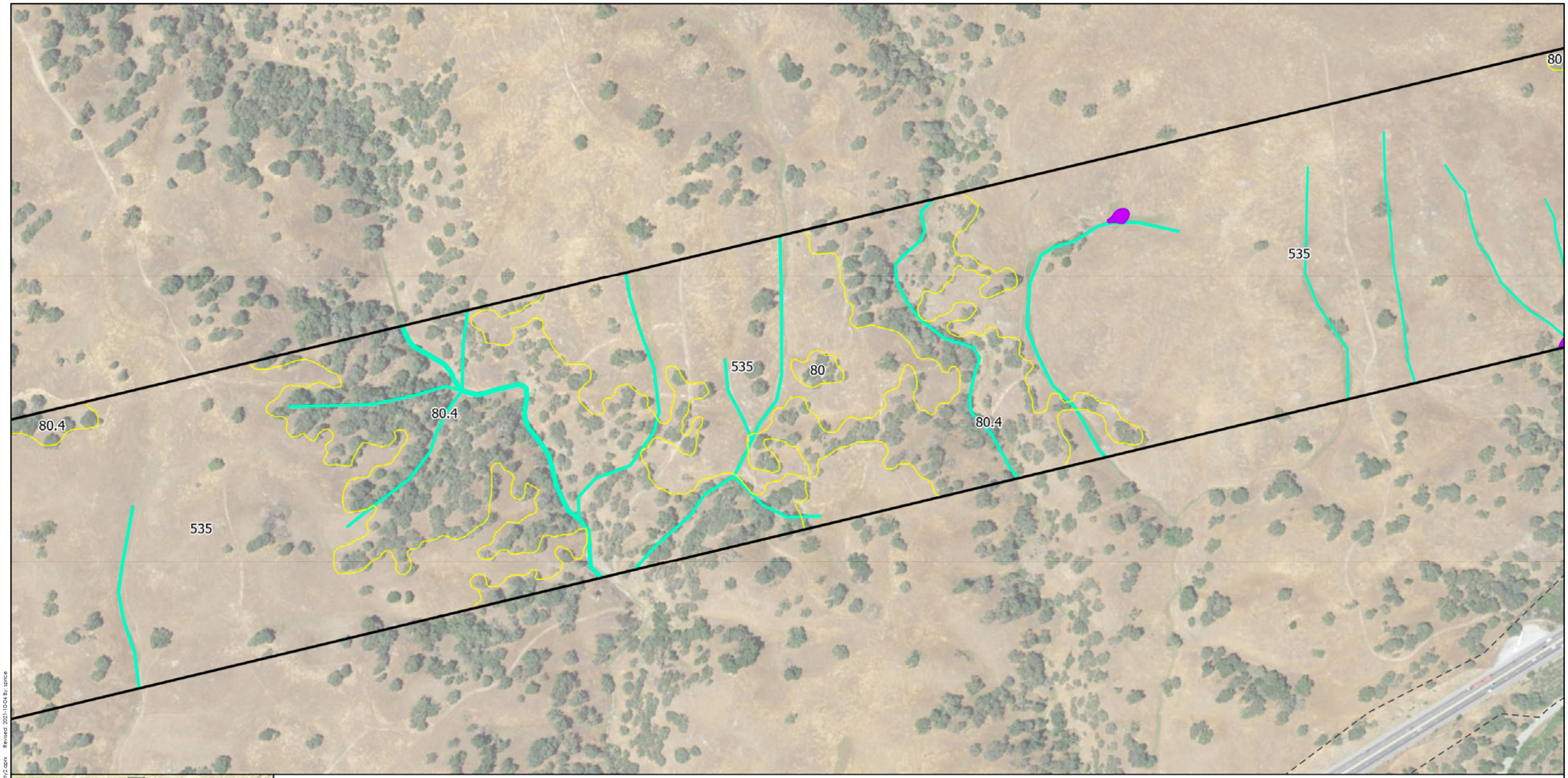

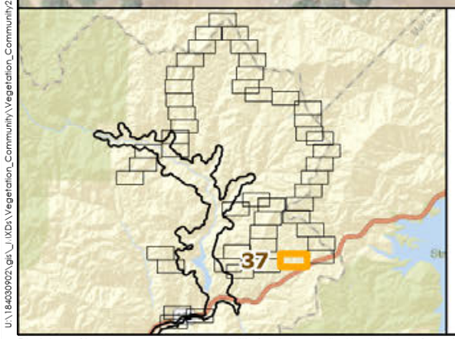

Pacheco Reservoir Expansion Project

Study Area

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Appendix E : Vegetation Communities and Other Land Cover Types (Page 37 of 50)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
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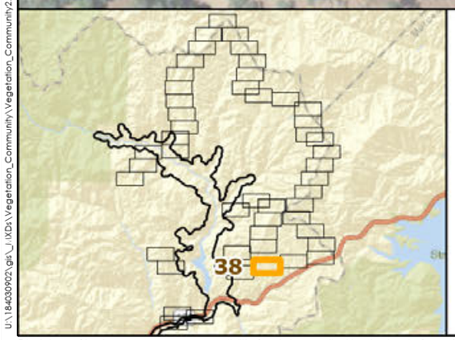

Pacheco Reservoir Expansion Project

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Appendix E : Vegetation Communities and Other Land Cover Types (Page 38 of 50)

