



**Biological Survey Report for the
El Capitan Dam Spillway
Vegetation Removal Project
San Diego, California**

Prepared for
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A handwritten signature in black ink, appearing to read "AS", is positioned above the name of the biologist.

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Acronyms and Abbreviations

ADD	Assistant Deputy Director
AMSL	above mean sea level
BBS	Busby Biological Services
BCME	Biological Construction Mitigation/Monitoring Exhibit
BMPs	Best Management Practices
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
City	City of San Diego
CNDDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CRAM	California Rapid Assessment Method
CRPR	California Rare Plant Rank
CSV	Consultant Site Visit Record
CWA	Clean Water Act
dB(A)	A-weighted decibels
DSD	Development Services Department
DSOD	Division of Safety of Dams
EPP	Essential Public Projects
ESA	Endangered Species Act
ESL	Environmentally Sensitive Lands
GPS	Global Positioning System
HELIX	Helix Environmental Planning, Inc.
L_{eq}	average sound level
MBTA	Migratory Bird Treaty Act
MHPA	Multi-Habitat Planning Area
MMC	Mitigation Monitoring Coordination
MMC	Mitigation Monitoring and Coordination
MSCP	Multiple Species Conservation Program
OHWM	Ordinary High Water Mark
PUD	City of San Diego Public Utilities Department
Rocks Biological	Rocks Biological Consulting
RWQCB	Regional Water Quality Control Board
SDNHM	San Diego Natural History Museum
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

Summary

The City of San Diego (City) proposes the El Capitan Dam Spillway Vegetation Removal (project), which entails the removal of vegetation and sediment from within the spillway of El Capitan Dam and temporary staging of equipment and debris outside of the spillway. The project impact area totals 9.80 acres. The project site is located at El Capitan Dam in central San Diego County, northwest of the community of Alpine and northeast of the community of Flinn Springs in San Diego County, California.

The project will be done in an effort to comply with the mandate from the Division of Safety of Dams (DSOD), part of the State of California Department of Water Resources. The DSOD has mandated that the City remove the accumulated vegetation and debris from the spillway to allow for unimpeded spillway flow and completion of requisite annual assessments of the spillway by the DSOD.

The project will remove approximately 58,900 cubic yards of debris and approximately six acres of vegetation to comply with the mandate from the DSOD described above. Vegetation removal will likely be done through cutting with chainsaws or other similar equipment down to the roots and then excavation of the root systems with a backhoe or excavator. Vegetation will be reduced via a woodchipper and hauled off-site for disposal. Any vegetation of invasive non-natives on-site will be contained in order to avoid the spread of seeds and properly disposed of off-site. Following the initial removal, the spillway will be regularly maintained to prevent any subsequent buildup of sediment and/or vegetation.

The survey area for this project was defined based on previously proposed project impact areas as well as direction provided by City staff during the planning phase of the project. The surrounding survey buffer varies between approximately 130 and 700 feet from the existing project impact area, resulting in a 75.44-acre survey area.

Vegetation Communities

The following 14 vegetation communities or land cover types were mapped within the survey area: coastal and valley freshwater marsh, fresh water, southern cottonwood-willow riparian forest, disturbed southern cottonwood-willow riparian forest, southern riparian woodland, southern coast live oak riparian forest, scrub oak chaparral, Diegan coastal sage scrub, disturbed Diegan coastal sage scrub, non-native grassland, eucalyptus woodland, Arundo-dominated riparian, disturbed land, and urban/developed land. The project would result in direct impacts to 4.97 acres of sensitive vegetation communities, comprising 0.20 acre of coastal and valley freshwater marsh (wetland), 2.08 acres of southern cottonwood-willow riparian forest (wetland), 0.62 acre of disturbed southern cottonwood-willow riparian forest (wetland), 0.51 acre of southern riparian woodland (wetland), 0.20 acre of southern coast live oak riparian forest (wetland), 0.91 acre of Diegan coastal sage scrub (Tier II), and 0.45 acre of disturbed Diegan coastal sage scrub (Tier II).

These impacts would be mitigated through the allocation of 11.99 acre of in-kind habitat credits from the City Public Utilities Department's Stadium Mitigation Site and Goat Mesa Mitigation Site, both of which occur within the Multi-Habitat Planning Area.

Sensitive Plant Species

A total of four sensitive plant species were observed within the survey area, including Dean's milkvetch (*Astragalus deanei*), delicate clarkia (*Clarkia delicata*), Engelmann oak (*Quercus engelmannii*), and rush-like bristleweed (*Xanthisma junceum*). However, only one Engelmann oak individual occurs within the project impact area but would be avoided during construction. The project activities are not expected to result in impacts to any other rare plant species. No other sensitive plant species are expected to occur on-site.

Sensitive Wildlife Species

A total of 15 sensitive wildlife species were observed within or adjacent to the survey area, and 22 additional sensitive wildlife species were identified as having a high or moderate potential to occur. The project would result in significant direct impacts to western spadefoot (*Spea hammondi*), Cooper's hawk (*Accipiter cooperii*), least Bell's vireo (*Vireo bellii pusillus*), yellow warbler (*Setophaga petechia*), yellow-breasted chat (*Icteria virens*), white-tailed kite (*Elanus leucurus*), western red bat (*Lasiurus blossevillii*), and western yellow bat (*Lasiurus xanthinus*), as well as bird species covered by the federal Migratory Bird Treaty Act and California Fish and Game Code sections 3503 and 3503.5. These impacts would be considered significant unless mitigated.

Direct impacts to breeding western spadefoot would be mitigated below the level of significance through restrictions on the timing of construction activities (avoiding impacts during periods when the site could support amphibian breeding) and/or the pre-construction surveys and biological monitoring during construction.

Direct impacts to Cooper's hawk, least Bell's vireo, yellow warbler, yellow-breasted chat, and white-tailed kite, as well as bird species covered by the Migratory Bird Treaty Act and California Fish and Game Code, would be mitigated below the level of significance through avoidance of construction activities during the combined breeding season for these species (February 1 to September 15). If construction during the breeding season cannot be avoided, a pre-construction survey shall be conducted by a Qualified Biologist to determine the presence of any bird nests. If an active nest is located, a Qualified Biologist and City Mitigation Monitoring Coordination section will determine additional measures to be implemented in order to avoid impacts to the nest.

Indirect noise impacts to least Bell's vireo would be mitigated through implementation of noise attenuation measures and/or noise monitoring, if construction occurs during this species breeding season (March 15 through September 15).

Direct impacts to western red bat and western yellow bat would be mitigated below the level of significance through the establishment of a Designated Bat Biologist who will monitor any vegetation with potential for bat roosting on the same day of and immediately prior to the removal of said vegetation. If western red bat or western yellow bat are found to be occupying

any portion of the project impact area, these areas will be avoided until the individuals have left of their own accord. Mitigation measures would include restrictions on the timing of construction activities (avoiding impacts during the maternity season of May through August 15) and/or the Designated Bat Biologist monitoring of the removal of any vegetation to examine the branches for nonvolant (nonflying) juvenile bats. Any injured or potentially injured bats shall be transported by the Designated Bat Biologist to a California Department of Fish and Wildlife (CDFW) licensed bat rehabilitator within 48 hours.

Jurisdictional Resources

Jurisdictional resources were delineated throughout the survey area in accordance with the guidelines set forth by the U.S. Army Corps of Engineers (USACE). These include 4.92 acres of potential wetland waters of the U.S. and 0.83 acre of potential non-wetland waters of the U.S. The CDFW and Regional Water Quality Control Board (RWQCB) potential jurisdictional areas consist of 0.26 acre of streambed (non-wetland waters of the state), 0.57 acre of lake (non-wetland waters of the state), and 11.10 acres of riparian habitat (wetland waters of the State), totaling 11.93 acres. The area considered City wetlands totals 5.13 acres.

The project would result in direct impacts to a total of 2.63 acres and 1,021 linear feet of potential wetland and non-wetland waters of the U.S. under the jurisdiction of the USACE. Direct impacts to potential wetland and non-wetland waters of the state (under the jurisdiction of CDFW and RWQCB) would total 3.62 acres and 1,021 linear feet. Direct impacts to City wetlands areas would total 2.62 acres.

Unavoidable impacts to jurisdictional waters may be authorized through permit authorizations from the USACE through the Section 404 Permit Program, from the CDFW through a 1602 Streambed Alteration Agreement, and from the RWQCB through a 401 State Water Quality Certification. During the permitting process, the USACE, CDFW, and RWQCB will decide the extent of their jurisdiction. The project qualifies as an Essential Public Project, which would allow a deviation from the City's Environmentally Sensitive Lands wetland regulations to be granted.

The off-site compensatory mitigation for impacts to sensitive wetland vegetation communities at the Stadium Mitigation Site may satisfy the no-net-loss requirement for impacts to jurisdictional resources. However, the details regarding the mitigation required will be determined during permit negotiations with USACE, CDFW, and RWQCB.

1.0 Introduction

The purpose of this biological resources report is to (1) document the existing biological conditions within the project survey area; (2) evaluate the survey area and the vicinity for the potential to support sensitive biological resources, including Environmentally Sensitive Lands (ESL); (3) provide an impact analysis based on the potential impacts associated with the proposed project; and (4) provide a discussion of potential avoidance, minimization, and mitigation measures to reduce potential impacts to sensitive biological resources below a level of significance.

1.1 Project Location

The project site is located at El Capitan Dam, which occurs along the San Diego River at the western end of the El Capitan Reservoir within El Monte Valley and northwest of the community of Alpine in central San Diego County, California (Figure 1). The project will take place within (from west to east) the Discharge Channel, the Lower Spillway, the Spillway Chute, and the Upper Spillway for approximately 2,500 feet (Figures 2 and 3). Access to the site will occur along existing access roads and areas have been identified for equipment staging and stockpiling material. The project site is located within the limits of the Cleveland National Forest and is in the northeast quarter of Section 7, Township 15 South, Range 02 East, on the U.S. Geological Survey (USGS) 7.5-minute topographical maps, El Cajon Mtn., California quadrangle (see Figure 2; USGS 1997). The project site comprises portions of Assessor's Parcel Numbers 4020700500, 4020700400, and 4020700300, which are owned by both the City of San Diego (City) and the U.S. Forest Service.

This project is located outside the boundaries of the City of San Diego and the City's Multiple Species Conservation Program Subarea Plan (MSCP). Therefore, the project occurs outside the City's Multi-Habitat Planning Area (MHPA). However, because this project occurs partially on City-owned land, the MSCP guidelines and conditions of coverage have been utilized to analyze impacts to covered species under the California Environmental Quality Act (CEQA). Although the project occurs partially on land owned by the U.S. Forest Service (USFS) as part of the Cleveland National Forest, this project would not conflict with the USFS Land Management Plan specific to the Cleveland National Forest: Part 2 Cleveland National Forest Strategy (U.S. Department of Agriculture [USDA] 2005).

1.2 Project Description

El Capitan Reservoir is located on the San Diego River and impounds runoff from the surrounding 190 square mile watershed. El Capitan Dam is a hydraulic fill rock embankment with an impervious clay core and a 510-foot-wide uncontrolled independent side channel spillway at elevation 750 feet above mean sea level (AMSL). The spillway capacity is 110,000 million gallons per day. The dam crest has a length of 1,170 feet and stands roughly 217 feet above the streambed.




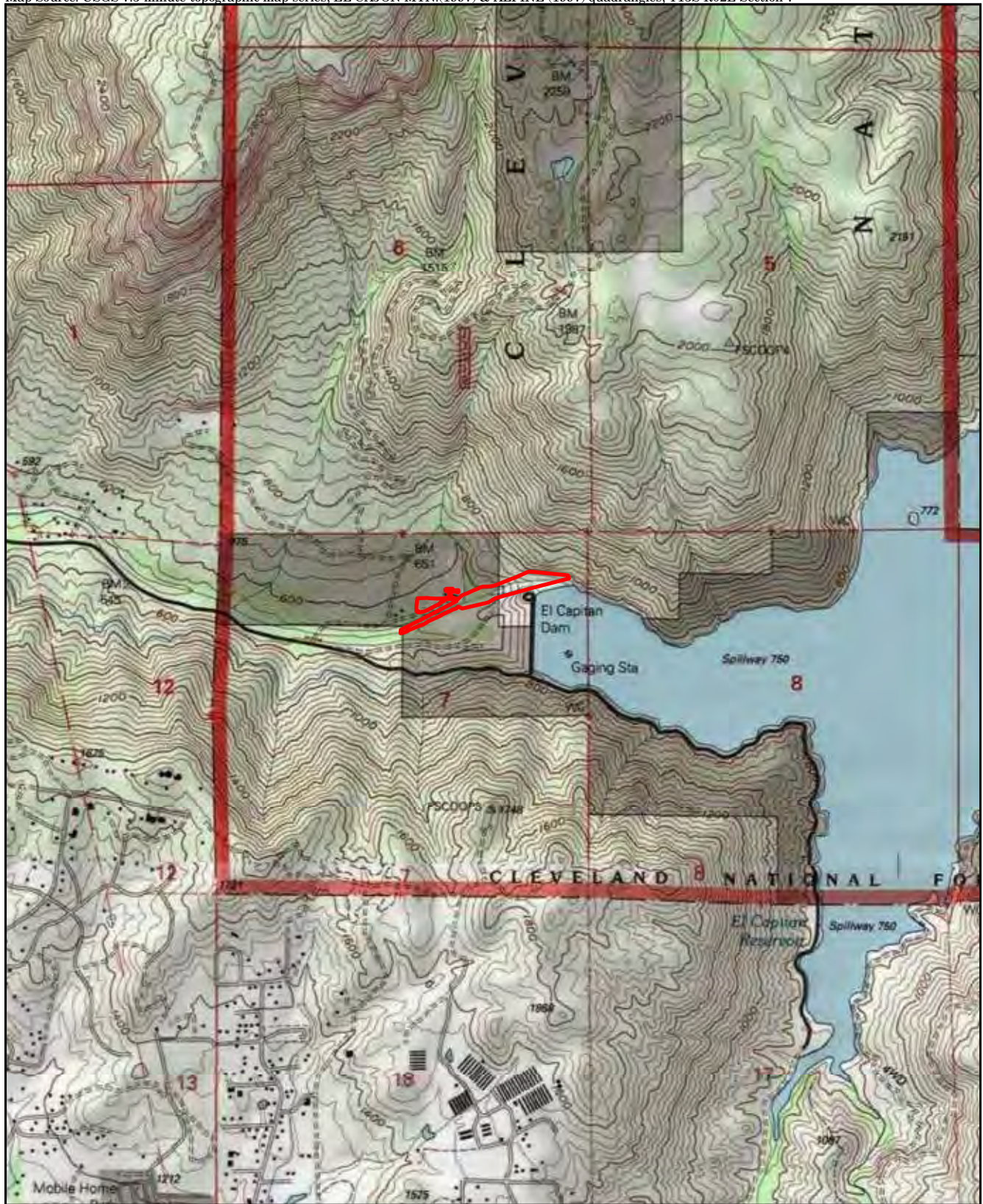
 Project Location

FIGURE 1
Regional Location









 Project Boundary



FIGURE 2

Project Location on USGS Map



- | | | |
|--|---|--|
|  Project Boundary | Spillway Sections |  Spillway Chute |
|  Survey Area |  Discharge Channel |  Upper Spillway |
| |  Lower Spillway | |

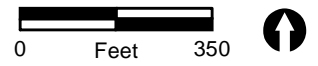


FIGURE 3
Project Location on Aerial Photograph

The spillway consists of four distinct sections, the Upper Spillway, the Spillway Chute, the Lower Spillway, and the Discharge Channel. Over the years, differing amounts and characteristics of sediment and vegetation accumulation have occurred in each section due to their different physical characteristics. The accumulated sediment includes soils, silt, rocks, landslide materials, and boulders. Vegetation, from grass and shrubs to fully matured trees, has also taken root and is quite dense in some areas.

The Division of Safety of Dams (DSOD) part of the State of California Department of Water Resources has mandated that the City remove the accumulated vegetation and debris from the spillway to allow for unimpeded spillway flow and completion of requisite annual assessments of the spillway by the DSOD. The City's Public Utilities Department (PUD) is proposing the removal of sediment and vegetation within the four sections of the spillway in an effort to comply with the mandate from the DSOD.

The project will remove approximately 58,900 cubic yards of debris and approximately six acres of vegetation to comply with the mandate from the DSOD described above. Vegetation removal will likely be done through cutting with chainsaws or other similar equipment down to the roots and then excavation of the root systems with a backhoe or excavator. Vegetation removal will be conducted by hand at the fieldstone wall immediately north of the project impact area. Vegetation will be reduced via a woodchipper and hauled off-site for disposal. Any vegetation of invasive non-native species on-site will be contained in order to avoid the spread of seeds and properly disposed of off-site. For example, any tamarisk (*Tamarix ramosissima*), tree tobacco (*Nicotiana glauca*), or giant reed (*Arundo donax*) removed during initial project construction (vegetation and sediment removal), and/or during any future maintenance, will be collected and either contained on-site or hauled off-site immediately following removal. If being contained on-site, the material from these, and any other invasive non-native species, will be placed in an appropriate bin or other containment device in order to minimize the spread of seed and/or potentially viable plant segments until this material can be hauled and disposed off-site.

Truck-mounted cranes, large tracked excavators, rubber-wheeled front end loaders, track mounted long-arm excavators, track mounted bobcats with breaker attachments, and dump trucks are examples of equipment that would be used to remove debris from the spillway. Large boulders will be reduced via breakers, drilling, or other methods determined by the contractor. Material (such as rocks and sediment) that can be reused will be stockpiled at the existing Lakes Program Storage Area (see Figure 3), owned and managed by the PUD, located immediately north of the spillway. Other debris will be hauled off-site and disposed of in accordance with applicable regulations. Proper Best Management Practices (BMPs) will be implemented during construction in order to control dust, prevent construction runoff and off-site impacts, and minimize impacts to wildlife. The BMPs proposed will include, but not be limited to, dust control through the use of a water truck, erosion control devices (straw wattles, gravel bags, etc.), and silt fencing around the construction boundary.

Access to the site will be via El Monte Road and a USFS access road, which leads to the Lakes Program Storage Area. The Lakes Program Storage Area will be utilized as a laydown yard in addition to a stockpile site. Entrance into the spillway will be from the Lakes Program

Storage Area (see Figure 3). Equipment will be driven to the Upper Spillway from the Lower Spillway along the Spillway Chute as it is cleared of vegetation. Access to the Discharge Channel will be possible from the Lower Spillway once the Lower Spillway is cleared of vegetation. Work is anticipated to be completed in 18 months. Following the initial vegetation and sediment removal, the spillway will be regularly maintained to prevent any subsequent buildup of sediment and/or vegetation.

2.0 Methods and Survey Limitations

Biological resource data for the project was obtained from a combination of literature review, general biological survey, and focused biological surveys. Focused surveys were conducted for the following resources and species: rare plants, coastal California gnatcatcher (*Polioptila californica californica*), southwestern willow flycatcher (*Empidonax trailii extimus*), least Bell's vireo (*Vireo bellii pusillus*), arroyo toad (*Anaxyrus californicus*), Quino checkerspot butterfly (*Euphydryas editha quino*; Quino), and jurisdictional wetlands/waters (Tables 1a through 1g; Appendices A through K). Additionally, a California Rapid Assessment Method for Wetlands (CRAM) survey was conducted to quantitatively analyze the quality of the riparian habitat within the project site prior to the project (Appendix L). The literature review and survey methods are discussed further below.

The biological surveys were conducted at appropriate times of year to detect presence/absence of target species. However, surveys were limited by temporal factors, as all surveys were conducted during the day. Nocturnal animals were only detected by sign such as tracks, scat, and/or burrows.

Zoological nomenclature for birds is in accordance with the American Ornithologists' Union Checklist (Chesser et al. 2018) and Unitt (2004); for mammals with Bradley et al. (2014); for amphibians and reptiles with Crother et al. (2017); and for invertebrates with SDNHM (2002) and Evans (2008). Floral nomenclature for common plants follows Baldwin (2012) as updated by the Jepson Online Interchange (Jepson Flora Project 2020) and for sensitive plants the California Native Plant Society online database (California Native Plant Society [CNPS] 2020). If a plant's common name was not provided in these resources, common names were obtained from Rebman and Simpson (2014), the USDA maintained database (USDA 2020a) or the Sunset Western Garden Book (Brenzel 2001) for ornamental/horticultural plants.

Table 1a Survey Dates, Personnel, Times, and Weather Conditions for Surveys at the El Capitan Dam Spillway Vegetation Removal Project				
Date	Surveyors	Survey Type	Survey Time	Survey Conditions ¹
11/14/2017	Brenna Ogg and Kayo Valenti	general biological survey	07:00 to 16:00	56–77°F, 5% cloud cover increasing to 60%, wind 0–8 mph
11/14/2017	Andrew Smisek and JR Sundberg	wetland delineation	07:00 to 16:00	56–77°F, 5% cloud cover increasing to 60%, wind 0–8 mph
6/6/2018	Terressa Whitaker and Andrew Smisek	CRAM pre-impact	08:00 to 15:30	N/A
4/16/2020	Andrew Smisek	general biological survey	09:00 to 14:00	68–75°F, 0% cloud cover, wind 1–5 mph
°F = degrees Fahrenheit; % = percent; mph = miles per hour; N/A = not available				

Table 1b Survey Dates, Personnel, Times, and Weather Conditions for Rare Plants Surveys at the El Capitan Dam Spillway Vegetation Removal Project				
Date	Surveyors	Survey Type	Survey Time	Survey Conditions ¹
3/27/2018	Andrew Smisek and Kayo Valenti	Rare Plants #1	8:40 to 15:20	N/A
4/25/2018	Andrew Smisek and JR Sundberg	Rare Plants #2	8:30 to 15:00	N/A
N/A = not available				

Table 1c Survey Dates, Personnel, Times, and Weather Conditions for Coastal California Gnatcatcher Surveys at the El Capitan Dam Spillway Vegetation Removal Project				
Date	Surveyors	Survey Type	Survey Time	Survey Conditions ¹
4/26/2018	Brenna Ogg	coastal California gnatcatcher 1	06:00 to 12:00	55–75°F, 100% (marine layer) clearing to 5% cloud cover, wind 2–8 mph
5/23/2018	Brenna Ogg	coastal California gnatcatcher 2	06:00 to 11:15	60–77°F, 100% (marine layer) clearing to 0% cloud cover, wind 0–5 mph
6/19/2018	Brenna Ogg	coastal California gnatcatcher 3	06:00 to 11:10	59–77°F, 100% (marine layer) clearing to 0% cloud cover, wind 2–8 mph
°F = Fahrenheit; % = percent; mph = miles per hour				

Table 1d Survey Dates, Personnel, Times, and Weather Conditions for Least Bell's Vireo Surveys at the El Capitan Dam Spillway Vegetation Removal Project				
Date	Surveyors	Survey Type	Survey Time	Survey Conditions ¹
4/18/2018	Darin Busby	least Bell's vireo 1	07:10 to 09:25	52–70°F, 0% cloud cover, wind 1–7 mph
5/3/2018	Darin Busby	least Bell's vireo 2	08:40 to 10:45	61–72°F, 0% cloud cover, wind 0–4 mph
5/15/2018	Darin Busby	least Bell's vireo 3	07:15 to 09:10	58–65°F, 100% cloud cover, wind 1–3 mph
5/25/2018	Erik LaCoste and Andrew Kort	least Bell's vireo 4	07:00 to 10:00	61–76°F, 100% cloud cover clearing to 50%, wind 0–4 mph
6/4/2018	Erik LaCoste and Andrew Kort	least Bell's vireo 5	06:30 to 08:30	64–70°F, 0% cloud cover, wind 2–5 mph
6/14/2018	Andrew Kort	least Bell's vireo 6	07:30 to 10:00	66–75°F, 0% cloud cover, wind 1–3 mph
6/27/2018	Andrew Kort	least Bell's vireo 7	07:00 to 09:00	61–70°F, 100% cloud cover clearing to 0%, wind 1–3 mph
7/12/2018	Andrew Kort	least Bell's vireo 8	07:00 to 09:00	71–72°F, 20% cloud cover, wind 1–3 mph

¹F = Fahrenheit; % = percent; mph = miles per hour

Table 1e Survey Dates, Personnel, Times, and Weather Conditions for Southwestern Willow Flycatcher Surveys at the El Capitan Dam Spillway Vegetation Removal Project				
Date	Surveyors	Survey Type	Survey Time	Survey Conditions ¹
5/25/2018	John Konecny	southwestern willow flycatcher 1	07:00 to 10:00	59–76°F, 100% cloud cover clearing to 80%, wind 1–3 mph
6/4/2018	John Konecny	southwestern willow flycatcher 2	06:35 to 08:30	64–70°F, 100% cloud cover clearing to 10%, wind 3–5 mph
6/14/2018	John Konecny	southwestern willow flycatcher 3	07:35 to 10:00	66–75°F, 5% cloud cover increasing to 75%, wind 1–2 mph
6/27/2018	John Konecny	southwestern willow flycatcher 4	07:00 to 09:00	61–73°F, 100% cloud cover clearing to 0%, wind 1–3 mph
7/12/2018	John Konecny	southwestern willow flycatcher 5	07:05 to 09:00	69–72°F, 20% cloud cover, wind 1–3 mph

¹F = Fahrenheit; % = percent; mph = miles per hour

Table 1f Survey Dates, Personnel, Times, and Weather Conditions for Arroyo Toad Surveys at the El Capitan Dam Spillway Vegetation Removal Project				
Date	Surveyors	Survey Type	Survey Time	Survey Conditions ¹
3/21/2018	Brenna Ogg	arroyo toad 1 (day)	09:50 to 11:55	64–76°F, thin cloud cover, wind 1–6 mph
3/21/2018	Brian Parker and Kayo Valenti	arroyo toad 1 (night)	20:25 to 23:45	63–62°F, 100% cloud cover, wind calm
4/18/2018	Brian Parker	arroyo toad 2 (day)	07:10 to 09:25	52–73°F, 0% cloud cover, wind 0–7 mph
4/18/2018	Brian Parker and Alex Fromer	arroyo toad 2 (night)	20:45 to 23:00	56–53°F, 0% cloud cover, wind calm
5/3/2018	Brenna Ogg	arroyo toad 3 (day)	08:50 to 10:45	61–72°F, 0% cloud cover, wind 0–4 mph
5/3/2018	Alex Fromer and Andrew Smisek	arroyo toad 3 (night)	20:40 to 22:40	64–58°F, 0% cloud cover, wind 0–1 mph
5/14/2018	Brenna Ogg and Beth Procsal	arroyo toad 4 (night)	20:35 to 23:50	66–62°F, 10% cloud cover increasing to 100%, wind calm
5/15/2018	Alex Fromer	arroyo toad 4 (day)	07:45 to 09:30	59–65°F, 100% cloud cover, wind 1–3 mph
6/7/2018	Brenna Ogg and Sonya Vargas	arroyo toad 5 (day)	18:20 to 19:45	78–72°F, 0% cloud cover, wind 1–6 mph
6/7/2018	Brenna Ogg and Sonya Vargas	arroyo toad 5 (night)	20:55 to 23:15	68–61°F, 0% cloud cover, wind 1–2 mph
6/20/2018	Brian Parker and Kayo Valenti	arroyo toad 6 (day)	18:45 to 19:45	74–68°F, 0% cloud cover, wind 1–3 mph
6/20/2018	Brian Parker and Kayo Valenti	arroyo toad 6 (night)	21:30 to 24:00	63°F, 0% cloud cover increasing to 100%, wind 0–4 mph

¹F = Fahrenheit; % = percent; mph = miles per hour

Table 1g Survey Dates, Personnel, Times, and Weather Conditions for Quino Checkerspot Butterfly Surveys at the El Capitan Dam Spillway Vegetation Removal Project				
Date	Surveyors	Survey Type	Survey Time	Survey Conditions ¹
2/15/2018	Brenna Ogg and JR Sundberg	Quino Site Assessment	09:10 to 13:50	N/A
2/15/2018	JR Sundberg and Brenna Ogg	Quino habitat assessment	09:10 to 13:50	N/A
2/25/2018	Brenna Ogg and JR Sundberg	Quino 1	11:20 to 15:00	66–71°F, 0% cloud cover, wind 0–6 mph
3/1/2018	JR Sundberg and Andrew Smisek	Quino 2	12:20 to 16:00	66–67°F, 0% cloud cover, wind 2–10 mph
3/6/2018	Brenna Ogg and Andrew Smisek	Quino 3	10:00 to 14:00	60–85°F, 2–10% cloud cover, wind 2–6 mph
3/13/2018	Brenna Ogg and JR Sundberg	Quino 4	11:00 to 14:35	70–85°F, 100% cloud cover, wind 0–5 mph
3/20/2018	Brenna Ogg and JR Sundberg	Quino 5	11:40 to 15:25	69–86°F, 10–80% cloud cover, wind 1–8 mph
3/26/2018	Brenna Ogg and Andrew Smisek	Quino 6	12:50 to 16:20	66–72°F, 30–60% cloud cover, wind 1–8 mph
4/3/2018	Brenna Ogg and JR Sundberg	Quino 7	11:55 to 15:45	73–82°F, 15–90% cloud cover, wind 2–6 mph

Date	Surveyors	Survey Type	Survey Time	Survey Conditions ¹
4/10/2018	JR Sundberg and Andrew Smisek	Quino 8	09:20 to 14:00	81–102°F, 5–10% cloud cover, wind 0–6 mph
4/17/2018	Brenna Ogg and Andrew Smisek	Quino 9	11:50 to 15:30	73–79°F, 0% cloud cover, wind 1–9 mph
4/24/2018	JR Sundberg and Andrew Smisek	Quino 10	09:30 to 14:00	67–83°F, 25–45% cloud cover, wind 0–5 mph
5/3/2018	Brenna Ogg and JR Sundberg	Quino 11	11:00 to 14:25	76–86°F, 0% cloud cover, wind 1–6 mph
5/11/2018	JR Sundberg and Andrew Smisek	Quino 12	12:30 to 15:30	70–75°F, 90–100% cloud cover, wind 5–12 mph

N/A = not available; °F = Fahrenheit; % = percent; mph = miles per hour

2.1 Literature Review

RECON conducted an analysis of existing sensitive species data recorded within two miles of the project site. This analysis included searches of the California Natural Diversity Database (CNDDDB; CDFW 2020a), the All Species Occurrences Database (U.S. Fish and Wildlife Service [USFWS] 2020), and SanBIOS (County of San Diego 2020). Additional maps, imagery, and databases reviewed included U.S. Geological Survey topographic maps (USGS 1997), soils survey maps (San Diego Association of Governments 1995, USDA 2020b), online aerial satellite imagery (Google Earth 2020), the Consortium of California Herbaria (2020), and the Amphibian and Reptile Atlas of Peninsular California (San Diego Natural History Museum [SDNHM] 2017).

2.2 General Biological and Vegetation Mapping Surveys

Biological surveys began with a general biological survey to inventory plant and wildlife species, map vegetation, and assess the suitability of habitat for special-status species identified based on the literature review discussed above. The survey area for this general biological survey was defined based on previously proposed project impact areas and direction provided by City staff while the project was still in the planning phase. Figure 3 depicts this survey area, which totals 75.44 acres. The surrounding survey buffer varies between approximately 130 and 700 feet from the existing project boundary.

RECON biologists Brenna Ogg and Kayo Valenti conducted the general biological survey on November 17, 2017 between 07:00 and 16:00 (see Table 1a). Ms. Ogg and Ms. Valenti conducted the survey on foot, mapped vegetation communities and land cover types on a 1-inch equals 200 feet scale aerial photograph of the survey area, with the aid of a sub-meter-accurate global positioning system (GPS) unit.

Dominant plant species within each vegetation community were noted, and sensitive plant and wildlife species were hand-mapped or recorded using GPS. Vegetation community

classifications follow Holland (1986) as modified by Oberbauer et al. (2008). However, in this report, “disturbed habitat” as defined by Oberbauer is classified as “disturbed land” for consistency with the Biology Guidelines (City of San Diego 2018). Digital photographs of representative areas were taken during the reconnaissance survey.

A follow-up general biological survey was conducted on April 16, 2020 by RECON biologist Andrew Smisek in order to verify and update existing conditions prior to the preparation of this report. During this survey, small adjustments were made to the mapping of vegetation communities and incidental sensitive plant or wildlife species were recorded using a GPS unit. Additionally, focused surveys for coastal California gnatcatcher, southwestern willow flycatcher, least Bell’s vireo, and Quino were performed by HELIX Environmental Planning, Inc. (HELIX) and focused surveys for arroyo toad were performed by Rocks Biological Consulting (Rocks Biological) in 2020 as part of a Programmatic Evaluation of the City's dams and reservoirs and the results of those surveys have been evaluated as part of this report to ensure the most up-to-date information. The HELIX and Rocks Biological survey dates and times are not included in Tables 1a through 1g but can be found in their respective reports (HELIX 2020a–d; Rocks Biological 2020).

2.3 Rare Plants Surveys

Prior to scheduling the focused rare plant surveys, an analysis of the rare plant species with potential to occur within the survey area was done based on the literature review and the results of the general biological survey.

RECON biologists Andrew Smisek and Kayo Valenti conducted the first of two rare plant survey on March 27, 2018 and Andrew Smisek and JR Sundberg (also a RECON biologist) conducted the second rare plant survey on April 25, 2018 (see Table 1b). The known blooming periods for potentially occurring species were taken into account when scheduling the focused rare plant surveys so that the detectability of these species was maximized. Additionally, timing was adjusted to account for the observed phenology of target species, such as delicate clarkia (*Clarkia delicata*), which was provided by biologists conducting other focused biological surveys on-site during spring of 2018.

Surveys were conducted within the survey area shown on Figure 3. Most of the survey area was traversed on foot during the surveys, with different portions of the site being given extra focus during each survey depending on the blooming status of the rare plant species present. The cliff face north of the eastern end of the spillway and the exposed concrete spillway were not accessed during the surveys due to safety issues and the lack of potential for sensitive plant species. However, any vegetation occurring in these areas was surveyed using binoculars. Surveyors recorded the location of all rare plant species when encountered via a combination of hand-mapping on an aerial map and using a sub-meter accurate GPS unit.

2.4 Coastal California Gnatcatcher Surveys

The majority of the survey area, including the entire project impact area, occurs within final critical habitat for coastal California gnatcatcher (Figure 4). Using vegetation mapping completed as part of the general biological survey, potentially suitable habitat for coastal California gnatcatcher within the survey area was identified. During the focused survey visits, species composition, height, and density of the vegetation communities within the suitable habitat areas were further assessed for their potential to support gnatcatcher.

Focused surveys for the federally threatened coastal California gnatcatcher were conducted in 47.2 acres of habitat determined potentially suitable for gnatcatcher (see Table 1c). The three survey visits were conducted a minimum of seven days apart and scattered throughout the breeding season in order to increase the likelihood of detecting early breeding season behavior (e.g., nest building) as well as fledgling dispersal in the latter part of the season. PUD biologists Mark Berninger and Cheryl Jenkins accompanied Ms. Ogg during the first survey visit.

In accordance with USFWS protocol survey guidelines for this species (USFWS 1997a), the surveying biologist walked all portions of suitable habitat and periodically used taped gnatcatcher vocalizations in an attempt to elicit initial calls. However, taped vocalizations were used infrequently due to the prevalence of potential avian nest predators—northern mockingbird (*Mimus polyglottos polyglottos*), California scrub-jay (*Aphelocoma californica*), and common raven (*Corvus corax clarionensis*)—throughout the survey area. Use of taped vocalizations was suspended when potential nest predators were detected in the vicinity. A total of 16.4 hours of field effort was devoted to the survey. The surveying biologist compiled lists of wildlife species detected and recorded the location of any observed sensitive wildlife species on a one-inch-equals-150-foot aerial map or using GPS. Complete survey methods are provided in Results of the 2018 Coastal California Gnatcatcher Presence/Absence Survey for El Capitan Dam Spillway Vegetation Removal Project (RECON 2018a; see Appendix A).

Survey methods and results of the 2020 coastal California gnatcatcher surveys conducted by HELIX can be found in *2020 Coastal California Gnatcatcher (Polioptila californica californica) Survey Report for the City of San Diego Dam Maintenance Program Project* (HELIX 2020a; see Appendix B).

2.5 Least Bell's Vireo and Southwestern Willow Flycatcher Surveys

Using vegetation mapping completed as part of the general biological survey, potentially suitable habitat for least Bell's vireo and southwestern willow flycatcher within the survey area was identified and totaled 11.91 acres. Qualified biologists conducted focused surveys for the least Bell's vireo and southwestern willow flycatcher in accordance with the current USFWS survey protocol for these species (USFWS 2001 and Sogge et al. 2010, respectively).

Image source: Nearmap (flown January 2020)

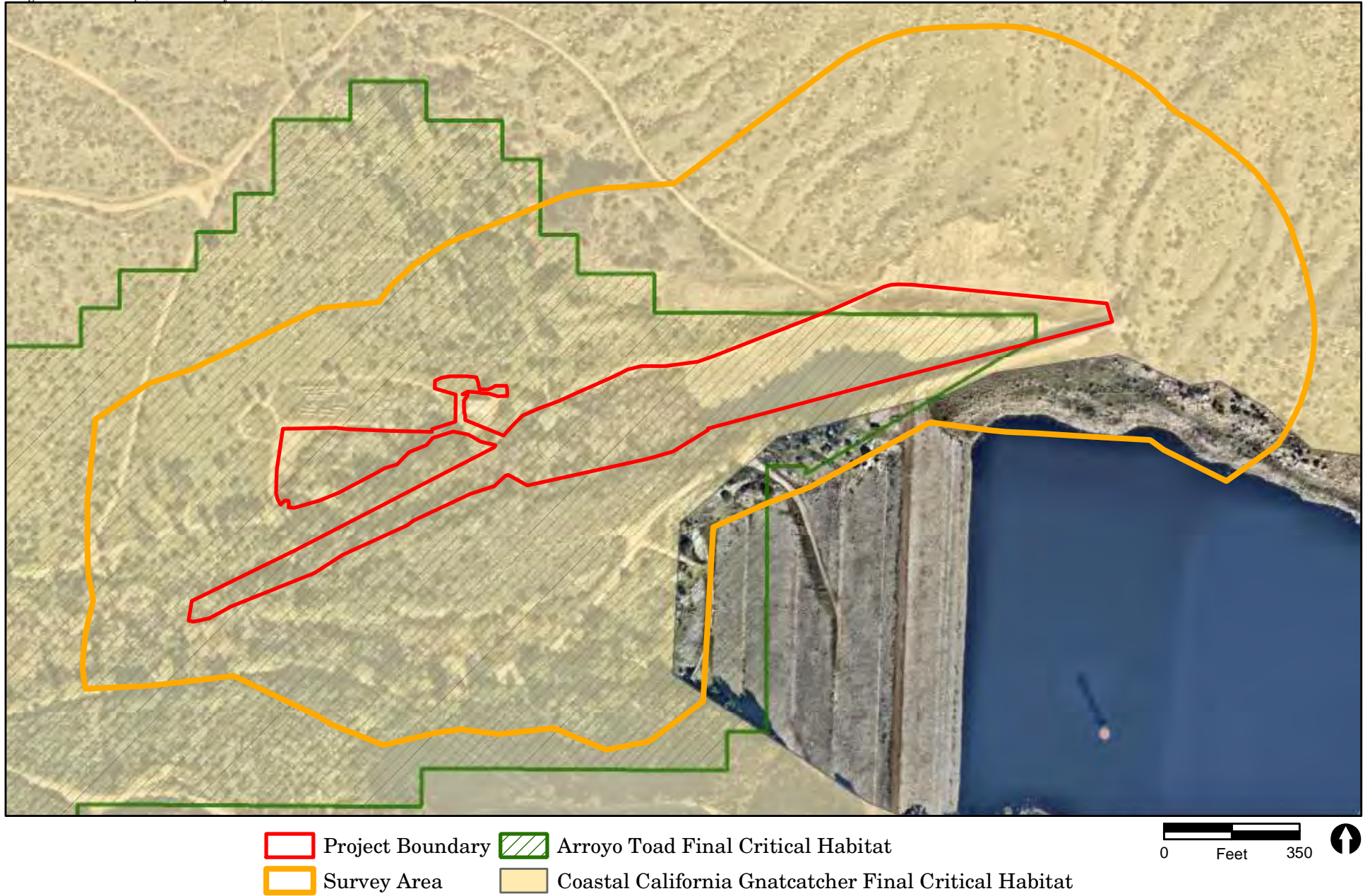


FIGURE 4
Project Location on Aerial Photograph

For least Bell's vireo, a total of eight surveys were conducted by conducted by Busby Biological Services, Inc. (BBS) biologists Darin Busby, Erik LaCoste, and Andrew Kort at least 10 days apart during the protocol survey window of April 10 to July 31, 2018 (see Table 1d). All surveys were conducted between approximately dawn and 1100 and avoided periods of adverse weather conditions (e.g., excessively hot or cold temperatures, high winds, steady rain, dense fog, and other inclement weather conditions) that may impede detection of the least Bell's vireo.

Surveyors slowly walked throughout the suitable habitat within the survey area and used visual and auditory cues to detect the least Bell's vireo. Various routes were utilized to conduct a survey of the potentially suitable habitat within the survey area, while taking care not to disturb sensitive habitat or potential nest areas.

For southwestern willow flycatcher, a total of five surveys were conducted by Konecny Biological Services biologist John Konecny during the three survey periods outlined in the protocol, including one survey conducted during the first period (May 15 to May 31), two surveys conducted during the second period (June 1 to June 24), and two surveys conducted during the third period (June 25 to July 17; see Table 1e). All surveys were conducted between approximately 05:30 and 10:30 and avoided periods of adverse weather conditions that may impede detection of the southwestern willow flycatcher. Mr. Konecny slowly walked throughout the suitable habitat within the survey area and used visual and auditory cues to detect the southwestern willow flycatcher. Various routes were utilized to conduct a survey of the potentially suitable habitat within the survey area, while taking care not to disturb sensitive habitat or potential nest areas. Pre-recorded southwestern willow flycatcher vocalization playbacks were used infrequently in attempt to elicit initial calls from the southwestern willow flycatcher. Pre-recorded vocalizations were played for a period of 10 to 15 seconds and were generally repeated approximately every 70 to 100 feet within the surveyed habitat.

Sensitive species detections were recorded electronically using GPS and/or by hand onto a high-resolution aerial image of the survey area, relevant information about the detection (e.g., age, sex, number of individuals detected) was noted when possible. In addition, numbers and locations of parasitic brown-headed cowbirds (*Molothrus ater*) were recorded, and other wildlife species observed directly or detected indirectly by sign, including scat, tracks, calls, and other evidence, were recorded. Complete survey methods are provided in 2018 Least Bell's Vireo and Southwestern Willow Flycatcher Survey Summary Report for the Proposed El Capitan Dam Spillway Vegetation Removal Project (BBS 2018; see Appendix C).

Survey methods and results of the 2020 least Bell's vireo surveys conducted by HELIX can be found in *2020 Least Bell's Vireo (Vireo bellii pusillis) Survey Report the City of San Diego Dam Maintenance Program Project* (HELIX 2020b; see Appendix D) and survey methods and results of the 2020 southwestern willow flycatcher surveys conducted by HELIX can be found in *2020 Southwestern Willow Flycatcher (Empidonax traillii extimus) Survey Report for the City of San Diego Dam Maintenance Program Project at El Capitan Reservoir, San Diego County, California* (HELIX 2020c; see Appendix E).

2.6 Arroyo Toad Surveys

A majority of the survey area occurs within an area mapped as critical habitat for arroyo toad (see Figure 4). The large slope in the northeastern portion of the survey area; as well as the eastern end of the spillway, portions of the dam, and the shore of the reservoir; do not occur within mapped arroyo toad critical habitat. Using vegetation mapping completed as part of the general biological survey, potentially suitable habitat for arroyo toad within the survey area was identified. RECON biologists Brenna Ogg, Brian Parker, Alex Fromer, Kayo Valenti, Andrew Smisek, Beth Procsal, and Sonya Vargas conducted focused surveys for arroyo toad between March 21 and June 20, 2018. Survey dates, personnel, times, and weather conditions are provided in Table 1f. PUD biologist Mark Berninger accompanied the surveying biologists during the first nighttime survey.

Focused arroyo toad surveys were conducted in suitable habitat in accordance with the current USFWS survey protocol (USFWS 1999a). They were focused within the riparian and adjacent upland habitat along the San Diego River channel downstream of El Capitan Dam, the spillway channel, and a natural drainage that occurs north of the spillway channel. Daytime surveys were conducted by walking slowly through suitable habitat and inspecting any ponded water for arroyo toad eggs, larvae, and juveniles. Night surveys were conducted by walking slowly through the focused survey area, stopping periodically and remaining silent for 15-minute intervals to listen for arroyo toad calls. Flashlights were also used to better identify anurans within the project survey area and to detect adult arroyo toads through eye shine. Complete survey methods are provided in Results of 2018 Arroyo Toad Presence/Absence Surveys for El Capitan Dam Spillway Vegetation Removal Project (RECON 2018b; see Appendix F).

Survey methods and results of the 2020 arroyo toad surveys conducted by Rocks Biological can be found in *45-Day Report for Breeding Arroyo Toad Surveys for the City of San Diego Dam Maintenance Program Project, San Diego County, California* (Rocks Biological 2020; see Appendix G).

2.7 Quino Checkerspot Butterfly Surveys

RECON biologists Brenna Ogg and JR Sundberg conducted a site assessment within the 75.44-acre project survey area on February 15, 2018, to identify suitable Quino Survey Areas, as defined in the USFWS survey guidelines and the recovery plan (USFWS 2014 and 2003, respectively). Suitable Quino Survey Areas, excluded areas, and populations of larval host plants were mapped in the field, using either a sub-meter accurate GPS unit or by hand on a one-inch-equals-200-feet color aerial photograph of the site.

Presence/absence adult flight season surveys for Quino were conducted in accordance with the Quino Checkerspot Butterfly Survey Guidelines (USFWS 2014) by RECON biologists Brenna Ogg, JR Sundberg, and Andrew Smisek. These guidelines specify that Quino surveys should be conducted weekly beginning the third week of February and ending the second Saturday in May. A summary of surveyors; survey dates, times, and weather conditions; and acres surveyed per hour is presented in Table 1g. Complete survey methods are provided in Results of the 2018 Quino Checkerspot Butterfly Presence/Absence Survey for El Capitan Dam Spillway Vegetation Removal Project (RECON 2018c; see Appendix H).

Survey methods and results of the 2020 Quino surveys conducted by HELIX can be found in *2020 Quino Checkerspot Butterfly (Euphydryas editha quino) Survey Report for the City of San Diego Dam Maintenance Program Project* (HELIX 2020d; see Appendix I).

2.8 Jurisdictional Waters Survey

A routine jurisdictional waters/wetland delineation, following the guidelines set forth by the U.S. Army Corps of Engineers (USACE; 1987, 2008), was performed by RECON biologists J.R. Sundberg and Andrew Smisek on November 14, 2017 (see Table 1a) to gather field data at potential jurisdictional waters in the survey area. Wetland waters were delineated using the USACE three-parameter method. The non-wetland areas were delineated by an observable ordinary high water mark (OHWM). Prior to conducting the delineation, aerial photographs and USGS topographic maps of the site were examined. Once on-site, the potential federal, state, and City jurisdictional areas were examined to determine the presence and extent of any jurisdictional waters. More details regarding the delineation survey can be found in the *Jurisdictional Waters/Wetland Delineation Report for the El Capitan Dam Spillway Vegetation Removal Project* (RECON 2017; see Appendix J).

2.9 California Rapid Assessment Method Survey

Pre-impact CRAM surveys were conducted on June 6, 2018 by RECON CRAM practitioners Terressa Whitaker and Andrew Smisek. At the time of the survey, the project was still in the design phase, so a preliminary project boundary was provided by the City of San Diego for purposes of this survey and assessment. This preliminary project boundary includes two riparian areas/stream channels: (1) a section of the main San Diego River channel, located immediately downstream of El Capitan Dam, and (2) a manufactured channel associated with and downstream of El Capitan Spillway. More details regarding the CRAM surveys can be found in the *El Capitan Dam Spillway Vegetation Removal Project California Rapid Assessment Method (CRAM) Pre-Impact Surveys* (RECON 2018d; see Appendix K).

3.0 Survey Results/Existing Conditions

This section describes the existing physical and biological conditions within the survey area. This includes a summary of land use, topographical features, soils, and hydrological features observed during biological surveys.

The survey area is generally centered on El Capitan Dam spillway and the associated manufactured channel that extends westward from the spillway for approximately 1,200 linear feet, where it merges with the main San Diego River channel. Although the spillway and the associated channel were manufactured and lined with concrete and/or rip rap, the lower portion of the spillway and the associated channel have collected sediment over time and now support mature riparian vegetation. The portion of the San Diego River channel just downstream of the dam also supports mature riparian vegetation.

The northeastern portion of the survey area contains a large hillside north of the spillway. This hillside is generally south-facing and contains open vegetation with a number of small upland drainages. The central portion of the survey area, north and south of the spillway, contains a series of previously graded terraces with open vegetation and concentrations of large rocks. The western portion of the site, north of the San Diego River riparian corridor, is generally flat and contains a series of manufactured berms, dirt roads, and the remnants of an old homestead among open vegetation. A plateau occurs between the northern and southern riparian corridors at the base of the dam, east of where the riparian corridors merge. The southern portion of the site contains a small amount of open vegetation south of the riparian corridor and along dirt roads.