0 300 600 Feet

1 in = 300 Feet

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Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
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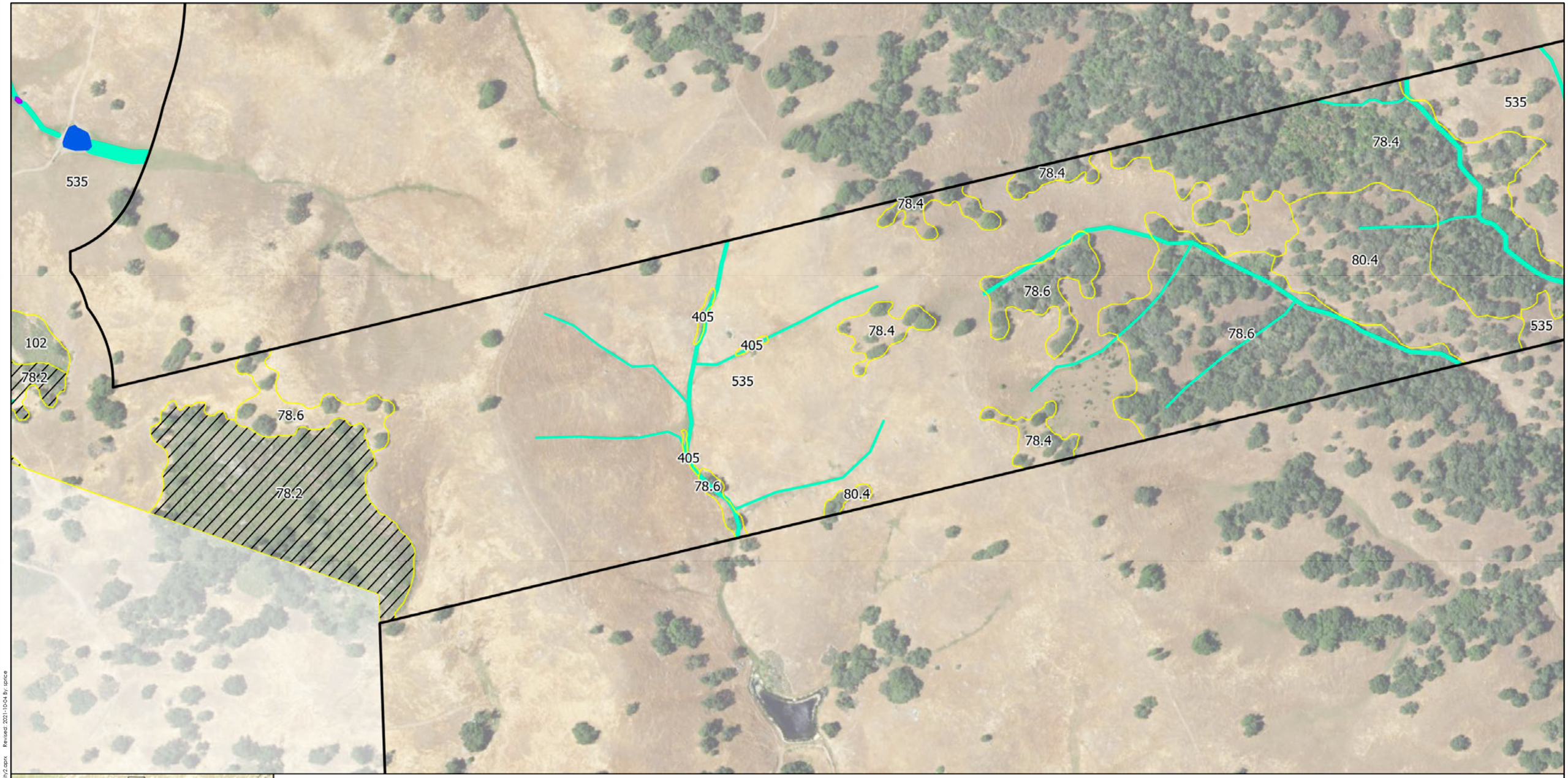

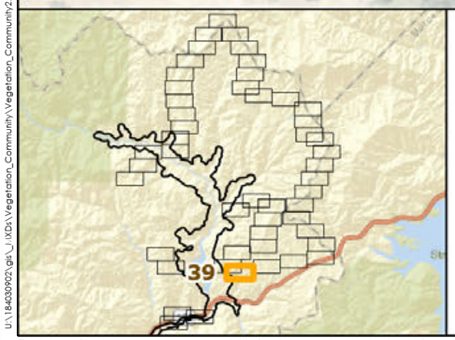

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Appendix E : Vegetation Communities and Other Land Cover Types (Page 39 of 50)