3.1 Topography and Soils

Within the survey area, elevations range from 560 feet AMSL in the San Diego River-bottom in the western portion of the survey area to 1,200 feet AMSL on the large hillside in the northeastern portion of the survey area. A portion of this hillside north of the upper portion of the spillway was cut during the original construction of the spillway and now occurs as a nearly vertical slope.

Four soil types—riverwash; stony land; Cieneba–Fallbrook rocky sandy loams, 30 to 65 percent slopes, eroded; and Visalia sandy loam, 5 to 9 percent slopes—are mapped within the survey area (Figure 5; San Diego Association of Governments 1995; USDA 2020b). The water and dam of the El Capitan Reservoir are mapped as well.

Riverwash soil occurs in intermittent stream channels and typically consists of sand, gravel, or cobble. Riverwash soil may be devoid of vegetation in many places or may contain sparse patches of shrubs and forbs. The soil is rapidly permeable and excessively drained. In the survey area, riverwash soil occurs at the base of the dam and the spillway and continues west within the river corridor. Riverwash soil is listed on the Natural Resource Conservation Service hydric soils list (2020).

Stony land is strongly sloping to very steep, occurs as the base of cliffs or steep slopes and is comprised mostly of large stones and boulders, as well as finer materials. This soil type is mapped within the western portion of the survey area north of the riparian corridor (see Figure 5).

Cieneba–Fallbrook rocky sandy loams, 30 to 65 percent slopes, eroded is a steep soil type with a high potential for runoff and erosion. This soil type is formed from granitic rock weathering in place. Within the survey area, this soil type is mapped north of the upper portion of the spillway and reservoir. This soil type is also mapped within two small areas in the southern portion of the survey area that extend up the north-facing slopes in that area.

Visalia sandy loam, 5 to 9 percent slopes is a moderately sloped soil type with a slow to medium runoff and a slight to moderate potential for erosion. Deriving from granitic alluvium, this moderately well drained very deep sandy loam occurs in alluvial fans and floodplains. This soil type occurs in the northwestern portion of the survey area, north of the riparian corridor (see Figure 5).

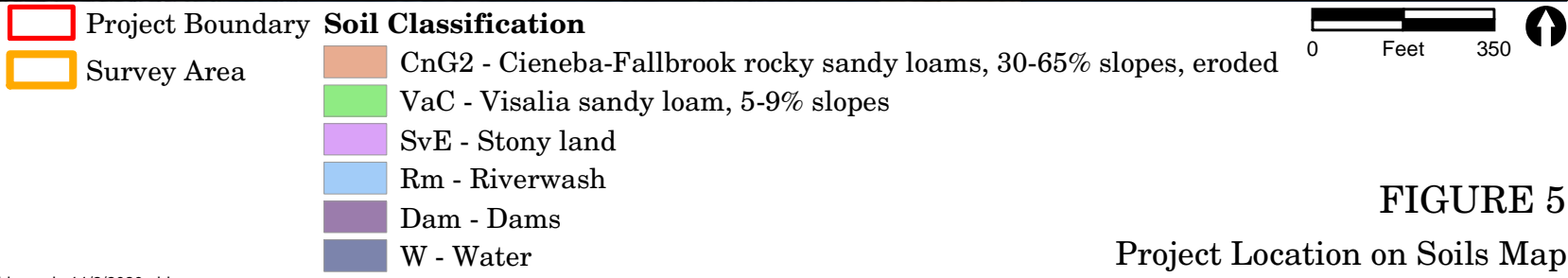
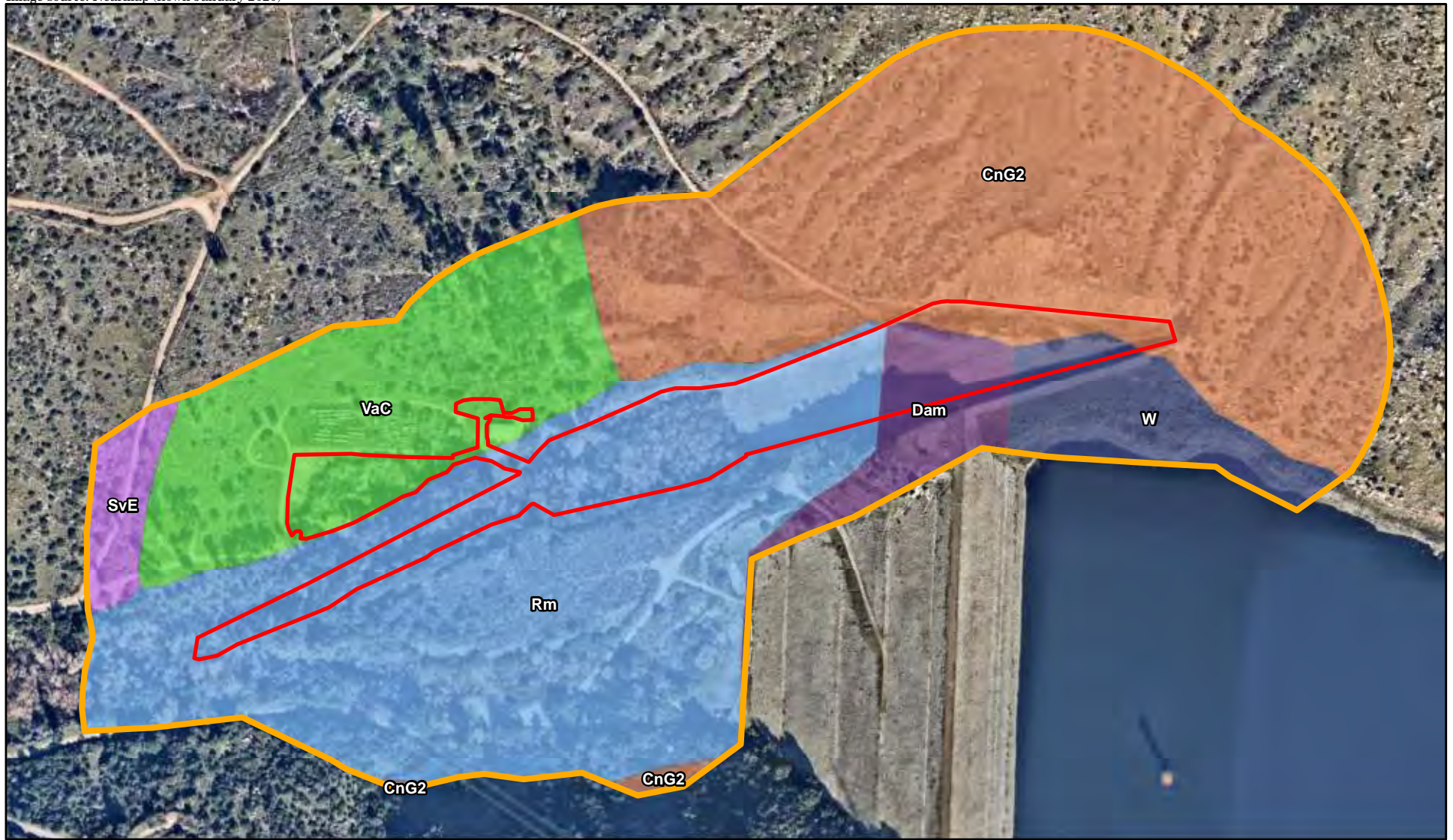


FIGURE 5
Project Location on Soils Map

3.2 Hydrology

The survey area includes two riparian corridors of the San Diego River that extend westward from both the spillway and the base of the El Capitan Dam. Here, the river collects water from the surrounding slopes of El Monte Valley along with any water that flows or is released from El Capitan Reservoir. According to the City, water has not spilled over the spillway since 2005.

The northern and southern riparian corridors occur generally as vegetated ditches with variable microtopography. They converge approximately 1,200 feet west of the base of the dam and continue west as a single corridor. In the north-central portion of the survey area, a small drainage flows into the northern riparian corridor from the north. On the steep slopes in the northeastern portion of the survey area, there are several swales that general run north to south. More detail regarding the potential jurisdictional wetland and non-wetland waters within the survey area can be found in Section 4.6.

3.3 Botanical Resources

The following 14 vegetation communities or land cover types were mapped within the survey area: coastal and valley freshwater marsh, fresh water, southern cottonwood-willow riparian forest, disturbed southern cottonwood-willow riparian forest, southern riparian woodland, southern coast live oak riparian forest, scrub oak chaparral, Diegan coastal sage scrub, disturbed Diegan coastal sage scrub, non-native grassland, eucalyptus woodland, Arundo-dominated riparian, disturbed land, and urban/developed land (Figure 6). These vegetation communities and land cover types, along with their corresponding City Tier, Holland/Oberbauer code, and acreage within the survey area, are summarized in Table 2. A brief description of each community is also provided below.

Vegetation Community/Land Cover Type (Holland Code as modified by Oberbauer)	City of San Diego Tier	Acreage
Coastal and valley freshwater marsh (52410)	N/A - wetland	0.34
Fresh water (64140)	N/A - wetland	0.57
Southern cottonwood-willow riparian forest (61330)	N/A - wetland	4.20
Disturbed southern cottonwood-willow riparian forest (61330)	N/A - wetland	0.87
Southern riparian woodland (62500)	N/A - wetland	0.51
Southern coast live oak riparian forest (61310)	N/A - wetland	5.34
Scrub oak chaparral (37900)	I	1.13
Diegan coastal sage scrub (32500)	II	40.00
Disturbed Diegan coastal sage scrub (32500)	II	5.34
Non-native grassland (42200)	IIIB	2.22
Eucalyptus woodland (79100)	IV	1.79
Arundo-dominated riparian (65100)	N/A - wetland	0.07
Disturbed land (11300)	IV	8.07
Urban/developed land (12000)	N/A	4.99
TOTAL		75.44
N/A = not applicable		



Project Boundary

Survey Area

Wildlife Points

- ▲ Least Bell's Vireo (*Vireo Bellii pusillus*; FE, CE, MSCP)
- ▲ Western Spadefoot Toad (*Spea hammondi*; CSC)
- ▲ Yellow Warbler (*Setophaga [=Dendroica] petechia*; CSC)

- ▲ Belding's Orange-throated Whiptail (*Aspidoscelis hyperythra beldingi*; CSC, MSCP)
- ▲ Coastal Whiptail (*Aspidoscelis tigris stejnegeri*; CSC)
- ▲ Red-diamond Rattlesnake (*Crotalus ruber*; CSC)
- ▲ Southern California Rufous Crowned Sparrow (*Aimophila ruficeps canescens*; WL, MSCP)
- ▲ Southern Mule Deer (*Odocoileus hemionus fuliginatas*; MSCP)

Plant Points

- Dean's milkvetch (*Astragalus deanei*; CRPR 1B.1)
- Delicate clarkia (*Clarkia delicata*; CRPR 1B.2)
- Engelmann oak (*Quercus engelmannii*; CRPR 4.2)
- Rush like bristleweed (*Xanthisma junceum*; CRPR 4.3)

Vegetation Communities

- Arundo-dominated Riparian
- Diegan Coastal Sage Scrub
- Disturbed Diegan Coastal Sage Scrub
- Eucalyptus Woodland
- Coastal and Valley Freshwater Marsh
- Fresh Water
- Non-native Grassland

- Southern Cottonwood-willow Riparian Forest
- Disturbed Cottonwood-willow Riparian Forest
- Southern Riparian Woodland
- Scrub Oak Chaparral
- Southern Coast Live Oak Riparian Forest
- Disturbed Land
- Urban/Developed Land

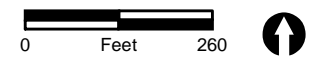


FIGURE 6
Existing Biological Resources

A total of 171 plant species was observed within the survey area, with 131 species (77 percent) considered native and the remaining 40 species (23 percent) considered non-native and/or naturalized into the area. Dominant plant species are discussed by vegetation community below, and a complete list of plant species detected is included as Appendix L.

3.3.1 Coastal and Valley Freshwater Marsh

Coastal and valley freshwater marsh occurs within the vegetation survey area as six isolated patches within the two riparian corridors (see Figure 6 and Photograph 1). This vegetation community is dominated by cattails (*Typha* sp.) and tule (*Schoenoplectus* sp.). One of these patches is dominated by San Diego sedge (*Carex spissa*) and western ragweed (*Ambrosia psilostachya*) with a substantial amount of dead cattail stalks. The coastal and valley freshwater marsh is considered moderate- to high-quality habitat as the patches are generally small but occur within a riparian corridor, are surrounded by largely undeveloped land, and have the potential to support sensitive wildlife species, including breeding amphibians and nesting birds. Coastal and valley freshwater marsh is considered a sensitive wetland vegetation community under the City's Biology Guidelines (2018).

3.3.2 Fresh Water

Fresh water occurs as the El Capitan Reservoir in the eastern portion of the survey area (see Figure 6 and Photograph 2). Willows (*Salix* sp.) are scattered sparsely along the edge of the fresh water. The fresh water provides high-quality habitat due to its occurrence within a large expanse of undeveloped land. Fresh water is considered a sensitive wetland community under the City's Biology Guidelines (2018).

3.3.3 Southern Cottonwood-Willow Riparian Forest

Southern cottonwood-willow riparian forest is the dominant vegetation along the river corridor (see Figure 6 and Photographs 3 and 4). It is a tall, open, broadleaved winter-deciduous riparian forest dominated by Goodding's black willow (*Salix gooddingii*), red willow (*Salix laevigata*), and arroyo willow (*Salix lasiolepis*) and also contains scattered western sycamore (*Platanus racemosa*) and Fremont cottonwood (*Populus fremontii*). The understory contains scattered herbaceous species such as mariposa rush (*Juncus dubius*), and leaf litter covers a majority of the ground surface. Portions of this habitat contain patches of mule fat (*Baccharis salicifolia*) and areas with a substantial amount of desert wild grape (*Vitis girdiana*). Scattered dead cattail stalks were observed in the understory in several areas, as well. Trees in this area are tall and form a moderately dense to very dense canopy. The southern cottonwood-willow riparian forest is considered high-quality habitat as it is dominated by mature trees surrounded by largely undeveloped land and has the potential to support sensitive wildlife species, such as tree-nesting raptors and listed bird species. It is considered a sensitive wetland vegetation community under the City's Biology Guidelines (2018).



PHOTOGRAPH 1
Coastal and Valley Freshwater Marsh in the Southern Portion of the Survey Area, Facing West, Taken November 14, 2017



PHOTOGRAPH 2
Fresh Water and Disturbed Habitat in Eastern Portion of the Survey Area, Facing East, Taken November 14, 2017



PHOTOGRAPH 3
Southern Cottonwood-willow Riparian Forest in the Central Portion of
the Survey Area, Facing Southwest, Taken April 16, 2020



PHOTOGRAPH 4
Southern Cottonwood-willow Riparian Forest in the Central Portion
of the Survey Area, Facing West from within the Spillway,
Taken April 16, 2020

3.3.4 Disturbed Southern Cottonwood-Willow Riparian Forest

A section of the southern cottonwood-willow riparian forest is considered disturbed due to the prevalence of non-native trees such as gum trees (*Eucalyptus* spp.). This section occurs south of a strip of eucalyptus woodland and in the middle of the northern river corridor (see Figure 6 and Photograph 5). It is dominated by Goodding's black willow, arroyo willow, red willow, and gum trees, and contains scattered western sycamore and Fremont cottonwood, as well as a substantial amount of desert wild grape in the understory. The disturbed southern cottonwood-willow riparian forest has a high prevalence of gum trees but is considered moderate-quality habitat due to the presence of mature native trees and because it is surrounded by largely undeveloped land. It is considered a sensitive wetland vegetation community under the City's Biology Guidelines (2018).

3.3.5 Southern Riparian Woodland

Southern riparian woodland occurs as a small patch along the northern river corridor (see Figure 6 and Photograph 6). It is a moderately dense riparian woodland containing scattered tall riparian trees, such as arroyo willow and cottonwood, with an understory dominated by small shrubs such as mule fat. The southern riparian woodland is considered high-quality habitat as it is dominated by native trees and shrubs, surrounded by largely undeveloped land, and has the potential to support sensitive plant and/or wildlife species, including tree-nesting raptors and listed bird species. This habitat is considered a sensitive wetland vegetation community under the City's Biology Guidelines (2018).

3.3.6 Southern Coast Live Oak Riparian Forest

Southern coast live oak riparian forest occurs slightly upslope of and predominately surrounding the southern cottonwood-willow riparian forest along the river corridor (see Figure 6 and Photographs 7 and 8). Southern coast live oak riparian forest occurs within the vegetation survey area as a dense riparian forest with a nearly closed canopy dominated by coast live oak (*Quercus agrifolia*). Scattered willows, Fremont cottonwood, western sycamore, and blue elderberry (*Sambucus nigra*) individuals also occur within this community. Portions of this vegetation community are sub-dominated by laurel sumac (*Malosma laurina*). Scattered open areas and around the edge of the coast live oak trees contain non-native grasses such as bromes (*Bromus* spp.). Although these occasional upland components occur, these areas are considered contiguous southern coast live oak riparian forest due to a consistent cover of oaks throughout and their position in bottomlands within the outer portions of the river floodplain. The southern coast live oak riparian forest provides high-quality habitat due to the dominance of mature trees, connectivity to undeveloped land, and has the potential to support sensitive plant and/or wildlife species, including tree-nesting raptors. Southern coast live oak riparian forest is a sensitive wetland vegetation community under the City's Biology Guidelines (2018).



PHOTOGRAPH 5
Disturbed Southern Cottonwood-Willow Riparian Forest in the Central Portion of the Survey Area, Facing Southeast, Taken April 16, 2020



PHOTOGRAPH 6
Southern Riparian Woodland in the Central Portion of the Survey Area, Facing East, Taken November 14, 2017



PHOTOGRAPH 7

Southern Coast Live Oak Riparian Forest in the Northwestern Portion of the Survey Area, Facing West, Taken November 14, 2017



PHOTOGRAPH 8

Southern Coast Live Oak Riparian Forest in the Northwestern Portion of the Survey Area, Facing North, Taken November 14, 2017

3.3.7 Scrub Oak Chaparral

Scrub oak chaparral occurs along the southern boundary of the survey area (see Figure 6 and Photograph 9). It is dominated by scrub oak (*Quercus berberidifolia*) and contains other shrubs such as mission manzanita (*Xylococcus bicolor*), birch-leaf mountain-mahogany (*Cercocarpus betuloides*), and hollyleaf redberry (*Rhamnus ilicifolia*) with an understory of veldt grass (*Ehrharta* sp.). The scrub oak chaparral is considered high-quality habitat due to the dominance of mature shrubs, the occurrence within a large expanse of undeveloped land, and has the potential to support sensitive plant and/or wildlife species. Scrub oak chaparral is a Tier I (rare uplands) vegetation community under the City's Biology Guidelines (2018).

3.3.8 Diegan Coastal Sage Scrub

Diegan coastal sage scrub occurs as the dominant upland vegetation surrounding the river corridor (see Figure 6). The patch between the river corridors in the southern portion of the survey area is dense (approximately 60 percent shrub cover), with an average shrub height of three to four feet, and is dominated by coast California buckwheat (*Eriogonum fasciculatum* var. *fasciculatum*) and deerweed (*Acmispon glaber*; Photograph 10). The Diegan coastal sage scrub along the southern boundary of the survey area occurs along dirt roads and continues south on a north-facing slope until it transitions to scrub oak chaparral. This area is dominated by coast California buckwheat and California sagebrush (*Artemisia californica*; Photograph 11). The Diegan coastal sage scrub in the northern portion of the survey just east of the non-native grassland is dominated by California sagebrush and contains a considerable amount of coast California buckwheat and laurel sumac. The Diegan coastal sage scrub in the northern portion of the survey area along the steep south facing slope contains a sparse shrub cover of approximately 10 percent with predominately laurel sumac. The open space contains a variety of short perennial and annual natives such as common goldenstar (*Bloomeria crocea*), odora (*Porophyllum gracile*), shining peppergrass (*Lepidium nitidum*), and Bigelow's spike-moss (*Selaginella bigelovii*), as well as a substantial cover of non-natives annuals such as short-pod mustard (*Hirschfeldia incana*), oats (*Avena* sp.), and bromes. The Diegan coastal sage scrub is considered high-quality habitat, due to the occurrence within a large expanse of undeveloped land and has the potential to support sensitive plant and/or wildlife species, including listed bird species. Diegan coastal sage scrub is a Tier II (uncommon uplands) vegetation community under the City's Biology Guidelines (2018).

3.3.9 Disturbed Diegan Coastal Sage Scrub

Disturbed Diegan coastal sage scrub occurs as a number of patches throughout the survey area. These areas of Diegan coastal sage scrub are generally considered disturbed due to a high cover of non-native species, mainly grasses and mustards, among the scattered native shrubs. A small patch of disturbed Diegan coastal sage scrub occurs within the upper (eastern) portion of the spillway (see Figure 6). The large patches in the northern portion of the survey area occurring on steep south-facing cut slopes contain an approximately 10 percent cover of native shrubs such as coast California buckwheat and 20 percent cover of crimson fountain grass (*Pennisetum setaceum*; Photograph 12).



PHOTOGRAPH 9
Scrub Oak Chaparral in the Southern Portion of the Survey Area,
Facing East, Taken November 14, 2017



PHOTOGRAPH 10
Diegan Coastal Sage Scrub in the South-Central Portion of the Survey
Area, Facing East, Taken November 14, 2017



PHOTOGRAPH 11
Diegan Coastal Sage Scrub in the West-Central Portion of the Survey Area, Facing East, Taken November 14, 2017



PHOTOGRAPH 12
Disturbed Diegan Coastal Sage Scrub on Cut Slopes in the North-Central Portion of the Survey Area, Facing Northwest, Taken November 14, 2017

The western patches contain a high cover of non-native grasses with an approximate 15 percent native shrub cover predominantly by California sagebrush. One patch just north of the Lakes Program Storage area is surrounded by dirt road and contains a stockpile of large concrete pipes surrounded by broom baccharis (*Baccharis sarothroides*; Photograph 13). The disturbed Diegan coastal sage scrub is considered moderate-quality habitat because, while it is dominated by non-native plant species, it could be used by a variety of wildlife species due its occurrence within a large expanse of undeveloped land. Diegan coastal sage scrub is a Tier II (uncommon uplands) vegetation community under the City's Biology Guidelines (2018).

3.3.10 Non-native Grassland

Non-native grassland occurs in the northwestern portion of the survey area (see Figure 6 and Photograph 14). This vegetation community is dominated by an approximately 50 percent cover of non-native grasses, including ripgut grass (*Bromus diandrus*) and red brome (*Bromus madritensis* ssp. *rubens*). It is also sub-dominated by short-pod mustard and contains a shrub cover of approximately 5 percent. The non-native grassland is considered moderate-quality habitat due to the dominance non-native plant species; however, it could be used by a variety of wildlife species due its occurrence within a large expanse of undeveloped land. Non-native grassland is a Tier IIIB (common uplands) vegetation community under the City's Biology Guidelines (2018).

3.3.11 Eucalyptus Woodland

Eucalyptus woodland occurs along the dirt road leading from the west end of the survey area and as a patch within the mid-north area (see Figure 6) with sugar gum (*Eucalyptus cladocalyx*) as the dominant tree (Photograph 15). The understory consists mostly of eucalyptus tree leaf litter. As the eucalyptus woodland is dominated by mature trees, it is considered high-quality nesting habitat for raptors and tree-cavity nesting birds. With the lack of understory vegetation, however, this community provides moderate-quality habitat for ground-dwelling species such as reptiles and mammals. Eucalyptus woodland is considered a Tier IV vegetation community under the City's Biology Guidelines (2018).

3.3.12 Arundo-dominated Riparian

Arundo-dominated riparian is dominated by giant reed and occurs as two small patches in a ditch along a dirt access road in the southern riparian corridor (see Figure 6 and Photograph 16). A third small patch occurs downstream (west) of the first two and adjacent to coastal and valley freshwater marsh, and a fourth patch occurs in the western portion of the survey area where the two riparian corridors converge. Few other plants were observed growing among these arundo patches. Although the habitat is dominated by the invasive, non-native giant reed, it is considered moderate-quality habitat due to its connectivity to the riparian corridor and occurrence within a large expanse of undeveloped land. This habitat is considered a sensitive wetland vegetation community under the City's Biology Guidelines (2018).



PHOTOGRAPH 13
Disturbed Diegan Coastal Sage Scrub in the Northwest Portion of the Survey Area, Facing East, Taken November 14, 2017



PHOTOGRAPH 14
Non-native Grassland in the Western Portion of the Survey Area, Facing East, Taken February 15, 2018



PHOTOGRAPH 15
Eucalyptus Woodland in the West-Central Portion of the Survey Area,
Facing South, Taken February 15, 2018



PHOTOGRAPH 16
Arundo-dominated Riparian in the Southern Portion of the Survey
Area, Facing Northeast, Taken November 14, 2017

3.3.13 Disturbed Land

Disturbed land occurs as a series of dirt roads that run throughout the survey area and as a patch of non-native species between El Capitan Reservoir and the concrete spillway in the southeastern portion of the survey area (see Figure 6). The dirt roads are composed of bare ground (see Photograph 17). The disturbed land adjacent to the reservoir is dominated by fountain grass and tree tobacco and contains scattered broom baccharis and mule fat (*Baccharis salicifolia*) (see Photograph 2). The disturbed land provides low-quality habitat due to the absence of plants or the prevalence of non-native species. Disturbed land is considered a Tier IV vegetation community under the City's Biology Guidelines (2018).

3.3.14 Urban/Developed

Urban/developed land occurs within the southeastern portion of the survey area as the concrete spillway, adjacent retaining walls, and riprap on the slopes along the reservoir levee (see Figure 6 and Photograph 18). It occurs from past residence use of concrete home foundations as two isolated patches in the western portion of the survey area. It also occurs as a large storage shed in the mid-western portion of the survey area. Urban/developed land is not a sensitive vegetation community and is not assigned a tier under the City's Biology Guidelines (2018).

3.4 Zoological Resources

A total of 103 animal species were detected within the survey area, including 28 invertebrates, four amphibians, four reptiles, 61 birds, and six mammals. The common animal species observed on-site are summarized below. A complete list of animal species detected is included as Appendix M. Sensitive animal species observed are discussed in Section 4.4.

3.4.1 Invertebrates

A total of 28 invertebrate species were recorded during the biological surveys, mostly being noted during protocol surveys for Quino checkerspot butterfly. These include, but are not limited to, common butterflies and skippers typical to scrub, grassland, and riparian habitats, such as Pacific Sara orangetip (*Anthocharis sara sara*), Behr's metalmark (*Apodemia mormo virgulti*), brown elfin (*Callophrys augustinus*), southern blue (*Glaucopsyche lygdamus australis*), acmon blue (*Icaricia acmon acmon*), common buckeye (*Junonia coenia grisea*), western tiger swallowtail (*Papilio rutulus*), and funereal duskywing (*Erynnis funeralis*).



PHOTOGRAPH 17
Disturbed Land within an Access Road in the Central Portion of the Survey Area, Facing North, Taken November 14, 2017



PHOTOGRAPH 18
Urban/Developed land of the Upper Portion of the Spillway in Eastern Portion of the Survey Area, Facing East, Taken November 14, 2017

3.4.2 Amphibians and Reptiles

Four amphibian and four reptile species were detected during the biological surveys. These include western spadefoot (*Spea hammondi*), western toad (*Anaxyrus boreas*), Baja California treefrog (*Pseudacris hypochondriaca*), American bullfrog (*Lithobates catesbeiana*), red diamond rattlesnake (*Crotalus ruber*), granite spiny lizard (*Sceloporus orcutti*), San Diegan tiger whiptail (*Aspidoscelis tigris stejnegeri*), and Belding's orange-throated whiptail (*Aspidoscelis hyperythra beldingi*). Western spadefoot, red diamond rattlesnake, San Diegan tiger whiptail, and Belding's orange-throated whiptail are all considered sensitive species and are discussed further in Section 4.4.

3.4.3 Birds

A total of 61 avian species were detected. These include, but are not limited to, bird species commonly found in scrub, grassland, and riparian habitats, such as Anna's hummingbird (*Calypte anna*), house finch (*Haemorhous mexicanus frontalis*), California towhee (*Melospiza crissalis*), northern mockingbird (*Mimus polyglottos polyglottos*), mourning dove (*Zenaida macroura marginella*), California scrub-jay (*Aphelocoma californica*), bushtit (*Psaltriparus minimus melanurus*), wrenit (*Chamaea fasciata henshawi*) and lesser goldfinch (*Spinus psaltria hesperophilus*). Cliff swallows (*Petrochelidon pyrrhonota tachina*) were commonly observed foraging near the vertical walls of the spillway and the previously cut hillside north of the upper portion of the spillway. Sensitive bird species are discussed further in Section 4.4.

3.4.4 Mammals

The following six mammal species were detected during the biological surveys: desert cottontail (*Sylvilagus audubonii*), woodrat (*Neotoma* sp.), striped skunk (*Mephitis mephitis*), coyote (*Canis latrans*), bobcat (*Lynx rufus*), and southern mule deer (*Odocoileus hemionus fuliginata*). Southern mule deer and other sensitive species observed or with potential to occur are discussed further in Section 4.4 and 4.5.

4.0 Regulatory Setting

4.1 Regulatory Framework

Various federal, state, and/or local regulations or policies apply to biological resources on or adjacent to the survey area and are summarized below. Compliance with all state and federal laws, including the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code (CFGC), is anticipated.

a. Federal Regulations

The Rivers and Harbors Act of 1899 and the Clean Water Act (CWA) regulate project activities within non-marine navigable waters and/or waters of the U.S, including wetlands. Wetlands are defined by the Clean Water Act as:

. . . those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances, do support a prevalence of vegetation typically adapted for life in saturated soil conditions (Environmental Protection Agency [EPA], 40 Code of Federal Regulations [CFR] 230.3 and, 33 CFR 328.3).

Wetlands are delineated using three parameters, which include hydrophytic vegetation, hydric soils, and wetland hydrology. According to the ACOE, indicators for all three parameters must be present to qualify an area as a wetland. The discharge of any pollutant from a point source into navigable waters is illegal unless a permit under the CWA's provisions is acquired. Permitting for projects that include both permanent and temporary dredging and filling in wetlands and waters of the U.S. is overseen by the USACE under Section 404 of the CWA. Projects can be permitted on an individual basis or be covered by one of several approved nationwide or regional general permits.

The federal Endangered Species Act (ESA) provides the legal framework for the listing and protection of species (and their habitats) that are identified as being endangered or threatened with extinction. Actions that jeopardize endangered or threatened species and the habitats upon which they rely are considered 'take' under the ESA. Section 9(a) of the ESA defines 'take' as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." The ESA is administered by the USFWS.

The MBTA (16 United States Code 703 et seq.) is a federal statute that implements treaties with several countries on the conservation and protection of migratory birds. The number of bird species covered by the MBTA is extensive and is listed at 50 Code of Federal Regulations (CFR) 10.13. The regulatory definition of "migratory bird" is broad and includes any mutation or hybrid of a listed species and any part, egg, or nest of such birds (50 CFR 10.12). The MBTA, which is enforced by USFWS, makes it unlawful "by any means or in any manner, to pursue, hunt, take, capture, [or] kill" any migratory bird, or attempt such actions, except as permitted by regulation. The take, possession, import, export, transport, sale, purchase, barter, or offering of these activities is prohibited, except under a valid permit or as permitted in the implementing regulations (50 CFR 21.11). Pursuant to U.S. Department of the Interior Memorandum M-37050, the federal Migratory Bird Treaty Act is no longer interpreted to cover incidental take of migratory birds (U.S. Department of the Interior 2017). Therefore, impacts that are incidental to implementation of an otherwise lawful project would not be considered significant.

The USFS has developed a Land Management Plan for USFS land within southern California, which includes a portion of the plan specific to the Cleveland National Forest: Part 2 Cleveland National Forest Strategy (USDA 2005). This plan identifies the Land-Use

Zone surrounding the project being designated as Developed Area Interface. Although this area includes a broad range of higher intensity uses, the management intent is to limit development to a slow increase of carefully designed facilities to help direct use into the most suitable areas and concentrating on improving facilities before developing new ones. The plan also addresses goals of fire prevention in this region. The project does not propose new development or increase the risk of fire or other potential threats to native habitat within the surrounding USFS land. Therefore, the project does not conflict with the Land Management Plan.

b. State Regulations

The CEQA requires an environmental review for projects with potentially adverse impacts on the environment. Adverse environmental impacts are typically mitigated in accordance with state laws and regulations.

The California ESA is similar to the federal ESA in that it provides the legal framework for the listing and protection of species (and their habitats) that are identified as being endangered or threatened with extinction.

Section 3503 of the CFGC states that it is “unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto,” and Section 3503.5 states that it is “unlawful to take, possess, or destroy any birds of prey or to take, possess, or destroy the nest or eggs of any such bird” unless authorized (State of California 1991).

The CFGC (Sections 1600 through 1603) regulates project activities within wetlands and riparian habitats. The CDFW can issue a Streambed Alteration Agreement for projects affecting riparian and wetland habitats.

Project activities that fill or dredge within wetland waters of the state and non-wetland waters of the state, including isolated waters such as vernal pools and other waters showing lack of connectivity to a Traditional Navigable Waters, require a Water Quality Certification by the California Regional Water Quality Control Board (RWQCB) under Section 401 of the CWA and Section 13000 et seq. of the California Water Code under the Porter-Cologne Water Quality Control Act.

c. Local Regulations

As described above, this project is located outside the boundaries of the City’s MSCP and MHPA. However, because this project occurs partially on City-owned land, the MSCP guidelines and conditions of coverage are utilized to analyze impacts to sensitive biological resources and covered species under CEQA.

The City’s Biology Guidelines (2018) were formulated to aid in the implementation and interpretation of the ESL Regulations, San Diego Land Development Code, Chapter 14, Division 1, Section 143.0101. Section III of the Biology Guidelines (Biological Impact Analysis

and Mitigation Procedures) provides standards for the determination of impact significance and mitigation under CEQA. The ESL defines sensitive biological resources as those lands included within the MHPA as identified in the City's MSCP (City of San Diego 1997), and other lands outside of the MHPA that contain wetlands; vegetation communities classifiable as Tier I (rare uplands), II (uncommon uplands), IIIA (common uplands) or IIIB (common uplands); habitat for rare, endangered, or threatened species; or narrow endemic species.

Deviation from Wetland Regulations

The City recognizes wetlands as vegetated waters, state jurisdictional areas, and USACE wetlands as per the Land Development Code (City of San Diego 2018). Any impacts to City wetlands will require a deviation from the ESL Regulations. The City Biology Guidelines (2018) and the ESL Regulations state that impacts to wetlands should be avoided and unavoidable impacts should be minimized to the maximum extent practicable. A wetland buffer shall be maintained around all wetlands as appropriate to protect the functions and values of the wetland.

4.2 Sensitivity Criteria

Sensitive Species: For purposes of this report, plant and animal species will be considered sensitive if they are:

1. Listed by state or federal agencies as threatened or endangered or are proposed for listing;
2. Designated by the City as a narrow endemic species (City of San Diego 1997, 2018);
3. Covered species under the MSCP (City of San Diego 1997) or Vernal Pool Habitat Conservation Plan (City of San Diego 2017);
4. Given a California Rare Plant Rank (CRPR) 1B (considered endangered throughout its range), 2 (considered endangered in California but more common elsewhere), 3 (more information about the plant's distribution and rarity needed), or 4 (plants of limited distribution) in the CNPS Inventory of Rare and Endangered Plants of California (2020);

5. Considered rare, endangered, or threatened by CDFW (2019a–b and 2020b–c); or
6. Identified by another recognized conservation or scientific group as being depleted, potentially depleted, declining, rare, critical, endemic, endangered, or threatened.

City of San Diego Regulations: As stated in the City’s Biology Guidelines (City of San Diego 2018), a survey area is considered to contain sensitive biological resources if any of the following conditions are met:

1. The site has been identified as part of the MHPA by the City’s MSCP Subarea Plan or the Vernal Pool Habitat Conservation Plan. MHPA lands are those that have been included within the City’s MSCP Subarea Plan for habitat conservation. These lands have been determined to provide the necessary habitat quality, quantity, and connectivity to sustain the unique biodiversity of the San Diego region. MHPA lands are considered by the City to be a sensitive biological resource.
2. The site supports Tier I, II, or IIIA and IIIB vegetation communities (such as grassland, chaparral, coastal sage scrub, etc.). The CEQA determination of significant impacts may be based on what was on the site (e.g., if illegal grading or vegetation removal occurred, etc.), as appropriate.
3. The site contains, or comes within 100 feet of, a natural drainage.
4. The site occurs within the 100-year floodplain established by the Federal Emergency Management Agency or the floodplain/floodway zones.
5. The site has potential to provide habitat for threatened, endangered, or otherwise protected wildlife species.

5.0 Sensitive Biological Resources

5.1 Sensitive Vegetation Communities

Pursuant to the City’s Biology Guidelines, ten sensitive vegetation communities occur within the survey area. Coastal and valley freshwater marsh, fresh water, southern cottonwood-willow riparian forest, disturbed southern cottonwood-willow riparian forest, southern riparian woodland, and southern coast live oak riparian forest are considered wetland habitats; scrub oak chaparral is considered a Tier I (rare uplands) habitat; Diegan coastal sage scrub and disturbed Diegan coastal sage scrub are considered Tier II (uncommon uplands) habitats; and non-native grassland is considered a Tier IIIB (common uplands) habitat. These sensitive vegetation communities are described in detail in Section 3.3.

5.2 Sensitive Plants

The following four sensitive plant species were observed during the focused rare plant surveys: Dean’s milkvetch, delicate clarkia, Engelmann oak, and rush-like bristleweed. None

of these plant species are federally or state listed, nor are they covered by the MSCP. However, they have a CRPR as assigned by CNPS. The rank of each sensitive plant species observed can be found in Table 3, along with the estimated number of individuals within the survey area. Descriptions of the sensitive plant species observed are provided below.

Table 3 Sensitive Plant Species Observed within the Survey Area					
Scientific Name	Common Name	Federal/State Listing	CRPR	MSCP	Number of Individuals Observed
<i>Astragalus deanei</i>	Dean's milkvetch	—/—	1B.1	—	312
<i>Clarkia delicata</i>	delicate clarkia	—/—	1B.2	—	381
<i>Quercus engelmannii</i>	Engelmann oak	—/—	4.2	—	20
<i>Xanthisma junceum</i>	rush-like bristleweed	—/—	4.3	—	41
California Rare Plant Ranks					
1B = Species rare, threatened, or endangered in California and elsewhere. These species are eligible for state listing.					
4 = A watch list of species of limited distribution. These species need to be monitored for changes in the status of their populations.					
Threat Ranks					
0.1 = Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)					
0.2 = Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)					
0.3 = Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)					

Appendix N summarizes these species and the other potentially occurring sensitive plant species that were assessed based on species locations records, habitat suitability, and soil preferences. All City narrow endemic plant species are also addressed in Appendix N. While some additional sensitive plant species have a low potential to occur in the survey area, no additional species have a moderate or high potential to occur within the vicinity of the project.

5.2.1 Sensitive Plant Species Observed

a. Dean's Milkvetch (*Astragalus deanei*)

Dean's milkvetch is a CRPR 1B.1 species (CNPS 2020). This perennial herb in the legume family (Fabaceae) grows one to two feet tall and flowers from March to May (Munz 1974). Its distribution is now mostly limited to southwestern San Diego County, with only two general populations occurring north of Interstate 8, one occurring in the vicinity of El Cajon Mountain and the other occurring in the vicinity of Cedar Creek, southwest of Julian. Where present, Dean's milkvetch generally occurs on dry hillsides or after fires (Munz 1974). Some populations have been found to grow in the partial shade of low-growing shrubs, making it difficult to detect (Reiser 2001).

Dean's milkvetch occurs throughout the large hillside in the northeastern portion of the survey area (see Figure 6). The species occurs mostly in small groups clustered within small swales and washes and is mostly absent from areas of the site containing an abundance of

short-pod mustard (*Hirschfeldia incana*). A small number of individuals were observed on the manufactured terraces north and south of the concrete spillway. A total of 312 individuals were mapped within the survey area by recording the location and number of individuals in each group when this species was detected.

b. Delicate Clarkia (*Clarkia delicata*)

Delicate clarkia is a CRPR 1B.2 species (CNPS 2020). This annual in the evening-primrose family (Onagraceae) grows up to 3 feet tall and produces rose-lavender to pale pink flowers in May and June. Delicate clarkia is found only in San Diego County and Baja California, Mexico. It grows on dry slopes in oak woodlands and chaparral below 4,000 feet (Munz 1974), preferring sites that are partially shaded with soils that are wet in spring and have abundant herbaceous growth in spring. Delicate clarkia is inconspicuous when not in flower, but readily recognizable by its spoon-shaped rose petals and bright, orange-tipped anthers (Reiser 2001).

A total of 381 delicate clarkia individuals were observed within the survey area. The majority of individuals detected occurred in groups in the southern portion of the survey area, either on a north-facing slope just south of a dirt access road or within the shoulder of the road. The location and number of individuals in each group were recorded when this species was detected. The observed abundance of this annual species was likely limited by well below average rainfall during the 2017-2018 rain season. Data from the National Oceanic and Atmospheric Administration show that this season's rainfall is only 33 percent of average in the San Diego region (National Oceanic and Atmospheric Administration 2018). Although more individuals may be detectable during an average rain year, the extent of this species within the survey area is likely well-represented by what was mapped (see Figure 6). No other portions of the survey area contain suitably mesic, north-facing slopes.

c. Engelmann Oak (*Quercus engelmannii*)

Engelmann oak is a CRPR 4.2 species (CNPS 2020). This spreading semi-deciduous tree in the oak family (Fagaceae) grows from fifteen to sixty feet tall with a rounded top and bluish-green leaves (Roberts 1995). The range of this species is in Los Angeles, Orange, Riverside, and San Diego Counties and northern Baja California, at elevations below 4,300 feet (Jepson Flora Project 2020). It occurs in southern oak woodland, oak savannah, and chaparral habitats, on alluvial fans, in interior valleys and on slopes (Roberts 1995).

A total of 20 Engelmann oaks were observed within the survey area. Of these, four large individuals were observed in the southern portion of the survey area along a dirt access road in areas mapped as southern coast live oak riparian woodland and Diegan coastal sage scrub (see Figure 6). A solitary Engelmann oak was observed on a terrace hanging over the southern edge of the concrete spillway. In the western portion of the survey area, six immature individuals were observed near a dirt access road, with four of these grouped together (see Figure 6). Additionally, one large individual was observed and contained eight Engelmann oak saplings beneath the canopy.

d. Rush-like Bristleweed (*Xanthisma junceum*)

Rush-like bristleweed is a CRPR 4.3 species (CNPS 2020). This herbaceous perennial shrub in the sunflower family (Asteraceae) grows from one to three feet tall and flowers from May to January (Jepson Flora Project 2020; CNPS 2020). Its range occurs mostly within San Diego County, extending south to northern Baja California, Mexico (CNPS 2020). Habitat for rush-like bristleweed is rocky, exposed locations in dry, low chaparral or coastal sage scrub (Reiser 2001) below 3,300 feet elevation (Jepson Flora Project 2020). This inconspicuous plant may often be overlooked because of its minimal foliage and late flowering period.

A total of 41 rush-like bristleweed individuals were observed within the survey area. The majority of individuals occur on the large hillside north of a dirt access road in the northern portion of the survey area (see Figure 6). Individuals were often observed in small groups, seeming to prefer areas with low non-native vegetation cover. The location and number of individuals in each group were recorded when this species was detected. One individual was observed on a terrace south of the road.

5.3 Sensitive Wildlife Species

The following 15 sensitive wildlife species were observed or detected during the general and focused biological surveys conducted for this project: western spadefoot (*Spea hammondi*), Belding's orange-throated whiptail (*Aspidoscelis hyperythra beldingi*), San Diegan tiger whiptail (*Aspidoscelis tigris stejnegeri*), red diamond rattlesnake (*Crotalus ruber*), great egret (*Ardea alba*), great blue heron (*Ardea herodias*), Cooper's hawk (*Accipiter cooperii*), bald eagle (*Haliaeetus leucocephalus*), olive-sided flycatcher (*Contopus cooperi*), least Bell's vireo, yellow warbler (*Setophaga petechia*), yellow breasted chat (*Icteria virens*), southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*), Peregrine falcon (*Falco peregrinus anatum*), and southern mule deer (*Odocoileus hemionus fuliginata*) (see Figure 6). One of these species, least Bell's vireo, is federally listed as endangered. Cooper's hawk and southern California rufous-crowned sparrow are CDFW watch list species. Western spadefoot, Belding's orange-throated whiptail, San Diegan tiger whiptail, red diamond rattlesnake, olive-sided flycatcher, yellow warbler, and yellow breasted chat are CDFW species of special concern. In addition, Belding's orange-throated whiptail, Cooper's hawk, least Bell's vireo, southern California rufous-crowned sparrow, and southern mule deer are covered by the MSCP.

Based on an assessment of species location records and habitat suitability, the following 22 additional sensitive wildlife species were identified as having a high or moderate potential to occur: San Diego banded gecko (*Coleonyx variegatus abbotti*), Blainville's horned lizard (*Phrynosoma blainvillii*), Coronado skink (*Plestiodon skiltonianus interparietalis*), San Diegan legless lizard (*Anniella stebbinsi*), rosy boa (*Lichanura orcutti*), California glossy snake (*Arizona elegans occidentalis*), San Diego ring-necked snake (*Diadophis punctatus similis*), coast patch-nosed snake (*Salvadora hexalepis virgulata*), white-tailed kite (*Elanus leucurus*), western red bat (*Lasiurus blossevillii*), western yellow bat (*Lasiurus xanthinus*), western mastiff bat (*Eumops perotis californicus*), pocketed free tailed bat (*Nyctinomops femorosaccus*), big free tailed bat (*Nyctinomops macrotis*), Dulzura pocket mouse

(*Chaetodipus californicus femoralis*), San Diego desert woodrat (*Neotoma lepida intermedia*), mountain lion (*Puma concolor*), green heron (*Butorides virescens*), snowy egret (*Egretta thula*), black-crowned night heron (*Nycticorax nycticorax*), golden eagle (*Aquila chrysaetos canadensis*), and Townsend's big-eared bat (*Corynorhinus townsendii*).

Descriptions of the observed and potentially occurring sensitive wildlife species are provided in Section 4.4.1 and/or in Appendix O. However, the following five observed sensitive species are only addressed in Appendix O, as none of these species is expected to breed, roost, or nest on-site: great egret (*Ardea alba*), bald eagle (*Haliaeetus leucocephalus*), olive-sided flycatcher (*Contopus cooperi*), Peregrine falcon (*Falco peregrinus anatum*), and great blue heron (*Ardea herodias*). Additionally, the following five sensitive species with moderate or high potential to occur are only addressed in Appendix O, as none of these species is expected to breed, roost, or nest on-site: green heron, snowy egret, black-crowned night heron, golden eagle, and Townsend's big-eared bat.

5.3.1 Sensitive Species Observed

a. Western Spadefoot (*Spea hammondi*)

The western spadefoot is a CDFW species of special concern (CDFW 2019a). This species ranges from central northern California through the Coast Ranges from San Francisco south into Baja California, Mexico, at elevations from sea level to 4,500 feet (Stebbins and McGinnis 2018; Zeiner et al. 1988-1990). Habitat for the western spadefoot includes lowlands, washes, floodplains of rivers, alluvial fans, alkali flats, temporary ponds, and vernal pools. Although this species is generally found in areas of open vegetation with sandy or gravelly soil (Stebbins and McGinnis 2018), occupied vernal pool habitat contains clay soils. This species primarily inhabits uplands, only entering water to breed. It spends most of its life buried underground in burrows, and is typically active on the surface for breeding, which typically occurs between October and May with a peak in February (Jennings and Hayes 1994). The western spadefoot diet consists of a variety of arthropods, including crickets, butterflies, ants, flies, and earthworms (Morey and Gullin, as cited in Jennings and Hayes 1994). Decline in western spadefoot populations is primarily due to habitat loss and fragmentation, and possibly pesticide use.

Three individuals of this species were observed in the central portion of the survey area in disturbed land (see Figure 6). Additionally, during the 2020 Rocks Biological arroyo toad surveys, five to ten western spadefoot toads were heard calling within a pond at the eastern end of the southern cottonwood-willow riparian forest at the base of the Spillway Chute on April 15, 2020, and one upland individual was observed on April 24, 2020 (Rocks Biological 2020). This species may utilize the portions of the survey area that pond, including portions of the project impact area, for breeding. Water ponding is limited to small portions of the site. Other lands within and surrounding the San Diego River floodplain are likely utilized by this species for foraging and breeding.

b. Belding's Orange-Throated Whiptail (*Aspidoscelis hyperythra beldingi*)

Belding's orange-throated whiptail is a CDFW species of special concern and an MSCP-covered species (CDFW 2019a, City of San Diego 1997). This species ranges from the coast to the Peninsular mountain ranges from Orange and southwestern San Bernardino counties to the tip of Baja California, Mexico (Stebbins and McGinnis 2018). It occurs in a variety of habitats and is most common in sandy areas of low, open sage scrub or chaparral, particularly where there is California buckwheat (*Eriogonum fasciculatum*), sage (*Salvia* spp.), or chamise (*Adenostoma fasciculatum*; Lemm 2006). This species feeds primarily on termites (*Reticulitermes* sp.), which comprises 86 percent or more of the lizard's stomach contents (Bostic 1966). It is active during spring and summer, but is largely dormant during the fall and winter, when temperatures drop (Jennings and Hayes 1994). Breeding occurs in spring and eggs are laid in June and July. The decline of this species is attributed to habitat loss and fragmentation, with approximately 75 percent of its historic range lost to development. (McGurty 1980; Stebbins and McGinnis 2018).