0 300 600 Feet

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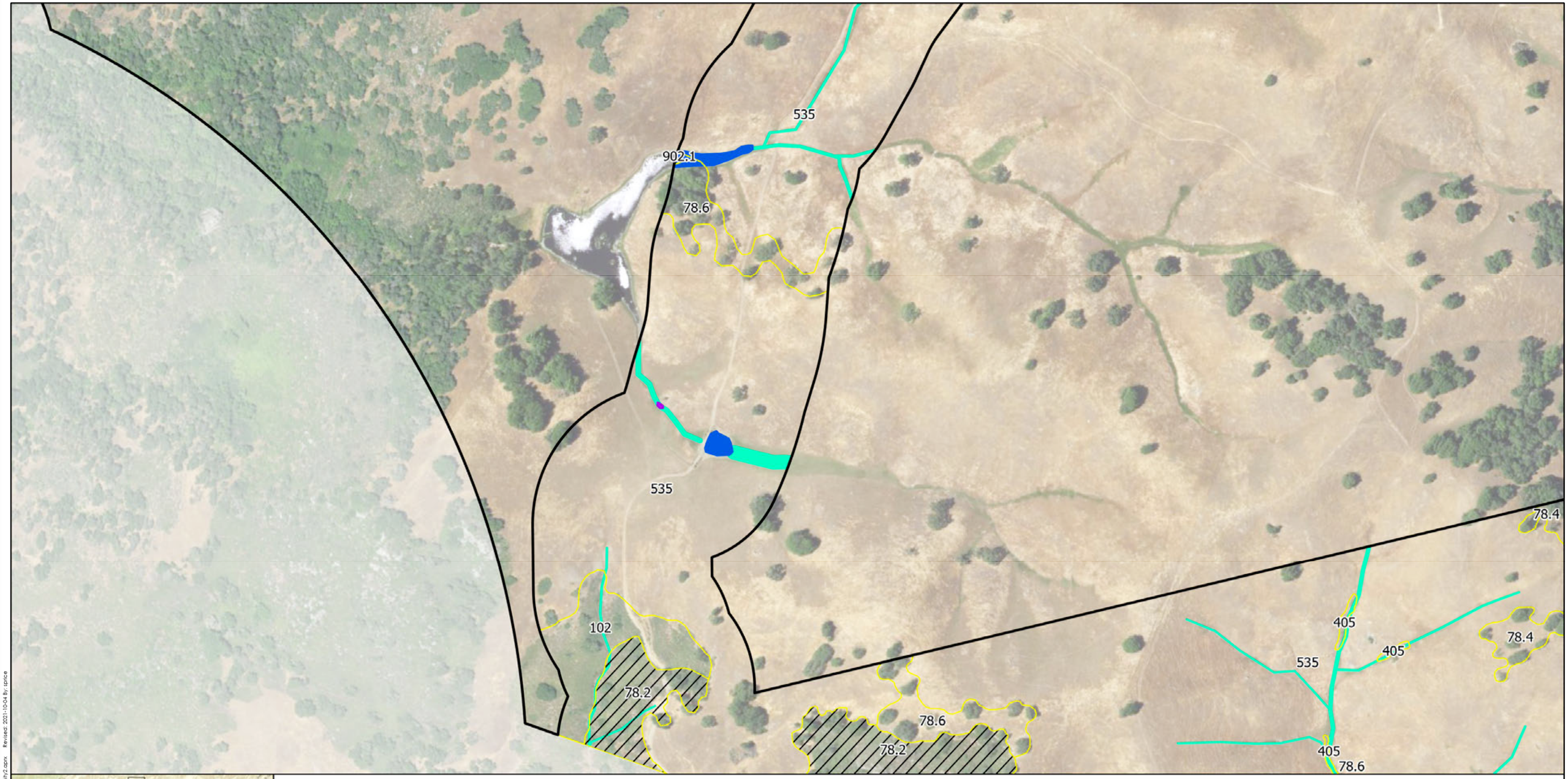

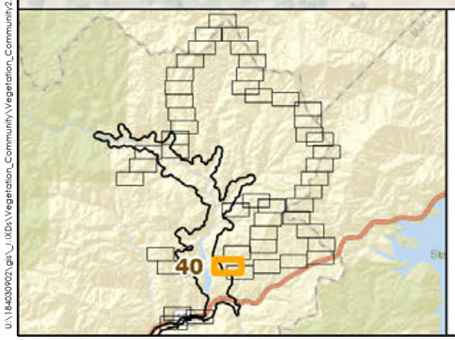

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Appendix E : Vegetation Communities and Other Land Cover Types (Page 40 of 50)

0 300 600 Feet

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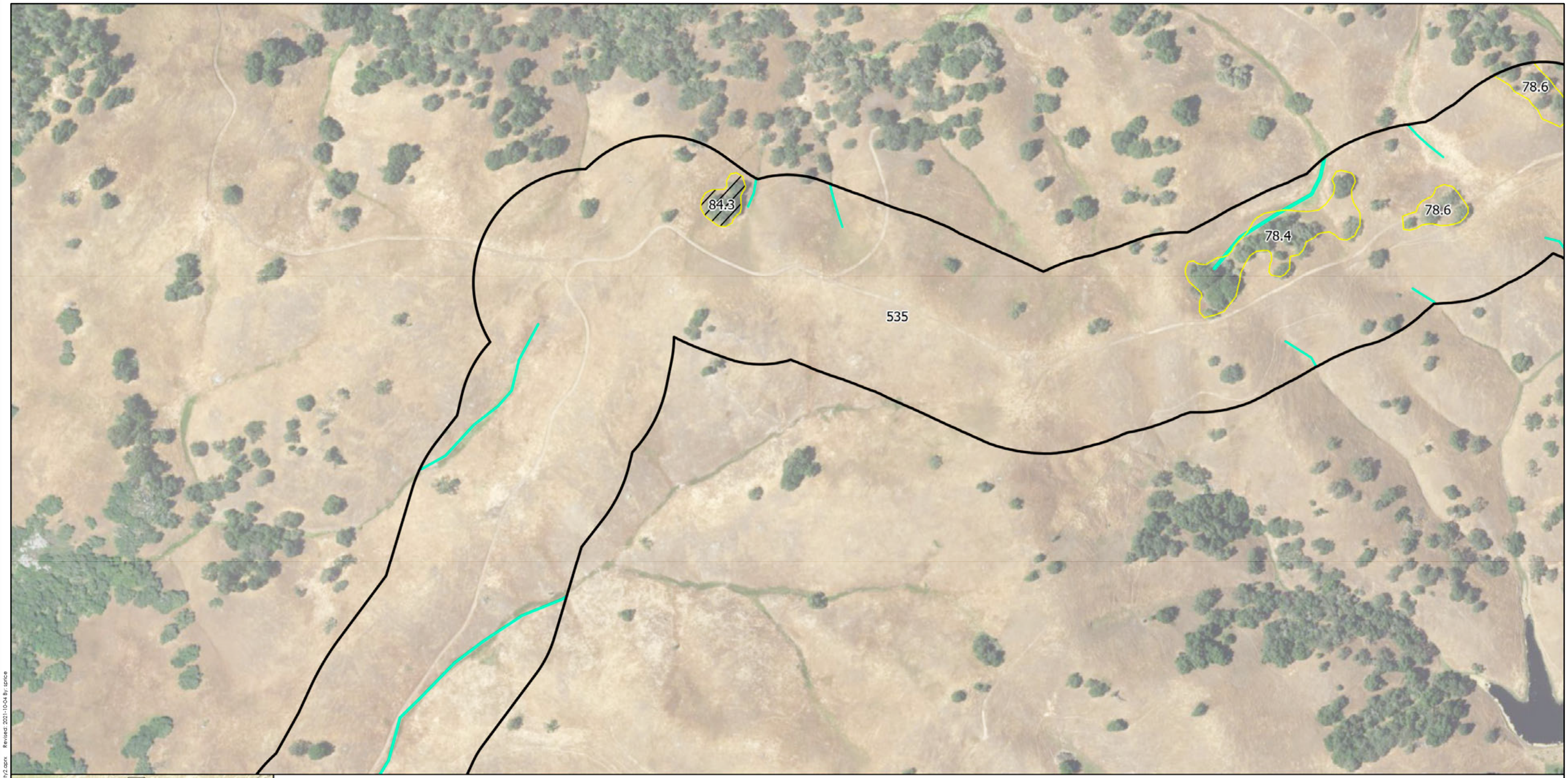

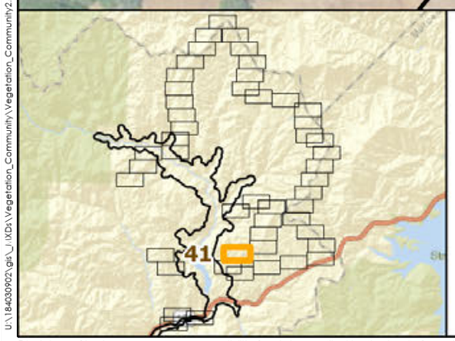

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Appendix E : Vegetation Communities and Other Land Cover Types (Page 41 of 50)

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Stantec, 2021

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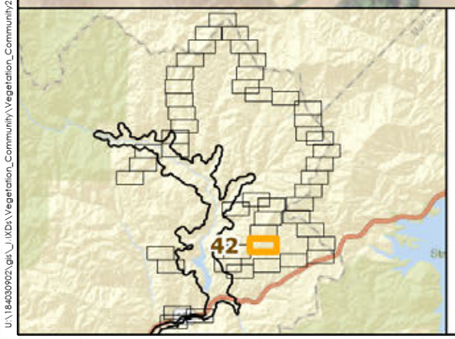

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Aquatic Resource

Pond (9.893 acres)

Riverine Ephemeral (17.132 acres)

Seasonal Wetland (1.116 acre)

Valley Water

AECOM

Stantec GEI

N

Appendix E : Vegetation Communities and Other Land Cover Types (Page 42 of 50)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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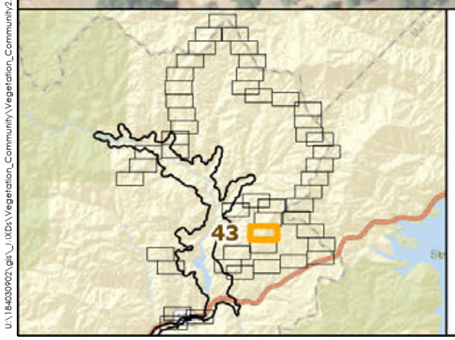

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Aquatic Resource

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Valley Water

AECOM

Stantec GEI

N

Appendix E : Vegetation Communities and Other Land Cover Types (Page 43 of 50)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

U:\185403902\gis_UXDs\Vegetation_Community\Vegetation_Community2.aprx Revised: 2021-10-04 By: spruce