Four individuals of this species were observed within Diegan coastal sage scrub in the northern and southern portions of the survey area (see Figure 6). This species has a moderate potential to occur in any of the habitats within the project impact area, besides developed land.

c. San Diegan Tiger Whiptail (*Aspidoscelis tigris stejnegeri*)

The San Diegan tiger whiptail is a CDFW species of special concern (CDFW 2019a). Its range lies in coastal southern California, predominantly on the coastal slope from Santa Barbara County south into northwestern Baja California, Mexico (Stebbins and McGinnis 2018). This species occurs in a variety of in arid and semi-arid areas, such as sage scrub, chaparral, and woodlands, where there are sufficient open areas for running. It is less common in areas with dense grass or shrub cover. San Diegan tiger whiptail is a diurnal species and is active from mid-March through October, with breeding occurring in spring and summer, with one to two clutches laid in cooler areas between April and August (Stebbins and McGinnis 2018; Thompson et al. 2016). Its diet consists of a wide variety of insects, spiders, scorpions, and other lizards (Lemm 2006). The decline of populations of coastal western whiptail is attributed to habitat loss and fragmentation from urban development (Thompson et al. 2016).

One individual of this species was observed within disturbed land in the southern portion of the survey area (see Figure 6). This species has a moderate potential to occur in any of the habitats within the project impact area, besides developed land.

d. Red Diamond Rattlesnake (*Crotalus ruber*)

The red diamond rattlesnake is a CDFW species of special concern (CDFW 2019a). This species occurs from sea level to 5,000 feet on both sides of the Peninsular Ranges from southeastern Los Angeles and southwestern San Bernardino counties, south through western Riverside and San Diego counties and most of Baja California, Mexico (Thompson et al. 2016;

Stebbins and McGinnis 2018). It inhabits coastal sage scrub, chaparral, desert scrub, grasslands and orchards, particularly where there are abundant rock outcrops (Thompson et al. 2016; Stebbins and McGinnis 2018). This species is active year-round with peak activity from late February to November, with most activity occurring in spring and summer. During the winter, it occupies dens in rock crevices, burrows, or under dense shrubs (Thompson et al. 2016). Breeding activity occurs from March to May, and females bear live young during summer. Its diet consists principally of small mammals, but it will also consume lizards, birds, and other snakes. The primary cause of population declines is habitat loss from urbanization and agriculture (Thompson et al. 2016).

One individual of this species was observed within Diegan coastal sage scrub in the southern portion of the survey area (see Figure 6). This species has a moderate potential to occur in any of the habitats within the project impact area, besides developed land.

e. Cooper's Hawk (*Accipiter cooperii*)

The Cooper's hawk is a CDFW watch list species (nesting) and an MSCP-covered species (CDFW 2019a; City of San Diego 1997). The Cooper's hawk's year-round range extends throughout most of the U.S. Its wintering range extends south to Central America, and its breeding range extends north to southern Canada (Curtis et al. 2006). Breeding birds are widespread over San Diego County's coastal slope and most abundant in lowland and foothill canyons and in urban areas. It is a common breeder in both oak and willow riparian woodlands and urban environments, with eucalyptus trees used nearly as often as oaks (Unitt 2004). Additionally, this species has been known to nest within planted trees including pine, redwood, and avocado (Unitt 2004). Breeding occurs from March to June, and nests are typically located high in the tree but under the canopy. This hawk forages primarily on medium-sized birds but is also known to eat small mammals such as chipmunks and other rodents (Curtis et al. 2006). Although urbanization and loss of habitat have contributed to the decline of this species, the Cooper's hawk acclimation to city living over the last 20 years has generously increased their numbers (Unitt 2004).

A pair of Cooper's hawks were observed flying over the site during one of the focused coastal California gnatcatcher survey visits (not depicted in Figure 6). This species has a high potential to forage and nest within the survey area, including within the project impact area, as potentially suitable nest sites (e.g., mature native trees and eucalyptus trees) are available.

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

Least Bell's vireo is federally and state listed as endangered and an MSCP-covered species (CDFW 2019b; City of San Diego 1997). Its historical breeding range once extended from northwestern Baja California, Mexico, to interior northern California, as far north as the city of Red Bluff in Tehama County, California (Franzreb 1989). The species is associated with riparian habitats, including cottonwood–willow woodlands and forests, oak woodlands, and mule fat scrub, and require dense canopy for foraging and a dense understory for nesting (Unitt 2004; USFWS 1998). Least Bell's vireos migrate to San Diego County arriving at the

breeding grounds in mid-March and remain until September or October. Populations are concentrated in the coastal lowlands of the county and are scattered within the foothills (Unitt 2004). Populations of least Bell's vireo have declined drastically due to extensive loss of riparian habitat from urban development, including flood control and damming, introduction of invasive, non-native plant species such as giant reed and saltcedar, and nest parasitism by brown-headed cowbird (USFWS 2009a). The population has increased as a result of extensive brown-headed cowbird trapping programs and restoration of riparian woodland habitat (Unitt 2004).

Although no least Bell's vireos were detected during the protocol-level surveys conducted in 2018 for this project, three males were detected during the 2020 surveys conducted by HELIX, occurring within the southern cottonwood-willow riparian forest both within the survey area and immediately downstream (west) of the survey area, as well as within the eucalyptus woodland in the northern portion of the survey area (HELIX 2020b; see Figure 6). Two incidental detections of this species (may have been one individual moving through site) were recorded in southern cottonwood-willow riparian forest within the survey area during the April 16, 2020 general biological survey (see Figure 6). Additionally, an incidental detection occurred in riparian woodland habitat north of the survey area on April 3, 2018, approximately 650 feet north of the survey area (not depicted in Figure 6). A second incidental detection occurred on June 19, 2018, approximately 300 feet north of the survey area (also not depicted in Figure 6).

Least Bell's vireo males tend to be vocal. Therefore, the lack of detection during the 2018 surveys could indicate that the 2020 detection was from an unpaired mature male looking to establish a territory or dispersal of an early-season fledgling. Although fledglings generally remain within or in close proximity to their natal territory for most of the season, immatures more than 30 days out of the nest may move over wide areas (Brown 1993). The initial dispersal distance of a juvenile vireo from its natal site has at least been documented at 1.6 kilometers (approximately 1 mile) by the time a second brood has fledged (USFWS 1998; Gray and Greaves 1984 as cited in Brown 1993). Furthermore, fledglings have been known to produce adult-like songs (Brown 1993). This species has been recorded in similar habitat in multiple locations within two miles of the project site. These nearby locations may support breeding pairs which may be a source of dispersing juveniles. As discussed in the least Bell's vireo survey report (BBS 2018), the combination of riparian vegetation communities within the survey area provides moderate to high quality habitat for least Bell's vireo, as these areas are dominated by native riparian plant species typically associated with least Bell's vireo.

g. Yellow Warbler (*Setophaga [=Dendroica] petechia*)

The yellow warbler is a CDFW species of special concern (CDFW 2019a). Yellow warblers commonly breed in San Diego County and are considered to be a rare winter visitor (Unitt 2004). This species is an obligate riparian species, nesting and foraging almost exclusively in mature riparian corridors on the coastal slopes and within the desert in San Felipe Valley (Unitt 2004). Shuford and Gardali (2008) describe yellow warblers as showing a high degree of site fidelity, with 60 to 64.5 percent of males and 32 to 44 percent of females returning to their previous year's territory. They are often observed in riparian habitat where surface

water is evident, although it is not necessary. Nesting occurs from April (Unitt 2004) through early August, and nests are typically three to five feet from the ground (Lowther et al. 1999). This species is declining due to the loss of riparian habitat and as a result of nest parasitism by brown-headed cowbirds (Unitt 2004; Zeiner et al. 2005).

Two individuals of this species were observed in southern cottonwood-willow riparian forest within the project impact area and one was observed in eucalyptus woodland in the northern portion of the survey area (see Figure 6). The survey area, including the project impact area, contains suitable riparian forest and woodland habitats for this species to use for foraging and nesting.

h. Yellow Breasted Chat (*Icteria virens*)

Yellow-breasted chat (*Icteria virens auricollis*). The yellow-breasted chat is a CDFW species of special concern (CDFW 2019a). Yellow-breasted chats arrive in San Diego County to breed in March and April, and leave as early as August, with most departing in September (Unitt 2004). Breeding occurs within dense brush or scrub along streams or marshy areas with dense riparian woodlands (Eckerle and Thompson 2001) particularly in the shrubby understory (Shuford and Gardali 2008). Chats are typically found within the coastal slope, less than 1,500 feet in elevation (Unitt 2004). This species also occurs within the desert slope along large creeks such as Coyote Creek and San Felipe Creek (Unitt 2004). Destruction of riparian woodlands by development, other human activities, and brown-headed cowbird parasitism have contributed to the decline of the species (Shuford and Gardali 2008). Due to this species' preference to use the understory for its breeding grounds, the chat is also susceptible to grazing impacts.

One individual of this species was incidentally detected by vocalizations in riparian forest habitat approximately 1,000 feet west of the survey area while accessing the survey area (not depicted in Figure 6). The survey area, including the project impact area, contains suitable riparian forest and woodland habitats for this species to use for foraging and nesting.

i. Southern California Rufous-crowned Sparrow (*Aimophila ruficeps canescens*)

The southern California rufous-crowned sparrow is a CDFW watch list species and an MSCP-covered species (CDFW 2019a; City of San Diego 1997). This subspecies of rufous-crowned sparrow is a San Diego County resident and ranges throughout southern California from Los Angeles County to Baja California, Mexico (Collins 1999). Southern California rufous-crowned sparrows are found in sage scrub, broken or burned chaparral habitats, and grasslands with scattered shrubs. The species exhibits a strong preference for moderate to steep, south-facing, dry, rocky slopes with a 50 percent cover of low shrubs (Unitt 2004; Collins 1999). Breeding occurs from March through June, and pair-bonds are formed that may last year-round (Collins 1999). Loss of habitat due to urbanization and habitat fragmentation has decreased the amount of suitable habitat for southern California rufous-crowned sparrows (Unitt 2004).

A total of 23 detections of southern California rufous-crowed sparrow were recorded within the survey area, mostly on the large hillside north of the spillway in open coastal sage scrub (see Figure 6). Some individuals of this species were observed in the coastal sage scrub and disturbed land south of the spillway, and one individual was observed along the northern edge of the spillway within the project impact area. The areas of open coastal sage scrub on the large hillside are highly suitable for this species to use for foraging and nesting. Based on on-site observations, this species may also utilize the coastal sage scrub adjacent to the spillway and within the project impact area. Although nesting adjacent to the spillway is less likely compared to the northern hillside, there is still a moderate potential for nesting within the coastal sage scrub of the project impact area.

j. Southern Mule Deer (*Odocoileus hemionus fuliginata*)

The southern mule deer is not state or federally listed but is an MSCP-covered species (City of San Diego 1997). It is a wide-ranging species, occurring from central Canada through the United States into central Mexico. The southern subspecies occurs from Orange and Riverside Counties, south through San Diego to central Baja California, Mexico (Tremor et al. 2017). In San Diego County, it is widespread throughout undeveloped areas from Marine Corps Base Camp Pendleton to the Laguna Mountains, Sweetwater River, and Otay Lakes at elevations of 400 to 3,600 feet (Bleich and Holl 1982). This species requires relatively large, undisturbed tracts of chaparral, coastal sage scrub, mixed grassland/shrub habitats, oak woodlands, and/or coniferous forests (Tremor et al. 2017). The reproductive cycle begins with the male rutting season as early as September, with breeding continuing through January, and fawning between June and August (Tremor et al. 2017). The diet of the southern mule deer consists of forbs, grasses, and nuts. Populations of mule deer appear to show a long-term decline, primarily as a result of urbanization and habitat fragmentation (Tremor et al. 2017).

Tracks and scat of this species were observed in sage scrub habitat within the northern portion of the survey area (see Figure 6). The project impact area and surrounding land likely serve as a movement corridor for this species, including the potential for this species to utilize on-site habitats for breeding and/or rearing young.

5.3.2 Sensitive Wildlife Species with Moderate to High Potential to Occur

The potential for these species to occur within the survey area and the project impact area is assessed below and summarized in Appendix O. As mentioned above, green heron, snowy egret, black-crowned night heron, golden eagle, and Townsend's big-eared bat have potential to occur, but are not discussed in detail because the bird species are not expected to nest or breed within the survey area and Townsend's big-eared bat is not expected to form a maternity colony.

a. San Diego Banded Gecko (*Coleonyx variegatus abbotti*)

San Diego banded gecko is a CDFW species of special concern (CDFW 2019a). Its historical range is in coastal and cismontane southern California, extending south into Baja California.

Currently, it appears to be largely restricted to San Diego County (Thompson et al. 2016). It is a nocturnal species, generally found under large granite rocks and other cover objects in coastal sage scrub and chaparral, between approximately 500 and 3,000 feet in elevation (Lemm 2006). San Diego banded gecko feeds on a variety of invertebrate prey. This species estivates from approximately November to February. Breeding occurs in April and May, and females lay up to three clutches of one to two eggs between May and September (Stebbins and McGinnis 2018). Young hatch in approximately 45 days.

Portions of the scrub habitat within the survey area contain suitably rocky granitic outcrops to support this species providing a moderate potential for San Diego banded gecko to occur within the survey area. However, this species is unlikely to occur within the project impact area because the scrub habitats lack granitic outcrops, and the riparian vegetation is not suitable for this species.

b. Blainville's Horned Lizard (*Phrynosoma blainvillii*)

Blainville's horned lizard is a CDFW species of special concern, and an MSCP-covered species (CDFW 2019a; City of San Diego 1997). This lizard's range extends from Butte County south through most of California west of the Sierra Nevada, at elevations between sea level and 8,000 feet (Stebbins and McGinnis 2018), to the desert foothills and into Baja California (Thompson et al. 2016). Blainville's horned lizard is often associated with open (20 to 40 percent bare ground) coastal sage scrub (Fisher et al. 2002), especially in areas of moderate topography and loose or sandy soil (Mills 1991). Adults are diurnally active year-round but are most common from late March to late August, when temperatures are warm but not extreme. They breed in the spring, and females lay clutches of 6–21 eggs in May and June. The eggs hatch in August and September. Blainville's horned lizard is largely dependent upon native harvester ants (*Pogonomyrmex* sp.), which contribute up to 90 percent of the species' diet (Pianka and Parker 1975), but it rarely eats invasive Argentine ants (*Linepithema humile*) (Jennings and Hayes 1994). Populations have been severely reduced by loss of habitat and introduction of Argentine ants.

The coastal sage scrub and scrub oak chaparral within the survey area contain loose soils and would be suitable for this species providing a moderate potential for Blainville's horned lizard to occur within the survey area. However, there is a low potential for this species to occur in the scrub habitats within the project impact area due to the disturbed and compacted soil, and it is not expected in the project impact area's riparian habitat. The nearest record of this species is from approximately 0.7 mile south of the site in similar scrub habitat (County of San Diego 2020).

c. Coronado Skink (*Plestiodon skiltonianus interparietalis*)

Coronado skink is a CDFW species of special concern (CDFW 2019a). The Coronado skink ranges from central Riverside County south to Baja California, Mexico (Jennings and Hayes 1994). In San Diego County, the Coronado skink is found in a variety of plant communities including grassland, open woodland, forest, and chaparral habitats with sunny openings. It is often associated with heavily vegetated streams. The Coronado skink is diurnal and most

active from early spring until fall, and breeding occurs in June or July (Jennings and Hayes 1994). Its diet consists of a variety of insects, particularly spiders and sow bugs. This species is threatened by habitat loss and fragmentation resulting from urbanization and agriculture.

The riparian woodland and forest habitats within the survey area, including the project impact area, provide suitable habitat for this species. Although this species is not expected to occur in the scrub habitat within the project impact area, there is a moderate potential for this species to occur in the riparian habitat within the project impact area. This species has also been recorded within two miles of the site in nearby Chocolate Canyon (County of San Diego 2020).

d. San Diegan Legless Lizard (*Anniella stebbinsi*)

The San Diegan legless lizard is a CDFW species of special concern (CDFW 2019a). This species occurs in southern California south of the Transverse Ranges into Baja California, with disjunct populations in the Tehachapi and Piute Mountains in Kern County (Stebbins and McGinnis 2018, Parham and Papenfuss 2008). It is found from sea level to 5,100 feet. It occurs in coastal scrub, chaparral, and open riparian habitats with loose soil for burrowing. It is often found in leaf litter in areas with a relatively higher moisture level (Stebbins and McGinnis 2018). San Diegan legless lizard may emerge above ground at night, but it will also forage for a variety of insects in the leaf litter by day (Stebbins and McGinnis 2018). Breeding occurs in June and July. The California legless lizard is insectivorous, with a diet consisting of larval insects, beetles, termites, and small moths (Stebbins and McGinnis 2018). Threats to this species include urbanization, agricultural and pesticide use, livestock grazing, and recreational activities in habitat.

The survey area contains suitable coastal sage scrub and riparian habitats with loose sandy soil to support this species. Although this species is not expected to occur in the scrub habitat within the project impact area due to mostly compacted soils, there is a high potential for this species to occur in the riparian habitat within the project impact area. Additionally, this species has been recorded in similar habitat within two miles of the project site (County of San Diego 2020).

e. Rosy Boa (*Lichanura orcutti*)

Rosy boa has no official state or federal listing status but is a Bureau of Land Management sensitive species (CDFW 2019a). The rosy boa ranges from Orange and southwestern Riverside counties south into northwestern Baja California, Mexico (Stebbins and McGinnis 2018). This species occurs in a variety of rocky shrub and desert habitats, including coastal sage scrub; pine, oak, and juniper woodlands; and chaparral and desert habitats, and is present from sea level to 5,000 feet in elevation (Lemm 2006). The rosy boa is primarily nocturnal or crepuscular and is most active from February to October but tends to be active at night in the desert portion of its range (Stebbins and McGinnis 2018; Lemm 2006). Its diet is primarily composed of rodents and small birds, but it may occasionally consume small lizards (Zeiner et al. 1988-1990). Rosy boas face threats from development, habitat loss, collecting, and predation by introduced species.

Although this species has not been recorded in the vicinity of the project or observed during the biological surveys for this project, suitable coastal sage scrub habitat occurs within the survey area providing a moderate potential for rosy boa to occur within this area. This species has a low potential to occur in the scrub habitat of the project impact area due to the mostly compacted and disturbed soils, and the riparian habitat provides only marginally suitable habitat.

f. California Glossy Snake (*Arizona elegans occidentalis*)

California glossy snake is a CDFW species of special concern (CDFW 2019a) and occurs from the eastern part of the San Francisco Bay Area south to northwestern Baja California (Jennings and Hayes 1994). It prefers arid scrub, rocky washes, grasslands, and chaparral, particularly microhabitats of open areas and areas with soil loose enough for easy burrowing (Jennings and Hayes 1994). California glossy snake is nocturnal, hiding underground in the daytime under rocks, in existing burrows, or using its specialized nose to make its own burrow (Jennings and Hayes 1994). It is typically active from late February until November, depending on the weather, and most active in May. Females lay eggs in June and July with eggs most likely hatching in late summer and early fall (Stebbins and McGinnis 2018).

The survey area contains large areas of suitable scrub habitat with loose soils providing a high potential for California glossy snake to occur within these areas. However, the project impact area mostly lacks these habitats. The scrub habitat within the project impact area contains mostly disturbed and compacted soils, and the riparian habitat is not preferred by this species. The nearest record of this species is approximately one mile northwest of the site (County of San Diego 2020).

g. San Diego Ring-necked Snake (*Diadophis punctatus similis*)

The San Diego ring-necked snake is listed as a sensitive animal by the U.S. Forest Service (CDFW 2019a). It is found mainly in San Diego County along the coast and into the Peninsular range, and in southwestern Riverside County. Its range extends south barely into northern Baja California, Mexico (Jennings and Hayes 1994). The San Diego ring-necked snake prefers moist habitats, including wet meadows, rocky hillsides, gardens, farmland, grassland, chaparral, mixed coniferous forests, and woodlands, usually being found under the cover of rocks, wood, bark, boards, and other surface debris (Jennings and Hayes 1994). It feeds on small salamanders, tadpoles, small frogs, small snakes, lizards, worms, slugs, and insects. Females lay eggs in the summer, sometimes in a communal nest. San Diego ring-necked snakes face threats from development, habitat loss, and predation by introduced species.

The survey area, including the riparian habitats within the project impact area, contains suitably rocky wet areas to support this species providing a moderate potential for San Diego ring-necked snake to occur within these areas. This species is less likely to occur in the scrub habitat within the project impact area due to the general lack of suitably moist locales.

h. Coast Patch-nosed Snake (*Salvadora hexalepis virgulata*)

The coast patch-nosed snake is a CDFW species of special concern (CDFW 2019a). This species occurs in coastal California from San Luis Obispo County south through cismontane southern California into northwestern Baja California, Mexico, from sea level to 7,000 feet (Jennings and Hayes 1994; Stebbins and McGinnis 2018). The coast patch-nosed snake inhabits sandy and rocky areas on the lower slopes of mountains within grassland, chaparral, sage scrub, and desert scrub habitats. This snake is diurnal and peak activity occurs in May and June, although it can be active year-round provided mild, warm weather (Zeiner et al. 1988-1990; Sweet, as cited in Jennings and Hayes 1994). Females lay eggs between May and August (Stebbins and McGinnis 2018). Primary prey items include small mammals, lizards, reptile eggs, and birds (Stebbins and McGinnis 2018). Habitat loss and fragmentation from urbanization and conversion to agriculture are the main threats to this species.

The survey area contains large areas of suitable scrub habitat with sandy and/or rocky soils providing a high potential for coast patch-nosed snake to occur within these areas. However, the project impact area mostly lacks these habitats. The scrub habitat within the project impact area contains mostly disturbed and compacted soils, and the riparian habitat is not preferred by this species. This species has been recorded within two miles of the project site (County of San Diego 2020).

i. White-tailed Kite (*Elanus leucurus*)

The white-tailed kite (nesting) is a California fully protected species (CDFW 2019a). This raptor is widespread within the coastal region of San Diego County, and its preferred nesting habitat includes riparian woodlands, oaks, or sycamore groves that border grassland or open fields. It also uses non-native trees freely, including citrus orchards (Unitt 2004). Nesting sites may vary from isolated trees to large stands of trees to shrubs three meters in height (Dunk 1995). Egg laying may begin as early as the beginning of February to May (Unitt 2004). The white-tailed kite forages over open areas and grasslands feeding primarily on small rodents, particularly the California vole (*Microtus californicus*) or meadow vole (*Microtus pennsylvanicus*). The white-tailed kite's population size fluctuates with rain and rodent numbers and the shifting of roosting sites (Unitt 2004). Lightly grazed or ungrazed fields also provide suitable hunting grounds for the kite, as they support larger prey populations. Areas with extensive winter freezes are generally avoided by this species (Dunk 1995).

This species is nonmigratory but nomadic and is known to roost in large communal groups (Unitt 2004). Roost sites are sensitive to human disturbance, and in one case, individuals of this species abandoned a roosting site after one day of repeated disturbance by off-road vehicles (Dunk 1995). White-tailed kite's nests are generally more successful in natural vegetation than non-urban settings and developed environments. The most significant threat to the white-tailed kite populations in southern California is loss of nesting and foraging habitat due to urbanization (Unitt 2004).

Although this species was not detected during the project biological surveys, the survey area, including the project impact area, contains suitable riparian woodland habitat to support this

species nesting providing a moderate potential for white-tailed kite to nest within these areas. Additionally, the adjacent areas provide suitable habitat for foraging.

j. Western Red Bat (*Lasiurus blossevillii*)

The western red bat is a CDFW species of special concern (CDFW 2019a). The species ranges from southern British Columbia south through California, western Nevada, Arizona, southern Utah, and western Mexico into South America (Harvey et al. 2011, Tremor et al. 2017). In San Diego County, it occurs throughout the coastal slope, with occasional records in Borrego Valley (Tremor et al. 2017). This species has been previously observed on the San Diego River in the vicinity of the proposed project, including in El Monte Valley and the upper San Diego River above El Capitan Reservoir (Clark and Stokes 2018). It is a tree-roosting bat that primarily roosts in riparian woodlands and forests dominated by sycamores, cottonwoods, oaks, and willows, though it will also use tamarisk and gum trees. Western red bat has adapted somewhat to urbanization, using orchard trees such as avocado, orange, fig, and walnut, as well as ornamental species like bougainvillea (Tremor et al. 2017). It primarily forages for moths in riparian and adjacent habitats but has also been found foraging around streetlights in suburban neighborhoods and parks. The primary threat to the species is loss of riparian habitat; however, individuals in urban and orchard trees can be at risk from tree trimming and herbicide use (Tremor et al. 2017).

The survey area, including the project impact area, contains suitable riparian habitat to support this species foraging and roosting providing a high potential for western red bat to occur within these areas. This species is not expected to utilize the scrub habitats within the project impact area or surrounding survey area due to lack of suitable roosting and foraging habitat.

k. Western yellow bat (*Lasiurus xanthinus*)

The western yellow bat is a CDFW species of special concern (CDFW 2019a). Its distribution extends from Los Angeles County east through western Arizona, southwestern New Mexico, and south to approximately Mexico City (Bat Conservation International 2019a, Western Bat Working Group 2020a). It is found in riparian, desert wash, and palm oasis habitats in the deserts and mountains from near sea level up to over 5,000 feet in elevation. Western yellow bat roosts primarily in groves of California fan palm (*Washingtonia filifera*), but will also use non-native palms, cottonwoods, and yuccas. In palms, it prefers tall trees with a skirt of dead fronds around the trunks (Tremor et al. 2017). While most common in the mountains and deserts, the western yellow bat appears to have expanded its range into suburban areas, roosting in exotic palms used in landscaping (Tremor et al. 2017). Threats to this species include drought and resultant drying of palm oases, as well as maintenance and trimming of occupied suburban palm trees (Tremor et al. 2017).

Although this species is more common in desert habitats, there is moderate potential for western yellow bat to utilize the riparian habitat within the survey area and project impact area for foraging and roosting. This species is not expected to utilize the scrub habitats within

the project impact area or surrounding survey area due to lack of suitable roosting and foraging habitat.

l. Western Mastiff Bat (*Eumops perotis californicus*)

The western mastiff bat is a CDFW species of special concern (CDFW 2019a). This subspecies ranges from central California, east to Texas, and south into northern Mexico (Tremor et al. 2019). In California, it has been recorded from Butte County and the Bay Area south along much of the coast and western slope of the Sierra Nevada, throughout the southern California coastal basins, and in the western portion of the desert (Williams 1986). It roosts primarily in cliffs (Western Bat working Group 2020b), as well as rock quarries and other rugged, rocky areas where there are large rock outcrops, and occasionally in tall buildings with sufficient shelter (Tremor et al, 2017). The western mastiff bat feeds on large moths, as well as other flying insects, such as bees, crickets, and beetles. Potential threats to this species include habitat loss to agriculture and urbanization, as well as loss of prey due to insecticide use (Williams 1986).

This species was recorded within two miles of the site in El Monte County Park, which contains large trees and open areas of non-native grass (CDFW 2020a). Additionally, a possible detection of a maternity colony of this species occurred in 1998 within the cut slope in the northern portion of the survey area (Clark and Stokes 2018). Due to the on-site conditions, there is high potential for this species to utilize this cut slope for a maternity colony but is not expected to use any portion of the project impact area for a maternity colony. This species may forage within the project impact area.

m. Pocketed Free-tailed Bat (*Nyctinomops femorosaccus*)

The pocketed free-tailed bat is a CDFW species of special concern (CDFW 2019a). This bat is distributed from California south of Los Angeles and southern Arizona south through Baja California and to Michoacán in mainland Mexico (Bat Conservation International 2019b). In San Diego County, it has been detected in a wide variety of locales, from the Anza-Borrego Desert, through the mountains and foothills, and into coastal urban areas, with most records by ultrasonic detection of calls (Tremor et al. 2017). The pocketed free-tailed bat roosts in crevices in rugged canyons, rock outcrops, and high cliffs, and has been found roosting in rock quarries, in the city of La Mesa and Mission Trails Regional Park (Tremor et al. 2017). Given its wide distribution, the species can be found foraging for large moths in a wide variety of habitats, including riparian areas, oak woodlands, grasslands, sage scrub, reservoirs, and ponds (Tremor et al. 2017). Overall detections of pocketed free-tailed bats have increased in recent years, either as a result of population increases or increased ease of ultrasonic detection. Thus, threats are poorly understood but include loss of cliff roosting habitat from mining or quarrying, as well as recreational uses such as rock climbing (Tremor et al. 2017).

This species was recorded within two miles of the site in El Monte County Park, which contains large trees and open areas of non-native grass (CDFW 2020a). Additionally, a possible detection of a maternity colony of this species occurred in 1998 within the cut slope in the northern portion of the survey area (Clark and Stokes 2018). Due to the on-site

conditions, there is high potential for this species to utilize this cut slope for a maternity colony but is not expected to use any portion of the project impact area for a maternity colony. This species may forage within the project impact area.

n. Big Free-tailed Bat (*Nyctinomops macrotis*)

The big free-tailed bat is a CDFW species of special concern (CDFW 2019a). Its range includes the southwestern United States, from southern California to southern Texas, south to northern Baja California and Chiapas, Mexico, as well as the Caribbean and most of South America (Western Bat Working Group 2020c). Little is known of the species locally, though it appears to be a rare fall migrant in San Diego County and it is unclear if the species breeds locally; most records are from specimens recovered by public health departments and wildlife rehabilitators (Tremor et al. 2017; Zeiner 1990). The big free-tailed bat is known to roost in rock outcrops, cliff crevices, and quarries and can be found up to 8,000 feet in elevation (Tremor et al. 2017; Zeiner 1990). It is found in a variety of habitats, including sage scrub, desert scrub, coniferous forest (Tremor et al. 2017), and forages primarily for large moths (Western Bat Working Group 2020c). Little is known about potential threats, though Tremor et al. (2017) note loss or disruption of roosting cliff habitat from mining and quarrying activities.

A possible detection of a maternity colony of this species occurred in 1998 within the cut slope in the northern portion of the survey area (Clark and Stokes 2018). This species may utilize this cut slope for a maternity colony but is not expected to use any portion of the project impact area for a maternity colony. Due to the on-site conditions, there is high potential for this species to forage within the project impact area.

o. Dulzura Pocket Mouse (*Chaetodipus californicus femoralis*)

The Dulzura pocket mouse is a subspecies of the California pocket mouse (*Chaetodipus californicus*). It is a CDFW species of special concern (CDFW 2019a). Its range is restricted to San Diego County and extreme northern Baja California. Locally, the Dulzura pocket mouse occurs along the coast from Camp Pendleton to Del Mar, and inland through the mountains to the desert slope. It is found from approximately sea level up to an elevation of at least 5,100 feet. Dulzura pocket mouse occurs in habitats with gravelly substrates and a mix of shrub cover and open areas. It in chaparral, grassland, sage scrub, and oak woodlands, and is particularly attracted to chaparral-grassland ecotones. Its diet consists primarily of grass seeds, but it also includes leaves, fruits, and arthropods (Tremor et al. 2017).

CNDDDB records indicate that one individual of this species was trapped and identified within the western portion of the survey area in 1993 (CDFW 2020a). This species has a high potential to utilize the scrub habitat within the survey area. However, the similar scrub habitats within the project impact area contain mostly disturbed and compacted soil, decreasing the potential for occurrence to moderate in these areas. This species has a low potential to occur in the riparian habitats within the project impact area and surrounding survey area.

p. San Diego Desert Woodrat (*Neotoma lepida intermedia*)

The San Diego desert woodrat is a CDFW species of special concern (CDFW 2019a). Its range includes coastal areas from San Luis Obispo, south into Baja California, inland to the San Bernardino Mountains and Julian (Hall 1981). This species is found primarily in chaparral and dense coastal sage scrub with succulent vegetation and rock outcrops. It creates middens (nests) under ledges, crevices, rock outcrops, and cactus thickets (Tremor et al. 2017). These middens can be occupied by multiple generations and have been documented as old as 200 to 400 years of age. This species is herbivorous and can eat a large variety of plants, with cacti often being consumed as an important source of water (Tremor et al. 2017). Threats to this species include habitat degradation and loss of habitat.

Woodrat tracks were observed during the biological surveys. However, they could not be identified to species and no middens were observed. The San Diego desert woodrat has a high potential to utilize the chaparral habitat within the southern portion of the survey area and a moderate potential to utilize areas of dense coastal sage scrub within the survey area. However, this potential is decreased to low for the scrub habitat within the project impact area due to the lack of dense vegetation and rock outcrops. It has a low potential to occur in the riparian habitat within the project impact area.

q. Mountain Lion (*Puma concolor*)

The mountain lion is an MSCP-covered species (City of San Diego 1997). It is widespread but uncommon in California, ranging from sea level to alpine meadows, avoiding only densely populated areas and open desert (Tremor et al. 2017). The mountain lion occurs in a wide variety of habitats, with its presence most strongly tied to that of southern mule deer, its primary prey. Home ranges differ for female and male mountain lions; in San Diego County females have home ranges of between 30 and 115 square miles, and males have an average home range of 145 square miles (Tremor et al. 2017). Mountain lions breed year-round, with a peak in the spring (Tremor et al. 2017). The primary threats to mountain lions are loss of habitat and freeway construction, which can isolate population and lead to inbreeding, as well as direct mortality from vehicle strikes (Tremor et al. 2017).

As the survey area is situated within a large expanse of mostly undeveloped land and within a large wildlife corridor, there is high potential for this species to utilize the habitat in the vicinity of the project site for hunting, mating, and general movement.

5.3.3 Sensitive Wildlife Species with Low Potential to Occur

Additional sensitive wildlife species that have a low potential or are not expected to occur within the survey area are addressed in Appendix O. Four of these species, the federally endangered Quino checkerspot butterfly and arroyo toad, the federally threatened coastal California gnatcatcher, the federally and state endangered southwestern willow flycatcher, are also addressed below to summarize focused surveys that were conducted for the species.

a. Quino Checkerspot Butterfly

Quino is federally listed as endangered (USFWS 1997c). Its historic range includes the coastal plain and inland valleys of southern California from the Santa Monica Mountains south to northern Baja California, Mexico. Currently, the species is known from southern San Diego County and southwestern Riverside County. Quino occurs at several locations from Otay Mesa and Jacumba in southern San Diego County to Oak Grove on the northeast slopes of Cleveland National Forest, as well as near Murrieta and Temecula and eastward to Hemet and Anza in Riverside County (Faulkner and Klein 2012; USFWS 1997c). The distribution is primarily defined by the distribution of its principal larval host plant, dot-seed plantain (*Plantago erecta*). However, female Quino have also been observed depositing eggs on woolly plantain (*P. patagonica*), white snapdragon (*Antirrhinum coulterianum*), thread-leaved bird's beak (*Cordylanthus rigidus*), purple owl's clover (*Castilleja exserta*), and Chinese houses (*Collinsia heterophylla*) (Faulkner and Klein 2012; USFWS 2009b). Food sources for this butterfly vary from low-growing annuals including popcorn flowers (*Plagiobothrys* and *Cryptantha* sp.), lomatium (*Lomatium* sp.), goldenstar (*Bloomeria* sp.), yarrow (*Achillea millefolium*), fiddleneck (*Amsinckia* sp.), goldfields (*Lasthenia* sp.), gilia (*Gilia* sp.), and onion (*Allium* sp.) to perennial shrubs such as California buckwheat and sugar bush (*Rhus ovata*). The adult flight period typically occurs between March and May, although adults have been known to emerge as early as January and as late as April, depending on elevation, winter rains, and temperatures (Faulkner and Klein 2012). The primary threats to this species include habitat loss and habitat type conversion, resulting from urban and agricultural development. Non-native plant invasion, off-road-vehicle use, nitrogen deposition from internal combustion engines, grazing and fire management practices, and introduced exotic invertebrates (i.e., earwigs and sow bugs) also threaten this species.

Although suitable Quino habitat was mapped within the survey area, this species was not observed during the RECON 2018 or HELIX 2020 presence/absence surveys (RECON 2018c and HELIX 2020d). One larval host plant species, dot-seed plantain, was observed in patches ranging in size from approximately 10 to over 1,000 individuals in the northern portion of the survey area. Most of these patches were scattered throughout much of the large hillside in the northeastern portion of the survey area, where dot-seed plantain generally occurred in openings in scrub habitats. Within the remainder of the survey area, dot-seed plantain was found concentrated along dirt access roads and areas that had previously been graded. The survey area supports a substantial number of potential nectar species, including known nectar sources such as those in the following genera: *Amsinckia*, *Cryptantha*, *Dichelostemma*, *Eriogonum*, *Gilia*, and *Plagiobothrys*; however, many of these species occurred in small numbers. Although host plants were plentiful, the nectar sources were sparse; therefore, this species has a low potential to occur on-site.

b. Coastal California Gnatcatcher

The coastal California gnatcatcher is federally listed as threatened, a CDFW species of special concern, and an MSCP-covered species (CDFW 2019b; City of San Diego 1997). The coastal California gnatcatcher is a nonmigratory, resident species found on the coastal slopes

of southern California ranging from Ventura County southward through Los Angeles, Orange, Riverside, and San Diego counties into Baja California, Mexico (Atwood and Bontrager 2001; USFWS 2010). In San Diego County, the eastern limits of the coastal scrub vegetation communities used by the gnatcatcher are largely bound by mountainous areas and colder winters (Unitt 2004).

Coastal California gnatcatchers typically occur in or near mature coastal sage scrub habitat (Atwood and Bontrager 2001). This vegetation generally comprises low (less than 3 feet) shrub and sub-shrub species. Gnatcatchers tend to defend breeding territories ranging in size from 2 to 14 acres (USFWS 2010). This species' ideal host shrub is California sagebrush, but it is also found nesting in coast California buckwheat, common encelia (*Encelia californica*), and broom baccharis and egg laying occurs typically in mid-March to early July in San Diego County (Unitt 2004). Other habitats used by coastal California gnatcatcher include chaparral, grassland, and riparian scrub; disturbed habitats are used where they occur adjacent to sage scrub (Atwood and Bontrager 2001).

The primary cause of decline in the coastal California gnatcatcher population is habitat loss and degradation from urban and agricultural development, wildfires, and grazing. Gnatcatcher populations in areas near agriculture or livestock may be more susceptible to brood parasitism (Atwood and Bontrager 2001).

This species was not detected during the RECON 2018 surveys or the HELIX 2020 surveys (RECON 2018a and HELIX 2020a, respectively). The sage scrub within the survey area varies in shrub density and dominant shrub species. Small portions provide low to moderate quality habitat for this species. However, the majority of coastal sage scrub provides only low-quality habitat because it lacks the density and dominant shrub species preferred by this species. Despite the project impact area occurring entirely within an area mapped as critical habitat for this species, it contains very few areas of moderate-quality scrub to support coastal California gnatcatcher.

c. Southwestern Willow Flycatcher

The southwestern willow flycatcher is federally and state listed as endangered, an MSCP-covered species (CDFW 2019b; City of San Diego 1997). This migratory bird breeds in southern California, southern Nevada, southern Utah, Arizona, New Mexico, western Texas, southwestern Colorado, and extreme northwestern Mexico (USFWS 2011).

The southwestern willow flycatcher is present in San Diego County in late spring and summer with two main populations within San Diego County: 1) the upper San Luis Rey River between East Grade Road and the La Jolla Indian Reservation and 2) the Santa Margarita River in Camp Pendleton (Unitt 2004). Other scattered colonies exist throughout San Diego County, located in the lower San Luis Rey River and Guajome Lake. The southwestern willow flycatcher breeding season is from late mid-May to mid-July. For breeding and nesting activities this species requires mature, multi-tiered riparian woodland habitat with a high percentage of canopy cover where surface water is present, or soil moisture is high enough to support suitable tree species (Sogge et al. 2010). Some of the more common tree and shrub species currently known to comprise nesting habitat in San Diego

County include Goodding's willow (*Salix gooddingii*), narrow-leaved willow (*Salix exigua*), arroyo willow (*Salix lasiolepis*), red willow (*Salix laevigata*), boxelder (*Acer negundo*), and tamarisk (USFWS 2013). Although there are exceptions, generally flycatchers are found nesting in areas with willows, tamarisk, or both (USFWS 2011).

Southwestern willow flycatchers are extremely sensitive to human activity in riparian areas. Threats to this species include loss of riparian habitat due to urbanization, flood control, water diversion, grazing, and invasion of non-native species such as giant reed (Unitt 2004). Parasitism by brown-headed cowbirds has been a significant factor in the decline of this species in California and Arizona and elsewhere (Sedgwick 2000). It should be noted that low cowbird parasitism rates, multi-tiered riparian woodland, and surface water are all important factors for the recovery of this species to be successful (Unitt 2004).

Although the survey area contains suitable riparian woodland and willow forest habitat preferred by this species, southwestern willow flycatcher is not expected to occur within this portion of the San Diego River corridor as breeding populations are very rare throughout San Diego County. Additionally, protocol-level surveys were conducted in 2018 for this species and none were observed (BBS 2018).

During the 2020 southwestern willow flycatcher surveys, one male willow flycatcher was detected in the eastern portion of the southern cottonwood-willow riparian forest within the survey area during the first survey period in May (HELIX 2020c). This occurrence is not depicted on Figure 6. The male could not be identified to subspecies as there are multiple very similar willow flycatcher subspecies with potential to be migrating through the southern California region during the survey period, including two northern breeding subspecies *Empidonax traillii brewsteri* and *E.t. adastus*. No willow flycatcher individuals were detected during the third survey period, beginning June 22, when the southwestern subspecies *E. t. extimus* should be the only subspecies remaining within the southern California region. The one male willow flycatcher was detected on-site on May 16, during the first survey window and no other willow flycatchers were detected during subsequent surveys. Therefore, it can be concluded that this individual most likely represents a migrating individual passing through the site, rather than a breeding bird.

d. Arroyo Toad

The arroyo toad is federally listed as endangered, CDFW species of special concern, and an MSCP-covered species. The arroyo toad occurs in coastal drainages in Santa Barbara, Ventura, Los Angeles, Orange, and San Diego counties and northwestern Baja California, Mexico, as well as in six desert drainages in Riverside and San Bernardino counties (Jennings and Hayes 1994). The arroyo toad is currently known from 23 drainages in San Diego County. It is generally found in shallow pools or along sandy banks third-order or greater streams with low currents (Jennings and Hayes 1994). Arroyo toads breed in pools, with the majority of the pool greater than one foot deep with a substrate of sand, gravel, or pebbles, lacking vegetation. Subadults and adults can range into surrounding uplands as much as 0.5 mile to 1.2 miles away from the stream (USFWS 1999b). Arroyo toads are nocturnal and breed from

March to June, depending on local climate. The main threats to arroyo toad are degradation, loss of riparian habitat, and predation by bullfrogs (*Rana catesbeiana*).

Although a majority of the survey area occurs within an area mapped as critical habitat for arroyo toad, it mostly lacks the open sand or gravel floodplain habitats required to support this species, thereby providing a low potential for arroyo toad to occur. Additionally, protocol-level surveys were conducted for this species in 2018 (RECON 2018b) and 2020 (Rocks Biological 2020) and none were detected.

5.4 Wildlife Movement Corridors

Wildlife movement corridors are defined as areas that connect suitable wildlife habitat areas in a region otherwise fragmented by rugged terrain, changes in vegetation, or human disturbance. Natural features such as canyon drainages, ridgelines, or areas with vegetation cover provide corridors for wildlife travel. Wildlife movement corridors are important because they provide access to mates, food, and water; allow the dispersal of individuals away from high population density areas; and facilitate the exchange of genetic traits between populations (Beier and Loe 1992). Wildlife movement corridors are considered sensitive by the City and the resource and conservation agencies.

The survey area, which contains a riparian corridor along the bottom of a large canyon among a large expanse of undeveloped land, is within a wildlife movement corridor. The project site occurs along the San Diego River and has connectivity to a network of undeveloped lands throughout the central portion of San Diego County. The corridor extending through the project survey areas likely supports terrestrial and avian wildlife of all sizes, and the perennial water source of the nearby El Capitan Reservoir likely supports the breeding and movement of many local native aquatic species (although partially restricted by the dam). Aquatic and terrestrial wildlife breeding is expected to occur throughout this corridor; however, during the surveys, no significant breeding populations or evidence of breeding activity (signs of roosting maternity colonies, deer bedding sites, etc.) was observed for aquatic or terrestrial species. Therefore, it is not likely that breeding is concentrated in the vicinity of the project in any way that would constitute a significant nursery site.

5.5 Jurisdictional Wetlands and Waters

As described in Section 3.2, the survey area contains two riparian corridors along the San Diego River that extend west from the dam, converge, and continue west outside of the survey area. From here, the San Diego River flows approximately 29 miles westward before emptying into the Pacific Ocean, a Traditional Navigable Waterway.

Water appears to pond or be held for extended periods of time within certain portions of the riparian corridors. For instance, in the northern riparian corridor at the base of the spillway, water appears to pond just upstream of the alluvial fan created by sediment deposition from another drainage flowing into the river from the north. West of the alluvial fan, the northern corridor occurs as a ditch that may carry water during flow events with portions remaining ponded for some time due to the width and/or microtopography of the channel.

As with the northern riparian corridor, the southern corridor contains small portions where water appears to pond for an extended period of time. Three vegetation communities within the survey area contain hydrophytic vegetation: coastal and valley freshwater marsh, southern cottonwood-willow riparian forest (including the disturbed form), and arundo-dominated riparian. These vegetation types are generally associated with the bottomland portions of each corridor that pond and/or appear to contain saturated soils for extended periods of time. Hydric soil indicators were observed in these areas during the wetland delineation survey.

Various hydrology indicators were observed in areas that appear to convey water and contain an OHWM, such as the drainage in the northern portion of the survey area and portions of the riparian corridors, as well as those portions of the riparian corridors that appear to pond. The various swales on the steep slopes in the northeastern portion of the survey area are small in size and do not have an OHWM or exhibit other hydrological indicators.

As discussed in the jurisdictional waters/wetland delineation report (RECON 2017), a total of 4.92 acres of potential wetland waters of the U.S. and 0.83 acre of potential non-wetland waters of the U.S. were delineated on-site (Table 4; Figure 7). The CDFW and RWQCB jurisdictional areas consists of 0.26 acre of streambed (potential non-wetland waters of the state), 0.57 acre of lake (potential non-wetland waters of the state), and 11.10 acres of riparian habitat (potential wetland waters of the State), totaling 11.93 acres. The City wetlands include vegetated riparian habitat but not areas of unvegetated streambed (see Figure 7). The area considered City wetlands totals 5.13 acres.

Jurisdictional Areas	Total Acreage (linear feet)
USACE Total Jurisdiction	5.75
Wetland Waters of the U.S.	4.92
Non-wetland Waters of the U.S. ²	0.83 (2,271)
CDFW and RWQCB Total Jurisdictional Areas¹	11.93
Riparian Habitat	11.10
Streambed ²	0.26 (2,271)
Lake	0.57
City of San Diego Wetlands	5.13
¹ CDFW/RWQCB area of jurisdiction includes all USACE jurisdictional waters.	
² Non-wetland waters/streambed area not included in the wetland/riparian areas so that no area is counted twice for the same jurisdiction.	



Survey Area

Project Boundary

Jurisdictional Resources

RWQCB Wetland Waters of the State/CDFW Riparian

USACE Non-wetland Waters of the US/RWQCB Non-wetland Waters of the State/CDFW Streambed

USACE Non-wetland Waters of the US/RWQCB Non-wetland Waters of the State/CDFW Streambed/City Wetland

USACE Wetland Waters of the US/RWQCB Wetland Waters of the State/CDFW Riparian/City Wetland

USACE Non-wetland Waters of the US/RWQCB Non-wetland Waters of the State/CDFW Lake

0 Feet 200



FIGURE 7
Jurisdictional Resources

6.0 Project Impact Analysis

The project proposes direct impacts to 9.80 acres within the project impact area, including the vegetation removal area and the staging/stockpiling areas. Indirect impacts may also occur as a result of construction and/or any future maintenance of the spillway. The following sections analyze the direct, indirect, and cumulative impacts to sensitive biological resources that may result from this project.

6.1 Impacts to Sensitive Vegetation Communities

The project has potential to impact seven sensitive vegetation communities: coastal and valley freshwater marsh, southern cottonwood-willow riparian forest, disturbed southern cottonwood-willow riparian forest, southern riparian woodland, southern coast live oak riparian forest, Diegan coastal sage scrub, and disturbed Diegan coastal sage scrub. Potential direct, indirect, and cumulative impacts to sensitive vegetation communities are discussed in this section.