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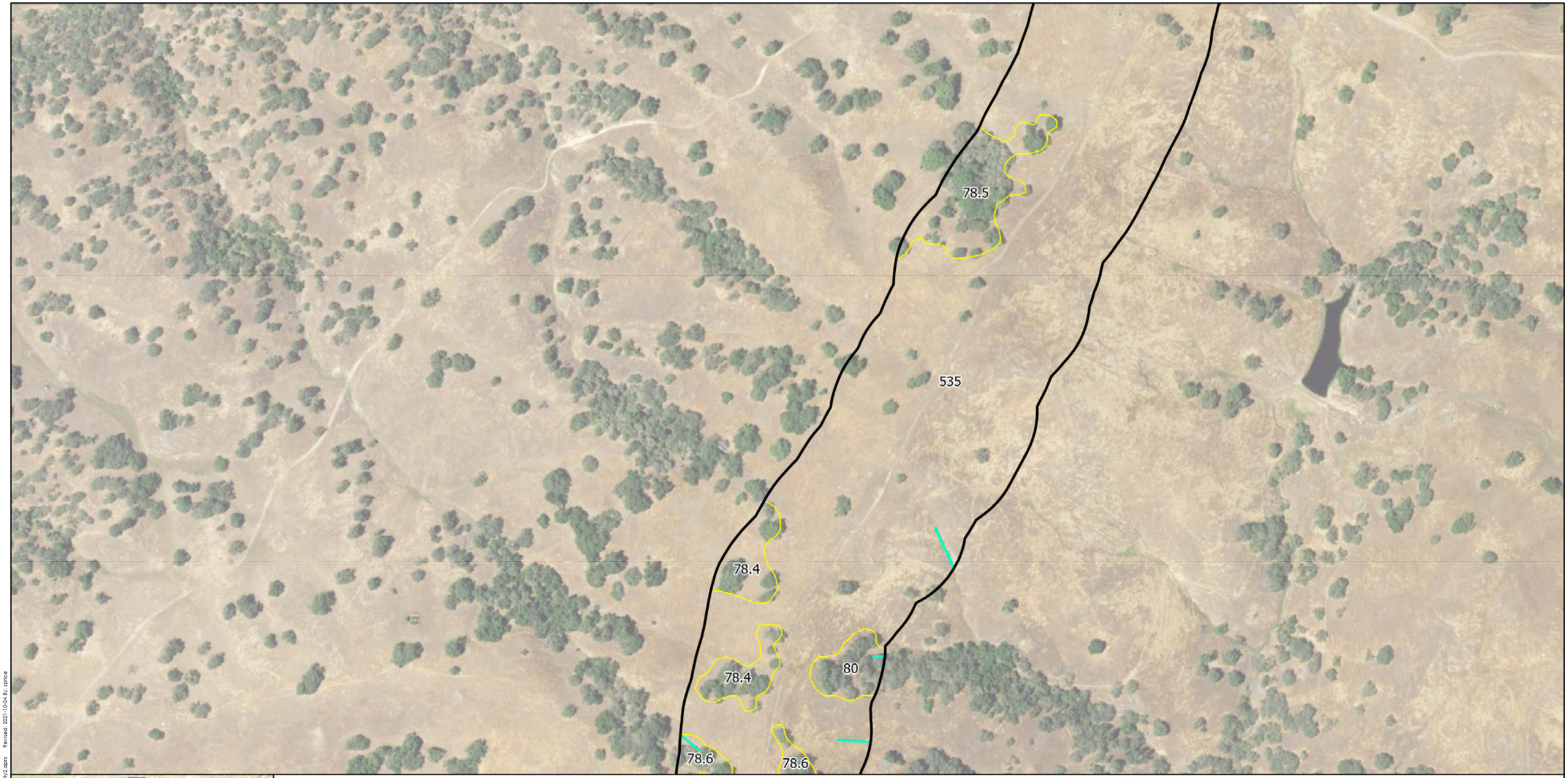

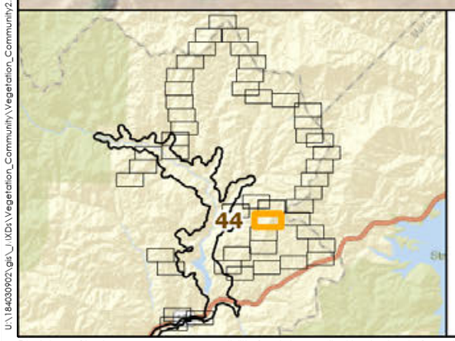

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Aquatic Resource

Pond (9.893 acres)

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Valley Water

AECOM

Stantec GEI

N

Appendix E : Vegetation Communities and Other Land Cover Types (Page 44 of 50)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

U:\18430922\gis_MXD\Vegetation_Community\Vegetation_Community2.aprx Revised: 2021-10-04 By: ajarice

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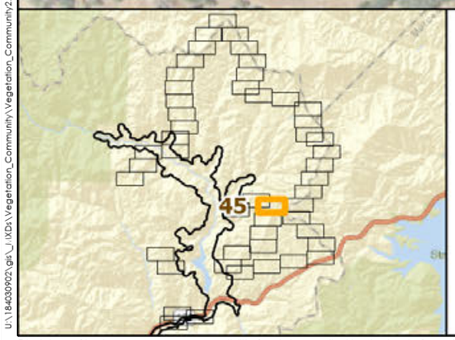

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

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525 Sensitive

County Line

Aquatic Resource

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Valley Water

AECOM

Stantec GEI

N

0 300 600 Feet

1 in = 300 Feet

Appendix E : Vegetation Communities and Other Land Cover Types (Page 45 of 50)

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

U:\185430902\gis_MXDs\Vegetation_Community\Vegetation_Community2.aprx Revised: 2021-10-04 By: spriece