6.1.1 Direct Impacts to Sensitive Vegetation Communities

Of the 9.80 acres of direct project impacts proposed, 4.97 acres would occur to sensitive vegetation communities, comprising coastal and valley freshwater marsh (wetland), southern cottonwood-willow riparian forest (wetland), disturbed southern cottonwood-willow riparian forest (wetland), southern riparian woodland (wetland), southern coast live oak riparian forest (wetland), Diegan coastal sage scrub (Tier II), and disturbed Diegan coastal sage scrub (Tier II) (Figure 8; Table 5). Some southern cottonwood-willow riparian forest canopy extends outside the southern boundary of the Lower Spillway. These trees are rooted within the spillway and would be directly impacted by the vegetation removal activities. The extent of this canopy to be directly impacted is included in the Vegetation Removal Area in Figure 8 and in the direct impact calculations in Table 5.

Impacts to wetlands and Tier II communities would be considered significant and require mitigation. Impacts to disturbed land, Eucalyptus woodland, and urban/developed land are not considered significant and would not require mitigation.



- | | | | | | | |
|---------------------------|--|---|---|-------------------------------------|---|---|
| Survey Area | Wildlife Points | Coastal Whiptail
(<i>Aspidoscelis tigris stejnegeri</i> ; CSC) | Plant Points | Vegetation Communities | Coastal and Valley Freshwater Marsh | Southern Riparian Woodland |
| Direct Impacts | Least Bell's Vireo
(<i>Vireo bellii pusillus</i> ; FE, CE, MSCP) | Red Diamond Rattlesnake
(<i>Crotalus ruber</i> ; CSC) | Dean's milkvetch
(<i>Astragalus deanei</i> ; CRPR 1B.1) | Arundo-dominated Riparian | Fresh Water | Scrub Oak Chaparral |
| Staging/Stockpiling Areas | Western Spadefoot
(<i>Spea hammondi</i> ; CSC) | Southern California Rufous Crowned Sparrow
(<i>Aimophila ruficeps canescens</i> ; WL, MSCP) | Delicate clarkia
(<i>Clarkia delicata</i> ; CRPR 1B.2) | Diegan Coastal Sage Scrub | Non-native Grassland | Southern Coast Live Oak Riparian Forest |
| Vegetation Removal Area | Yellow Warbler
(<i>Setophaga [=Dendroica] petechiae</i> ; CSC) | Southern Mule Deer
(<i>Odocoileus hemionus fuliginata</i> ; MSCP) | Engelmann oak
(<i>Quercus engelmannii</i> ; CRPR 4.2) | Disturbed Diegan Coastal Sage Scrub | Southern Cottonwood-willow Riparian Forest | Disturbed Land |
| | Belding's Orange-throated Whiptail
(<i>Aspidoscelis tigris stejnegeri</i> ; CSC, MSCP) | | Rush like bristleweed
(<i>Xanthisma junceum</i> ; CRPR 4.3) | Eucalyptus Woodland | Disturbed Cottonwood-willow Riparian Forest | Urban/Developed Land |

FIGURE 8
Impacts to Biological Resources

Vegetation Community/Land Cover Type (Holland Code as modified by Oberbauer)	City of San Diego Tier	Direct Impacts in Acres
Coastal and valley freshwater marsh (52410)	N/A - wetland	0.20
Southern cottonwood-willow riparian forest (61330)	N/A - wetland	2.08
Disturbed southern cottonwood-willow riparian forest (61330)	N/A - wetland	0.62
Southern riparian woodland (62500)	N/A - wetland	0.51
Southern coast live oak riparian forest (61310)	N/A - wetland	0.20
Diegan coastal sage scrub (32500)	II	0.91
Disturbed Diegan coastal sage scrub (32500)	II	0.45
Eucalyptus woodland (79100)	IV	0.13
Disturbed land (11300)	IV	1.05
Urban/developed land (12000)	N/A	3.65
Total Project Impacts		9.80
N/A = not applicable		

6.1.2 Indirect Impacts to Sensitive Vegetation Communities

The proposed construction activities include sediment removal to a depth of 10 to 17 feet within the Lower Spillway and the eastern end of the Discharge Channel. Although this change in topography may result in significant changes to the local hydrology of this area, it is not expected to result in the loss of adjacent coastal sage scrub occurring outside the Lower Spillway, because it is an upland habitat type. Proposed sediment removal within the remainder of the Discharge Channel varies between 3 and 5 feet in depth, with the depth generally tapering toward the western end of the Discharge Channel. This amount of sediment removal is not expected to result in the loss of the adjacent vegetation communities (coast live oak riparian forest, southern cottonwood-willow riparian forest [including the disturbed form], coastal and valley freshwater marsh, Diegan coastal sage scrub, and eucalyptus woodland) as the change in topography from sediment removal would not be considered significant and groundwater levels and surface flow are expected to be sufficient to support these habitats.

Indirect impacts from edge effects (e.g., habitat degradation) to adjacent sensitive vegetation communities would be minimized below a level of significance through the implementation of proper BMPs, including dust control through the use of a water truck, erosion control devices (straw wattles, gravel bags, etc.), and silt fencing around the construction boundary.

6.1.3 Cumulative Impacts to Sensitive Vegetation Communities

Cumulative impacts are those that may occur at a landscape or regional level as a result of past, current, and foreseeable projects within the cumulative study area. While impacts from one project may not be significant, when analyzed in concert with multiple projects in the area, impacts may compound and reach a level of significance.

The MSCP was designed to compensate for the regional loss of biological resources throughout the region. Projects that conform with the MSCP as specified by the Subarea Plan, and implementing ordinances, (i.e., Biology Guidelines and ESL Regulations) are not expected to result in a significant cumulative impact to vegetation communities identified as wetlands or Tier I through IV. Therefore, with implementation of habitat-based mitigation required by the City Biology Guidelines (2012), no cumulative impacts to wetland or Tier II vegetation communities are anticipated to occur. Due to a no-net-loss policy implemented by the resource agencies, no cumulative impacts to wetland vegetation communities (coastal and valley freshwater marsh, southern cottonwood-willow riparian forest, disturbed southern cottonwood-willow riparian forest, and southern riparian woodland) are anticipated to occur.

6.2 Sensitive Plant Species

A solitary mature Engelmann oak is mapped on a terrace hanging over the southern edge of the concrete spillway in the east-central portion of the project impact area (see Figure 8). However, this Engelmann oak individual is rooted outside of the spillway and would be avoided during project construction. No direct impacts are expected to occur to the remaining 19 Engelmann oaks or other sensitive plant species observed within the survey area, including Dean's milkvetch, delicate clarkia, and rush-like bristleweed.

Project construction is not anticipated to result in significant indirect impacts to Engelmann oak, Dean's milkvetch, delicate clarkia, and rush-like bristleweed. Adherence to BMPs both during initial project construction (vegetation and sediment removal) and any future maintenance of the spillway (e.g., dust control, water quality control, and erosion control devices) is anticipated to prevent indirect impacts from erosion, contaminated runoff, and minimize generation and deposition of dust. Therefore, indirect impacts to sensitive plant species would be considered less than significant and would not require mitigation.

6.3 Sensitive Wildlife Species

The project has potential to result in impacts to 21 sensitive wildlife species occurring or potentially occurring within the survey area. These potential direct, indirect, and cumulative impacts are discussed for each species in this section.

6.3.1 Direct Impacts to Sensitive Wildlife Species

Direct impacts to sensitive wildlife species may result from incidental mortality within the areas proposed for vegetation removal and staging/stockpiling. The project impact area in relation to the observed sensitive wildlife species locations is shown on Figure 8.

6.3.1.1 Direct Impacts to MSCP-Covered Wildlife Species

The following five MSCP-covered wildlife species would potentially be directly impacted by the proposed project: Belding's orange-throated whiptail, Cooper's hawk, least Bell's vireo,

southern California rufous-crowned sparrow, southern mule deer, and mountain lion. Each species is discussed in detail below.

a. Direct Impacts to Belding's Orange-throated Whiptail

Belding's orange-throated whiptail was recorded within the survey area and this species may occur in the project impact area. Therefore, the project has potential to result in direct impacts to this species through incidental mortality during construction and/or any future maintenance activities (vehicle strike, crushing, etc.) and removal of approximately six acres of suitable habitat for this species. However, the suitable habitat within the project impact area comprises a small fraction of the habitat available to this species both at a local level (within the survey area, around the El Capitan Reservoir, and within El Monte Valley) and on a regional scale. In addition, this species is considered adequately covered by the MSCP with habitat conserved in the MHPA. Therefore, potential direct impacts to this species would be considered less than significant, and no species-specific mitigation would be required.

b. Direct Impacts to Cooper's Hawk

Cooper's hawk was observed flying over the project impact area. Although no foraging or nesting was observed within the project impact area during the biological surveys, this species has potential to nest within the riparian woodland, riparian forest, and eucalyptus woodland habitats of the project impact area. Adherence to avoidance measure AM-BIO-1, as described in Section 6.3, would be required to reduce potential impacts to any nests of this species below a level of significance. Significant direct impacts would also result from removal of approximately three acres of foraging and nesting habitat for which habitat-based compensatory mitigation would be required.

c. Direct Impacts to Least Bell's Vireo

Based on the incidental detections of this species described in Section 4.4.1, the suitable riparian forest and woodland habitats within the project impact area and surrounding survey area may not support breeding territories but are likely used occasionally by unpaired mature males looking to establish a territory or by dispersed fledglings. Adherence to avoidance measure AM-BIO-1, as described in Section 6.3, would be required to reduce potential impacts to any nests of this species below a level of significance. Significant direct impacts would also result from removal of approximately three acres of available foraging and nesting habitat for which habitat-based compensatory mitigation would be required.

d. Direct Impacts to Southern California Rufous-crowned Sparrow

A majority of the 23 detections of southern California rufous-crowned sparrow were recorded on the large hillside north of the spillway in open coastal sage scrub (see Figure 6). However, some individuals of this species were observed in the coastal sage scrub and disturbed land within or adjacent to the project impact area. Although this species is more likely to nest outside of the project impact area on the northern hillside, there is still a moderate potential for nesting within the coastal sage scrub of the project impact area. Adherence to avoidance

measure AM-BIO-1, as described in Section 6.3, would be required to reduce potential impacts to any nests of this species below a level of significance. The loss of suitable coastal sage scrub habitat within the project impact area comprises a small portion of the suitable habitat available to southern California rufous-crowned sparrow on a local level (within El Monte Valley) and on a regional scale; therefore, this loss of habitat would not be considered a significant impact for these species.

e. Direct Impacts to Southern Mule Deer and Mountain Lion

Southern mule deer was detected via tracks and scat in multiple portions of the survey area and has potential to utilize the project impact area. No mountain lions were detected during the biological surveys, but this species has potential to utilize the project impact area. As individuals of these two species are highly mobile, direct impacts to individuals during construction activities (vegetation removal) and any future maintenance of the spillway are unlikely. In addition, biological monitoring will occur and construction crews will be required to adhere to BMPs (e.g., covering of open trenches or holes), both of which are anticipated to further avoid entrapment or other impacts. In addition, although the project would remove approximately six acres of habitat within an area that may be utilized by these species, this loss would only account for a small fraction of the available habitat for these species in the surrounding area. Aside from vegetation removal within the spillway, the project does not propose any structures or barricades that would impede movement of these species through the surrounding areas. Therefore, the impacts would be considered less than significant and require no species-specific mitigation measures.

6.3.1.2 Direct Impacts to Sensitive Non-Covered Wildlife Species

The following 15 sensitive wildlife species not covered by the MSCP may be directly impacted by the project: western spadefoot, San Diegan tiger whiptail, red diamond rattlesnake, yellow warbler, yellow breasted chat, Coronado skink, San Diego legless lizard, San Diego ring-necked snake, white-tailed kite, western red bat, western yellow bat, western mastiff bat, pocketed free-tailed bat, big free-tailed bat, and Dulzura pocket mouse. Each species is discussed in detail below.

a. Direct Impacts to Western Spadefoot

Western spadefoot has potential to utilize the project impact areas for foraging and breeding. Specifically, limited portions of the project impact area appear to become inundated during the rainy season and may support breeding of western spadefoot. Potential breeding (ponded) areas are limited within the survey area and mostly concentrated within the river floodplain, including the project impact area. These ponded areas are particularly sensitive to disturbance and/or alterations in hydrology and, if occupied by breeding western spadefoot, impacts could result in a significant loss of individuals. Therefore, the project has potential to result in significant direct impacts to this species through incidental mortality of adults and/or larvae (tadpoles) during construction activities and any future maintenance of the spillway (e.g., vehicle strike and crushing) if they occur during a time when western spadefoot

may be breeding on-site. Adherence to avoidance measure AM-BIO-4, as described in Section 6.3, would be required to reduce potential impacts to any nests of these species below a level of significance. The suitable breeding habitat within the project impact area comprises a small portion of the available breeding habitat on a local scale (within El Monte Valley) and on a regional scale; therefore, this loss of habitat would not be considered a significant impact for this species.

b. Direct Impacts to San Diegan Tiger Whiptail, Red Diamond Rattlesnake, Dulzura Pocket Mouse, Coronado Skink, San Diego Legless Lizard, and San Diego Ring-Necked Snake

San Diegan tiger whiptail and red diamond rattlesnake were observed within the survey area and may occur within the project impact areas. Dulzura pocket mouse has a high potential to occur within the scrub habitats within the project impact area. San Diego legless lizard has high potential and Coronado skink and San Diego ring-necked snake have moderate potential to occur within the riparian habitats within the project impact areas. Therefore, the project has potential to result in direct impacts to these species through incidental mortality during construction activities and any future maintenance of the spillway (e.g., vehicle strike, crushing), and through the removal of suitable habitat. However, these species likely occur on-site in low numbers, and the project would be expected to result in the loss of very few individuals, if any. Therefore, the potential loss of these individuals would not be considered significant. Suitable habitat within the project impact area comprises a small fraction of the habitat available to these species both at a local level (within the survey area, around the El Capitan Reservoir, and in undeveloped land in El Monte Valley) and on a regional scale. Therefore, loss of habitat on-site would be considered less than significant, and no species-specific mitigation would be required.

c. Direct Impacts to Yellow Warbler, Yellow-breasted Chat, White-tailed Kite, and Migratory Birds

Yellow warbler was observed within the project impact area and yellow-breasted chat was observed nearby the survey area. These two species and white-tailed kite all have potential to nest within the riparian woodland and riparian forest habitats of the project impact area. Additionally, bird species protected by the MBTA or CFGC have potential to nest in all undeveloped portions of the project impact area. Adherence to avoidance measure AM-BIO-1, as described in Section 6.3, would be required to reduce potential impacts to any nests of these species below a level of significance. The loss of suitable riparian habitat within the project impact area comprises a small portion of the suitable habitat available to these species on a local level (within El Monte Valley) and on a regional scale; therefore, this loss of habitat would not be considered a significant impact for these species.

d. Direct Impacts to Western Red Bat and Western Yellow Bat

Western red bat and western yellow bat have potential to roost within the riparian woodland and riparian forest habitats of the project impact area. These species are particularly sensitive to disturbance during the maternity season (May through August 15) when roosting

may include the presence of young. Disruption of maternity season roosting could result in the loss of a significant number of juveniles. Adherence to avoidance measure AM-BIO-6, as described in Section 6.3, would be required to reduce potential impacts to any nests of these species below a level of significance. Avoidance measures would be required to prevent direct impacts to roosting individuals. The loss of approximately three acres of available foraging and roosting habitat would not be considered significant as it comprises a small fraction of the habitat available to these species both at a local level (undeveloped riparian habitat along the San Diego River throughout El Monte Valley) and on a regional scale.

e. Direct Impacts to Western Mastiff Bat, Pocketed Free-tailed Bat, and Big Free-tailed Bat

Western mastiff bat, pocketed free-tailed bat, and/or big free-tailed bat may utilize the cut slope in the northern portion of the survey area, north of the project impact area, for a maternity colony. Although these species may forage within the project impact area, none are expected to use any portion of the project impact area for roosting or for a maternity colony. Additionally, because no nighttime construction or maintenance activities would occur (during foraging), direct impacts to individuals during construction activities are unlikely. As the suitable foraging habitat within the project impact area comprises a small fraction of the habitat available to this species both at a local level (undeveloped land in El Monte Valley and around the El Capitan Reservoir) and on a regional scale, potential direct impacts to this species would be considered less than significant, and no species-specific mitigation would be required.

6.3.2 Indirect Impacts to Sensitive Wildlife Species

Potential indirect impacts to the 21 sensitive wildlife species that occur or have a moderate to high potential to occur within the survey area are discussed in this section.

6.3.2.1 Indirect Impacts to MSCP-Covered Wildlife Species

The following five MSCP-covered wildlife species would potentially be indirectly impacted by the proposed project: Belding's orange-throated whiptail, Cooper's hawk, least Bell's vireo, southern mule deer, and mountain lion. Each species is discussed in detail below.

a. Indirect Impacts to Belding's Orange-throated Whiptail, Southern Mule Deer, and Mountain Lion

Indirect impacts to Belding's orange-throated whiptail, southern mule deer, and mountain lion as a result of construction and/or maintenance-related erosion, contaminated runoff, or generation and deposition of dust are anticipated to be less than significant with adherence to proper BMPs during construction and any future maintenance of the spillway. No night-time lighting is proposed during construction or maintenance activities.

b. Indirect Impacts to Least Bell's Vireo

Indirect impacts to least Bell's vireo may occur if construction activities are conducted during this species' breeding season of March 15 to September 15. Suitable habitat (southern cottonwood-willow riparian forest) for this species occurs adjacent to the project impact area (see Figure 8) and construction is likely to cause noise levels within these adjacent habitat areas to exceed 60 A-weighted decibels average sound level [dB(A) L_{eq}], which would be considered a significant indirect impact. Adherence to avoidance measure AM-BIO-5, as described in Section 6.3, would be required to reduce potential indirect noise impacts to this species below a level of significance.

6.3.2.2 Indirect Impacts to Sensitive Non-Covered Wildlife Species

The project has the potential to indirectly impact the following 16 sensitive wildlife species not covered by the MSCP: western spadefoot, San Diegan tiger whiptail, red diamond rattlesnake, yellow warbler, yellow breasted chat, Coronado skink, San Diego legless lizard, San Diego ring-necked snake, white-tailed kite, western red bat, western yellow bat, western mastiff bat, pocketed free-tailed bat, big free-tailed bat, and Dulzura pocket mouse. Each species is discussed in detail below.

a. Indirect Impacts to Amphibians, Reptiles, and Mammals

Indirect impacts to western spadefoot, San Diegan tiger whiptail, red diamond rattlesnake, Coronado skink, San Diego legless lizard, San Diego ring-necked snake, western red bat, western yellow bat, western mastiff bat, pocketed free-tailed bat, big free-tailed bat, and Dulzura pocket mouse as a result of construction and/or maintenance-related erosion, contaminated runoff, or generation and deposition of dust are anticipated to be less than significant with adherence to proper BMPs during construction and any future maintenance of the spillway. No night-time lighting is proposed during construction or maintenance activities.

6.3.3 Cumulative Impacts to Sensitive Wildlife Species

6.3.3.1 Cumulative Impacts to MSCP-Covered Wildlife Species

The project's conformance with the MSCP is expected to prevent cumulative impacts to MSCP-covered wildlife species, which include Belding's orange-throated whiptail, Cooper's hawk, least Bell's vireo, southern California rufous-crowned sparrow, southern mule deer, and mountain lion.

6.3.3.2 Cumulative Impacts to Sensitive Non-Covered Wildlife Species

Adherence to the MSCP does not directly address cumulative impacts to species not covered by the MSCP. As discussed above, the project has potential to cause significant direct and/or

indirect impacts to the following non-covered sensitive wildlife species: western spadefoot, yellow warbler, yellow-breasted chat, white-tailed kite, western red bat, and western yellow bat. However, much of the suitable habitat for these species in the surrounding area is protected either as part of the San Diego County Park system or the Cleveland National Forest, and unlikely to undergo significant losses in the foreseeable future. Therefore, when considered in conjunction with past and present projects located in the vicinity of the project, the project would not contribute to a cumulatively considerable impact.

6.4 Impacts to Wildlife Corridors

No significant direct or indirect impacts to wildlife movement corridors are expected to occur from implementation of the proposed project. Although the project will occur within a wildlife corridor, completion of the project is not expected to cause the corridor to be constrained in any way. No new buildings or barriers are proposed as part of the project and adjacent areas of riparian and upland habitat will remain available for both the local and regional movement of wildlife.

6.5 Impacts to Jurisdictional Resources

Table 6 summarizes the existing jurisdictional areas mapped within the survey area and the proposed direct impacts to each potential jurisdictional area. The proposed direct impacts to these potential jurisdictional areas would result from the removal of vegetation and sediment within the spillway (Figure 9). These direct impacts would be considered significant and require mitigation. No jurisdictional resources would be impacted as a result of any access, staging of equipment, or stockpiling of materials during construction.

Jurisdictional Areas	Total Survey Area in Acres (linear feet)	Direct Impacts in Acres
USACE Total Jurisdiction	5.75 (2,271)	2.63 (1,021)
Wetland Waters of the U.S.	4.92	2.50
Non-wetland Waters of the U.S.**	0.83 (2,271)	0.13 (1,021)
CDFW and RWQCB Total Jurisdictional Areas*	11.93 (2,271)	3.62 (1,021)
Wetland Waters of the State (Riparian Habitat)	11.10	3.49
Non-wetland Waters of the State (Streambed)**	0.26 (2,271)	0.13 (1,021)
Non-wetland Waters of the State (Lake)**	0.57	0.00
City of San Diego Wetlands	5.13	2.62
*CDFW/RWQCB area of jurisdiction includes all USACE jurisdictional waters.		
**Non-wetland waters/streambed area not included in the wetland/riparian areas so that no area is counted twice for the same jurisdiction.		

The existing wetland areas adjacent and downstream of the project impact area have the potential to be indirectly impacted from erosion, construction runoff, and generation and deposition of dust. However, adherence to construction BMPs (e.g., dust control, water quality control, and erosion control) is anticipated to minimize these indirect off-site impacts.

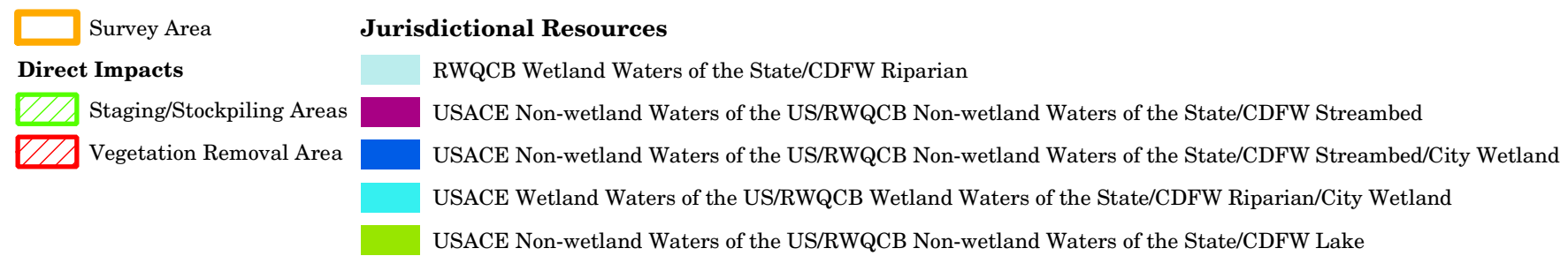
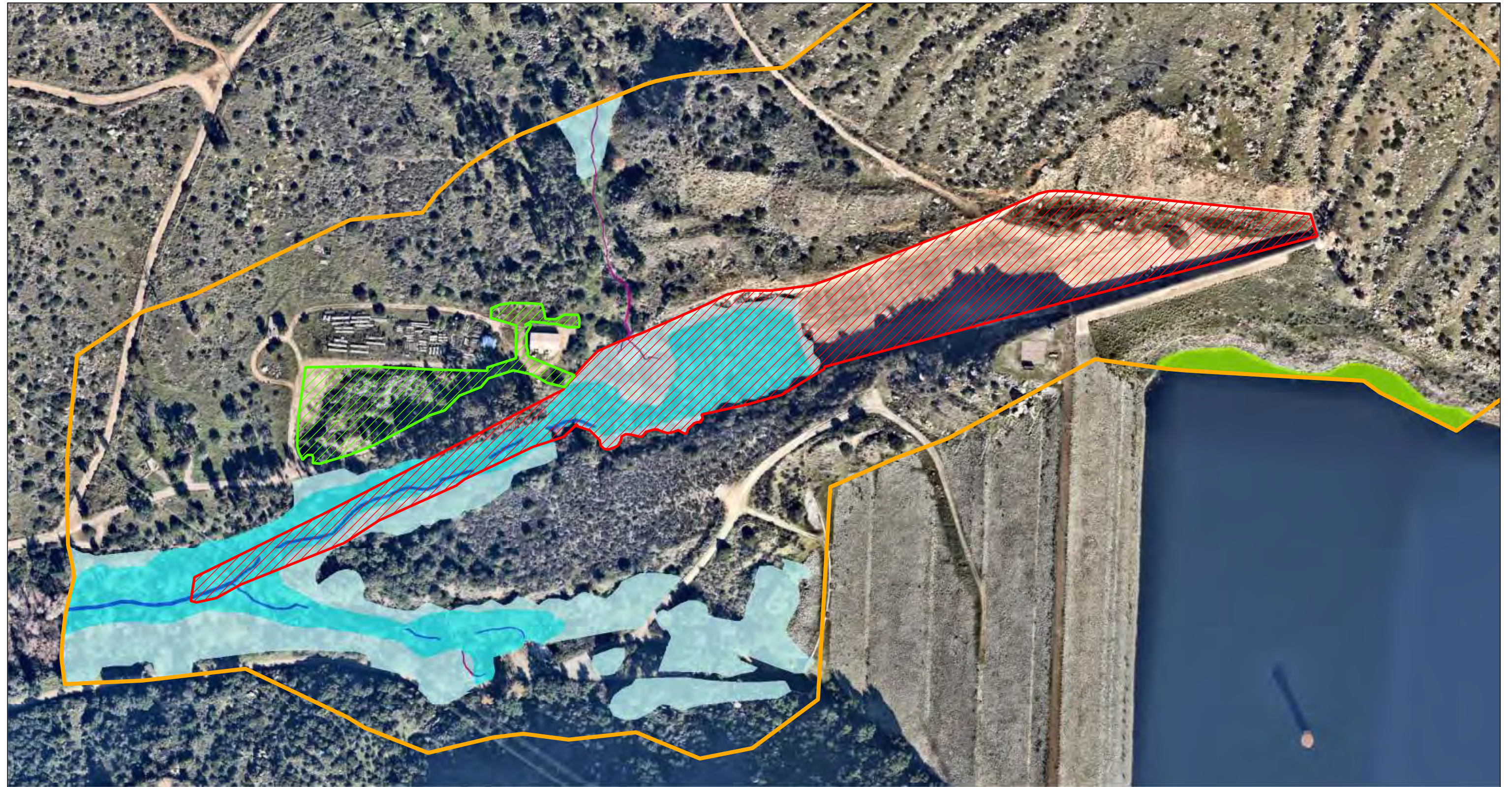


FIGURE 9
Impacts to Jurisdictional Resources

6.5.1 Deviation from Wetland Regulations

The project proposes impacts to wetlands outside the Coastal Overlay Zone and would therefore require a deviation from the wetland regulations. In order for a deviation to be granted, the development must qualify to be processed as one of these three options: Essential Public Projects (EPP) Option, Economic Viability Option, and Biologically Superior Option.