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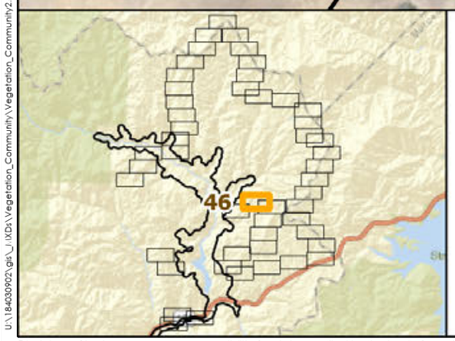

Pacheco Reservoir Expansion Project

Study Area

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

Aquatic Resource

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Valley Water

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Appendix E : Vegetation Communities and Other Land Cover Types (Page 46 of 50)

0 300 600 Feet

1 in = 300 Feet

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

U:\18453892\gis_UXD\1 Vegetation_Community\Vegetation_Community2.aprx Revised: 2021-10-04 By: sprice

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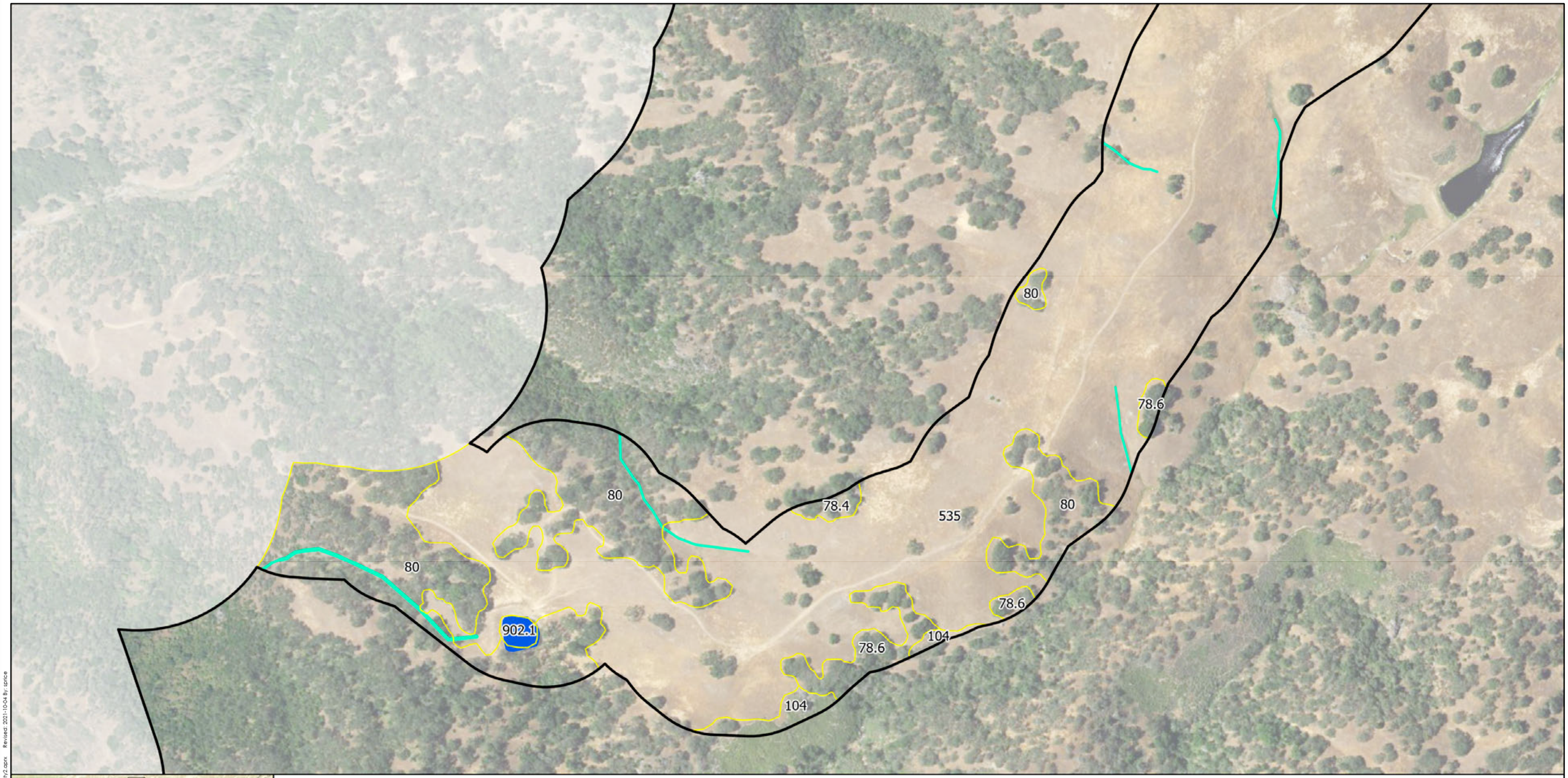

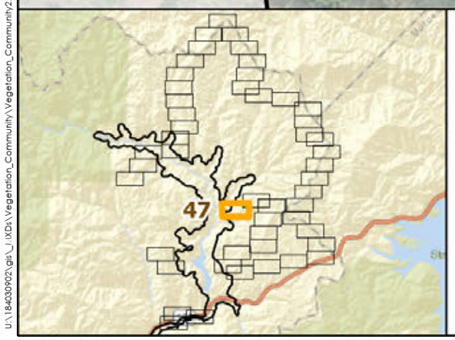

Pacheco Reservoir Expansion Project

Study Area

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0 300 600 Feet

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Appendix E : Vegetation Communities and Other Land Cover Types (Page 47 of 50)

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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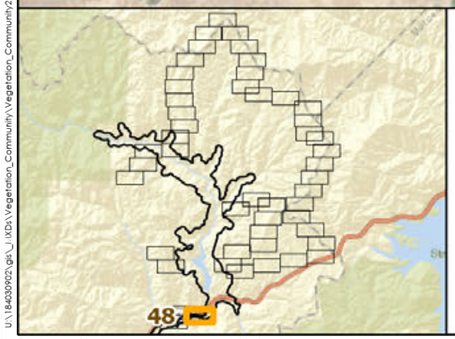
Pacheco Creek



Pacheco Reservoir Expansion Project

Study Area

Caltrans Right-of-way

Vegetation Communities

80 Not Sensitive or Not Listed

525 Sensitive

County Line

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Appendix E : Vegetation Communities and Other Land Cover Types (Page 48 of 50)

Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

U:\185403920\gis_MXDs\Vegetation_Community\Vegetation_Community2.aprx Revised: 2021-10-04 By: sprice

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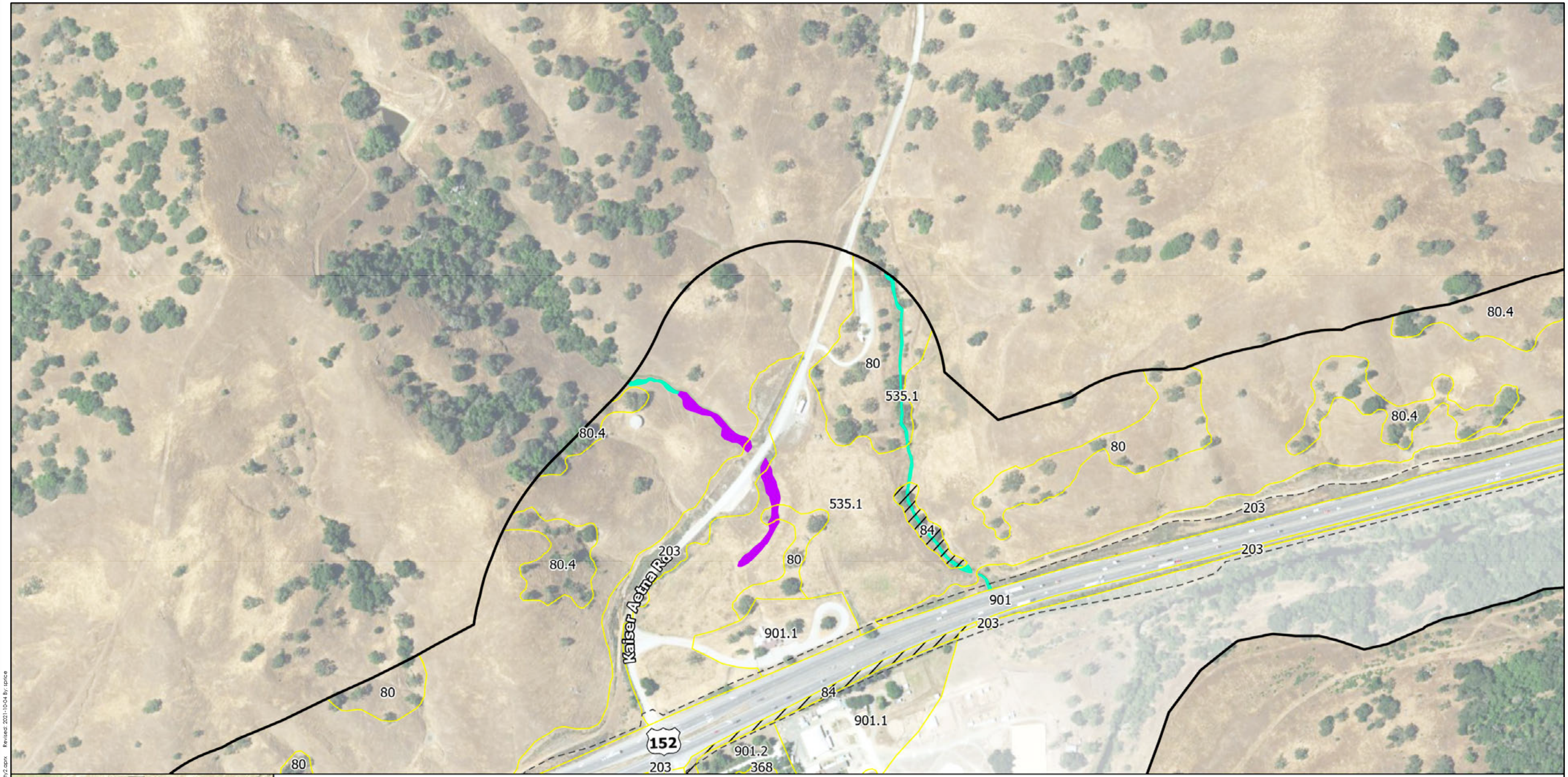

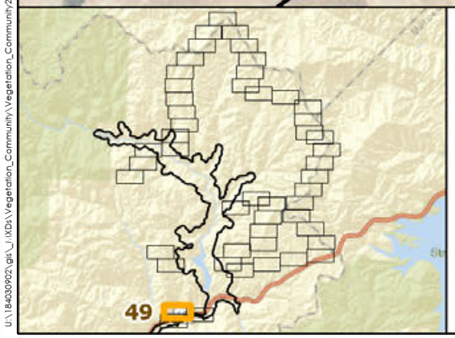

Pacheco Reservoir Expansion Project

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Appendix E : Vegetation Communities and Other Land Cover Types (Page 49 of 50)

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Projection: NAD 1983 State Plane California Zone III
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Stantec, 2021

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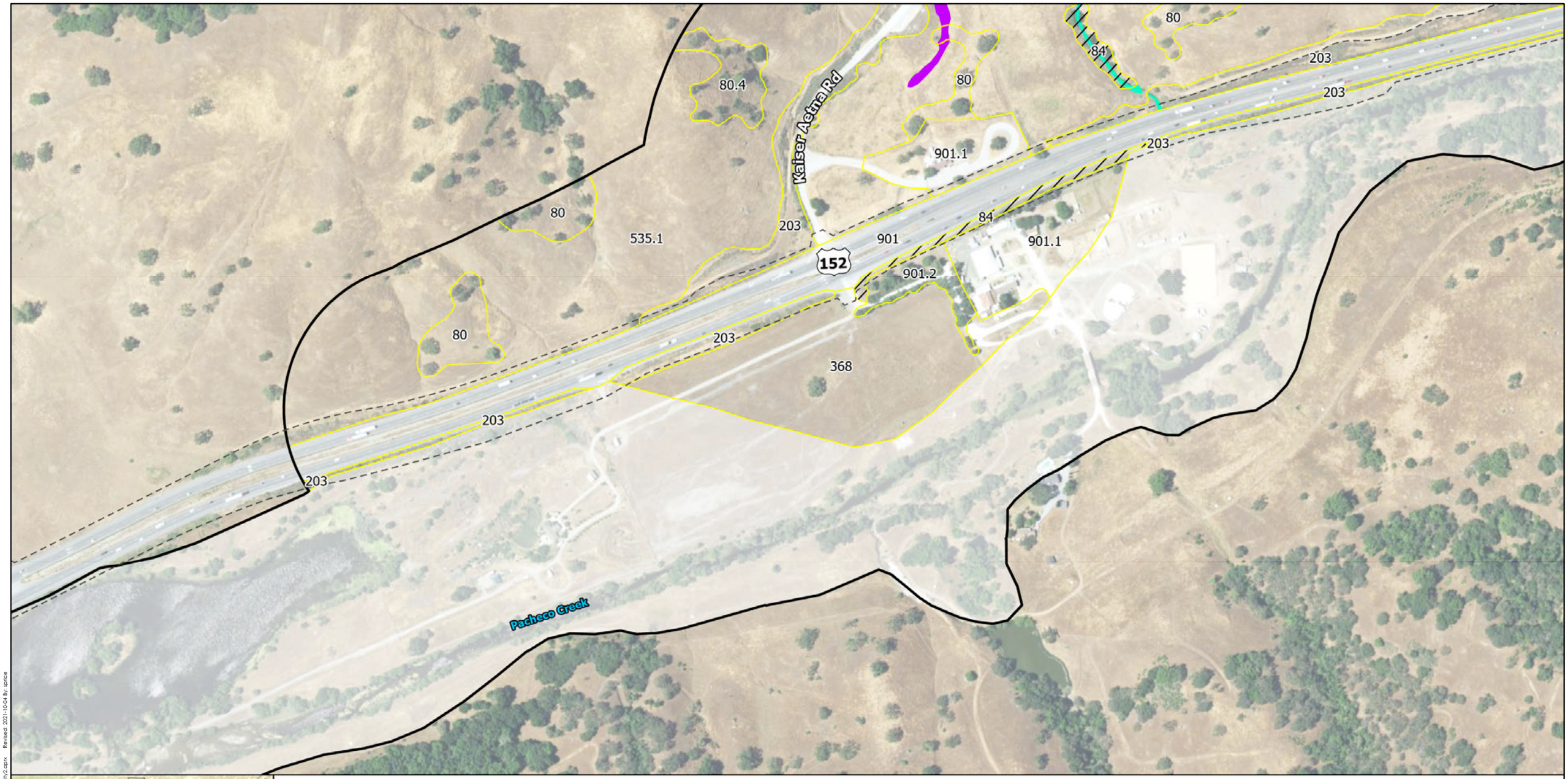

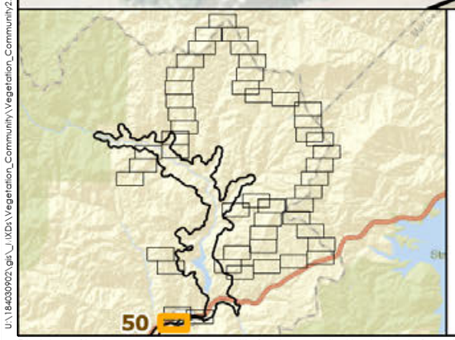

Pacheco Reservoir Expansion Project

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Appendix E : Vegetation Communities and Other Land Cover Types (Page 50 of 50)

0 300 600 Feet

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Prepared by SCP: October 04, 2021
Projection: NAD 1983 State Plane California Zone III
Background: USGS/NAIP (2016)
Stantec, 2021

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