The City Biology Guidelines (2018) define an EPP as:

- (i) Any public project identified in an adopted *land use plan* or implementing document and identified on the Essential Public Projects List in Appendix III to the Biology Guidelines; or
- (ii) Linear infrastructure, including but not limited to major roads and *land use plan* circulation element roads and facilities including bike lanes, water and sewer pipelines including appurtenances, and stormwater conveyance systems including appurtenances; or
- (iii) Maintenance of existing public infrastructure; or
- (iv) State and federally mandated projects.

Further, to meet the requirements of an ESL deviation under the EPP, the project must service the community at large and not just a single development project or property. This project is considered maintenance of existing public infrastructure and is also mandated by the state DSOD, which does not allow for alternative compliance for this mandate. Therefore, the project meets the definition of an EPP under criteria iii and iv. The proposed project and all biological alternatives, both practicable and impracticable shall be fully described and analyzed in an appropriate CEQA document.

The required project alternatives described above include a no project alternative, a wetland avoidance alternative, and a wetland impact minimization alternative. This project is being conducted in response to the DSOD mandate to remove accumulated vegetation and debris from the spillway, which currently contains mostly wetlands. Therefore, the wetland avoidance and wetland impact minimization project alternatives would essentially equate to a no project alternative. Although a no project alternative would avoid impacts to wetlands, it would fail to comply with the DSOD mandate. Therefore, these project alternatives are not feasible.

All impacts shall be mitigated according to the requirements of the Wetland Mitigation Ratios table (Table 2a of the City's Biology Guidelines; City of San Diego 2018) and the project shall not have a significant adverse impact to the City's MSCP.

The undeveloped habitat within the surrounding area, including the nearby valley slopes, currently serves as a buffer between these existing adjacent wetland areas and the nearest developed areas. The project would not affect these wetland buffers as no new development is proposed within these buffer areas.

7.0 Mitigation

Potential impacts to biological resources were evaluated through review of the project's consistency with the City's ESL Regulations and Biology Guidelines, as well as the MSCP Subarea Plan. Mitigation is required for project impacts to sensitive biological resources that are considered significant under CEQA, as described in the City's *California Environmental Quality Act Significance Determination Thresholds* (City of San Diego 2016).

7.1 General Management Directives

As described above, this project is located outside the boundaries of the City's MSCP and MHPA. However, because this project occurs partially on City-owned land, the MSCP guidelines are utilized to analyze impacts under CEQA.

Section 1.5.2 of the MSCP provides general management directives related to 1) mitigation; 2) restoration; 3) trails, public access, and recreation; 4) trash/litter and materials storage; 5) adjacency management issues; 6) invasive species control and removal; and 7) flood control. Project consistency with these guidelines is summarized and addressed below.

7.1.1 Mitigation

As discussed in Section 5.1, the project will result in the permanent loss of sensitive vegetation communities. These impacts will be mitigated off-site in accordance with the City's ESL Regulations and Biology Guidelines (2018). More details regarding the off-site compensatory mitigation can be found in Section 6.4.

7.1.2 Restoration

No restoration or revegetation is proposed as part of the project.

7.1.3 Public Access, Trails, and Recreation

Public access within the project area is not allowed. The access roads and other facilities associated with the dam are well-marked regarding the restrictions on public access and will remain so during and after the project. No new equestrian trails, pedestrian trails, or off-road vehicle trails would be created. The project is not expected to result in any increase in access to the sensitive habitat areas in the vicinity of the project.

7.1.4 Litter/Trash and Materials Storage

All construction-related litter or trash would be removed from the project site before initial construction activities (vegetation and sediment removal) are complete. Any litter or trash resulting from future maintenance activities would be removed prior to completion of the maintenance event. No new material storage is proposed as part of the project. Due to the

site's restricted access to the public, no increase in litter or trash is expected to result from the project.

7.1.5 Adjacency Management Issues

As discussed in Section 6.1.3, public access is restricted to the dam and its associated facilities, including the entirety of the project impact area. No new management issues are expected to result from the project.

7.1.6 Invasive Exotics Control and Removal

As discussed in Section 1.2, the removed vegetation material from any invasive non-native species will be placed in an appropriate bin or other containment device in order to minimize the spread of seed and/or potentially viable plant segments until this material can be hauled and disposed off-site. Therefore, the project, including any future maintenance of the spillway is not expected to increase invasive species encroachment.

7.1.7 Flood Control

The general management directives regarding flood control include priorities to protect least Bell's vireo and flood control channels within the MHPA. The project proposes the initial removal of vegetation and sediment from the El Capitan Dam spillway and regular maintenance of the spillway. Sections 6.3 and 6.5 discuss the measures proposed to avoid and/or minimize impacts to sensitive wildlife species, including least Bell's vireo. The project site does not occur within the MHPA.

7.2 MSCP Conditions for Covered Species

Five MSCP-covered species were detected or have moderate potential to occur in the survey area: Belding's orange-throated whiptail, Cooper's hawk, least Bell's vireo, mountain lion, and southern mule deer. The MSCP does not include conditions for coverage of mountain lion or southern mule deer, as large populations of this species are adequately conserved. Conditions for Belding's orange-throated whiptail, Cooper's hawk, and least Bell's vireo are presented below.

7.2.1 Belding's Orange-throated Whiptail

The condition for coverage of Belding's orange-throated whiptail under the MSCP requires area specific management directives to address edge effects. The project site is situated within a large expanse of mostly undeveloped habitat for this species. The project's implementation of proper BMPs during construction is expected to minimize edge effects with little to no effect on this surrounding expanse of suitable Belding's orange-throated whiptail habitat. Specifically, disturbances to habitat that supports Belding's orange-throated whiptail such as construction and/or maintenance-related runoff, ground disturbance, and the introduction of invasive non-native species in adjacent off-site habitat would be

minimized through the implementation of erosion control devices, silt fencing, and the containment and proper disposal of invasive non-natives, respectively.

7.2.2 Cooper's Hawk

MSCP conditions for coverage for Cooper's hawk require 300-foot impact avoidance areas around any active nests, and minimization of disturbance in oak woodlands and oak riparian forests. Project compliance with this condition for coverage is discussed in Section 6.3.

7.2.3 Least Bell's Vireo

MSCP conditions for coverage for least Bell's vireo require measures to provide appropriate successional habitat, upland buffers for all known populations, cowbird control, and specific measures to protect against detrimental edge effects to this species. Any clearing of occupied habitat must occur between September 15 and March 15 (i.e., outside of the breeding period).

Off-site habitat-based mitigation at PUD's Stadium Mitigation Site, which contains suitable least Bell's vireo habitat, is expected to compensate for the loss of suitable least Bell's vireo habitat within the project impact area. Although protocol surveys conducted in 2018 for this project suggest this species was not nesting on-site at that time, least Bell's vireo was detected within the survey area in 2020. Through the implementation of proper BMPs both during initial construction and any future maintenance of the spillway, the project would not cause any detrimental edge effects to the suitable least Bell's vireo habitat adjacent to the project impact area or the upland buffers around this habitat. In addition, the project is not expected to affect the conditions of any habitat adjacent to the project impact area that would make it more favorable for cowbirds. Project compliance with these conditions for coverage are discussed in Sections 6.3 and 6.5.2 below.

Prior to the issuance of any grading permit, the City Project Manager (or appointed designee) shall verify that the following construction-related project requirements regarding biological resources are shown on the construction plans.

7.3 General Avoidance Measures During Construction

As currently designed, the proposed project has the potential to result in significant direct and indirect impacts to sensitive biological resources. The following general City standard avoidance measures (AM-BIO-1 to AM-BIO-3) for biological resource protection during construction shall be included in the environmental document:

AM-BIO-1. Biological Resource Protection During Construction

Prior to issuance of Notice to Proceed, the Development Services Department (DSD) Environmental Designee shall review and approve all construction documents (plans,

specifications, details, etc.) to ensure these Mitigation Monitoring and Reporting requirements are incorporated.

I. Prior to Construction

- A. Biologist Verification - The owner/permittee shall provide a letter to the City's Mitigation Monitoring Coordination (MMC) section stating that a Project Biologist (Qualified Biologist) as defined in the City of San Diego's Biological Guidelines (2018), has been retained to implement the project's biological monitoring program. The letter shall include the names and contact information of all persons involved in the biological monitoring of the project.
- B. Preconstruction Meeting - The Qualified Biologist shall attend the preconstruction meeting, discuss the project's biological monitoring program, and arrange to perform any follow up mitigation measures and reporting including site-specific monitoring, restoration or revegetation, and additional fauna/flora surveys/salvage.
- C. Biological Documents - The Qualified Biologist shall submit all required documentation to MMC verifying that any special mitigation reports including but not limited to, maps, plans, surveys, survey timelines, or buffers are completed or scheduled per City Biology Guidelines, MSCP, ESL, project permit conditions; CEQA; ESAs; and/or other local, state or federal requirements.
- D. Biological Construction Mitigation/Monitoring Exhibit (BCME) - The Qualified Biologist shall present a BCME which includes the biological documents in C above. In addition, include: restoration/revegetation plans, plant salvage/relocation requirements (e.g., coastal cactus wren plant salvage, burrowing owl exclusions, etc.), avian or other wildlife surveys/survey schedules (including general avian nesting and USFWS protocol), timing of surveys, wetland buffers, avian construction avoidance areas/noise buffers/barriers, other impact avoidance areas, and any subsequent requirements determined by the Qualified Biologist and the City Assistant Deputy Director (ADD)/ Mitigation Monitoring Coordination (MMC). The BCME shall include a site plan, written and graphic depiction of the project's biological mitigation/monitoring program, and a schedule. The BCME shall be approved by MMC and referenced in the construction documents.
- E. Avian Protection Requirements - To avoid any direct impacts to Cooper's hawk, least Bell's vireo, and any species identified as a listed, candidate, sensitive, or special status species in the MSCP, removal of habitat that supports active nests in the proposed area of disturbance should occur outside of the breeding season for these species (February 1 to September 15). If removal of habitat in the proposed area of disturbance must occur during the breeding season, the Qualified Biologist shall conduct a pre-construction survey to determine the presence or absence of nesting birds on the proposed area of disturbance. The

pre-construction survey shall be conducted within 10 calendar days prior to the start of construction activities (including removal of vegetation). The applicant shall submit the results of the pre-construction survey to City DSD for review and approval prior to initiating any construction activities. If nesting Cooper's hawk, least Bell's vireo, sensitive or MSCP-covered birds are detected, a letter report or mitigation plan in conformance with the City's Biology Guidelines and applicable state and federal law (i.e., appropriate follow up surveys, monitoring schedules, construction and noise barriers/buffers, etc.) shall be prepared and include proposed measures to be implemented to ensure that take of birds or eggs or disturbance of breeding activities is avoided. The report or mitigation plan shall be submitted to the City for review and approval and implemented to the satisfaction of the City. The City's MMC Section and Biologist shall verify and approve that all measures identified in the report or mitigation plan are in place prior to and/or during construction.

- F. Resource Delineation - Prior to construction activities, the Qualified Biologist shall supervise the placement of orange construction fencing or equivalent along the limits of disturbance adjacent to sensitive biological habitats and verify compliance with any other project conditions as shown on the BCME. This phase shall include flagging plant specimens and delimiting buffers to protect sensitive biological resources (e.g., habitats/flora & fauna species, including nesting birds) during construction. Appropriate steps/care should be taken to minimize attraction of nest predators to the site.
- G. Education - Prior to commencement of construction activities, the Qualified Biologist shall meet with the owner/permittee or designee and the construction crew and conduct an on-site educational session regarding the need to avoid impacts outside of the approved construction area and to protect sensitive flora and fauna (e.g., explain the avian and wetland buffers, flag system for removal of invasive species or retention of sensitive plants, and clarify acceptable access routes/methods and staging areas, etc.).

II. During Construction

- A. Monitoring - All construction (including access/staging areas) shall be restricted to areas previously identified, proposed for development/staging, or previously disturbed as shown on "Exhibit A" and/or the BCME. The Qualified Biologist shall monitor construction activities as needed to ensure that construction activities do not encroach into biologically sensitive areas, or cause other similar damage, and that the work plan has been amended to accommodate any sensitive species located during the pre-construction surveys. In addition, the Qualified Biologist shall document field activity via the Consultant Site Visit Record (CSV). The CSV shall be e-mailed to MMC on the 1st day of monitoring, the 1st week of each month, the last day of monitoring, and immediately in the case of any undocumented condition or discovery.

- B. Subsequent Resource Identification - The Qualified Biologist shall note/act to prevent any new disturbances to habitat, flora, and/or fauna onsite (e.g., flag plant specimens for avoidance during access, etc.). If active nests or other previously unknown sensitive resources are detected, all project activities that directly impact the resource shall be delayed until species specific local, state or federal regulations have been determined and applied by the Qualified Biologist.

III. Post Construction Measures

- A. In the event that impacts exceed previously allowed amounts, additional impacts shall be mitigated in accordance with City Biology Guidelines, ESL and MSCP, State CEQA, and other applicable local, state and federal law. The Qualified Biologist shall submit a final BCME/report to the satisfaction of the City ADD/MMC within 30 days of construction completion.

7.4 Mitigation Measures for Sensitive Vegetation Communities

The mitigation requirements for impacts to sensitive upland and wetland vegetation communities are based on Tables 2a and 3 of the City's Biology Guidelines respectively (City of San Diego 2018). Impacts to sensitive vegetation communities occur outside the MHPA and the mitigation ratios provided in Table 7 assume all compensatory mitigation will occur inside the MHPA because mitigation is proposed to occur at the PUD's Stadium Mitigation Site and Goat Mesa Mitigation Site, within the MHPA. The following mitigation measure is proposed to fulfill habitat-based mitigation requirements:

MM-BIO-1. Habitat-based Mitigation

- A. **Off-site Compensatory Mitigation** – To fulfill the project's mitigation requirements for 4.97 acres of expected direct impacts to wetlands and Tier II vegetation (i.e., coastal and valley freshwater marsh, southern cottonwood-willow riparian forest, disturbed southern cottonwood-willow riparian forest, southern riparian woodland, southern coast live oak riparian forest, Diegan coastal sage scrub, and disturbed Diegan coastal sage scrub), a total of 11.99 acres of mitigation is required (see Table 7). Compensatory mitigation for wetland habitats shall occur off-site at the PUD's Stadium Mitigation Site and for upland habitats (Diegan coastal sage scrub) at the PUD's Goat Mesa Mitigation Site, both of which occur within the City's MHPA. The Stadium site will be used to allocate establishment/reestablishment/restoration credits at a 1:1 ratio for 0.20 acre of coastal and valley freshwater marsh, 2.70 acre of southern cottonwood-willow riparian forest, 0.51 acre of southern riparian woodland, and 0.20 acre of southern coast live oak riparian forest to meet the resource agencies' no-net-loss requirement. The remaining 1:1 mitigation requirement for coastal and valley freshwater marsh would be satisfied with the enhancement of 0.20 acre of in-kind habitat at the Stadium site. The remaining 2:1 mitigation requirements for southern cottonwood-willow riparian forest, southern

riparian woodland, and southern coast live oak riparian forest would be satisfied with the enhancement of 5.40 acre, 1.02 acre, and 0.40 acre of respective in-kind habitats at the Stadium site. The Goat Mesa site will be used to allocate establishment/reestablishment/restoration credits at a 1:1 ratio for 1.36 acre of Diegan coastal sage scrub. Therefore, off-site mitigation would total 1.99 acres.

Table 7				
Direct Project Impacts to Vegetation and Associated Mitigation				
Community or Type (Holland Code as modified by Oberbauer)	Direct Impacts in Acres	Mitigation Ratio*	Required Mitigation in Acres**	Mitigation Proposed
Wetland Habitats (no Tier)				
Coastal and valley freshwater marsh (52410)	0.20	2:1	0.40	0.40
Southern cottonwood-willow riparian forest (61330)	2.08	3:1	6.24	6.24
Disturbed southern cottonwood- willow riparian forest (61330)	0.62	3:1	1.86	1.86***
Southern riparian woodland (62500)	0.51	3:1	1.53	1.53
Southern coast live oak riparian forest (61310)	0.20	3:1	0.60	0.60
Tier II				
Diegan coastal sage scrub (32500)	0.91	1:1	0.91	0.91
Disturbed Diegan coastal sage scrub (32500)	0.45	1:1	0.45	0.45***
Tier IV				
Eucalyptus woodland (79100)	0.13	0:1	0.00	0.00
Other Land Cover Types				
Disturbed land (11300)	1.05	0:1	0.00	0.00
Urban/developed land (12000)	3.65	0:1	0.00	0.00
Total Direct Project Impact	9.80	--	11.99	11.99
*Assumes proposed wetland mitigation occurs at the Stadium Mitigation Site and upland mitigation occurs at the Goat Mesa Mitigation Site, which are inside the MHPA. **All wetland and Tier II impacts are required to be mitigated in-kind, with a 1:1 creation element included for wetland impacts. *** Credit withdrawal would include the undisturbed form of these habitat types.				

The project’s implementation of proper BMPs, including dust control through the use of a water truck, erosion control devices (straw wattles, gravel bags, etc.), and silt fencing around the construction boundary, is expected to minimize indirect impacts (edge effects) to adjacent sensitive vegetation communities below a level of significance. Proper BMPs would also be implemented during any future maintenance of the spillway.

7.5 Mitigation and Monitoring Recommendations for Sensitive Wildlife Species

Recommended measures to avoid, minimize, and/or mitigate significant project impacts to sensitive wildlife species are provided in this section.

Adherence to measure AM-BIO-1 is anticipated to avoid significant direct impacts to nesting birds (including Cooper's hawk, least Bell's vireo, yellow warbler, yellow-breasted chat, southern California rufous-crowned sparrow, and white-tailed kite) in the project impact area.

Although no direct or indirect impacts are anticipated to occur to coastal California gnatcatcher or arroyo toad, critical habitat for these species has been mapped within the project impact area. Impacts to these species' critical habitat would require consultation with the USFWS. Since this project would also impact areas under the jurisdiction of USACE and USFS, a Section 7 consultation is anticipated. As part of this consultation, a Biological Assessment will be prepared that analyzes the project's potential for significant impacts to these species and their Primary Constituent Elements. This Biological Assessment will also discuss the potential for significant impacts to least Bell's vireo and its Primary Constituent Elements and address the potential for occurrence of other federally listed species.

Additional species-specific recommended measures to avoid, minimize, or mitigate for potentially significant direct and/or indirect impacts to western spadefoot, least Bell's vireo, western red bat, and western yellow bat are detailed below.

7.5.1 Mitigation, and Monitoring Recommendations for Western Spadefoot

The following avoidance measure is recommended to mitigate for direct impacts to breeding western spadefoot:

AM-BIO-4. Measures for Western Spadefoot Breeding Habitat

- A. Initial construction activities and any future maintenance of the spillway within the project impact area shall occur during the dry season when no portions of the project impact area contain areas of ponded or flowing water with the potential to support the breeding of western spadefoot. If construction or maintenance must occur during a time when portions of the site may support the breeding of this species, a Qualified Biologist shall conduct a survey of all potential western spadefoot breeding areas a no more than 3 days prior to construction impacts within these areas. If any areas are determined to be occupied by western spadefoot, these areas shall be staked or fenced by, or under the supervision of, a Qualified Biologist. No construction/maintenance activities shall occur within these avoidance areas unless authorized by the Qualified Biologist or until the western spadefoot individuals and/or larvae have left of their own accord.

7.5.2 Mitigation and Monitoring Recommendations for Least Bell's Vireo

The following avoidance measures are recommended to avoid indirect impacts to least Bell's vireo:

AM-BIO-5. Noise Restrictions for Least Bell's Vireo

Prior to the preconstruction meeting, the City Manager (or appointed designee) shall verify that the following project requirements regarding the least Bell's vireo are shown on the construction plans:

No clearing, grubbing, grading, or other construction activities shall occur between March 15 and September 15, the breeding season of the least Bell's vireo, until the following requirements have been met to the satisfaction of the City Manager:

- A. A Qualified Biologist (possessing a valid Endangered Species Act Section 10(a)(1)(a) Recovery Permit) shall survey those wetland areas that would be subject to construction noise levels exceeding 60 decibels [dB(A)] hourly average for the presence of the least Bell's vireo. Surveys for this species shall be conducted pursuant to the protocol survey guidelines established by the USFWS within the breeding season prior to the commencement of construction. If the least Bell's vireo is present, then the following conditions must be met:
 - I. Between March 15 and September 15, no clearing, grubbing, or grading of occupied least Bell's vireo habitat shall be permitted. Areas restricted from such activities shall be staked or fenced under the supervision of a Qualified Biologist; and
 - II. Between March 15 and September 15, no construction activities shall occur within any portion of the site where construction activities would result in noise levels exceeding 60 dB(A) hourly average at the edge of occupied least Bell's vireo or habitat. An analysis showing that noise generated by construction activities would not exceed 60 dB(A) hourly average at the edge of occupied habitat must be completed by a qualified acoustician (possessing current noise engineer license or registration with monitoring noise level experience with listed animal species) and approved by the City Manager at least two weeks prior to the commencement of construction activities. Prior to the commencement of any of construction activities during the breeding season, areas restricted from such activities shall be staked or fenced under the supervision of a qualified biologist; or
 - III. At least two weeks prior to the commencement of construction activities, under the direction of a qualified acoustician, noise attenuation measures (e.g., berms, walls) shall be implemented to ensure that noise levels resulting from construction activities will not exceed 60 dB(A) hourly average at the edge of habitat occupied by the least Bell's vireo. Concurrent with the commencement

of construction activities and the construction of necessary noise attenuation facilities, noise monitoring* shall be conducted at the edge of the occupied habitat area to ensure that noise levels do not exceed 60 dB(A) hourly average. If the noise attenuation techniques implemented are determined to be inadequate by the qualified acoustician or biologist, then the associated construction activities shall cease until such time that adequate noise attenuation is achieved or until the end of the breeding season (September 16).

- * Construction noise monitoring shall continue to be monitored at least twice weekly on varying days, or more frequently depending on the construction activity, to verify that noise levels at the edge of occupied habitat are maintained below 60 dB(A) hourly average or to the ambient noise level if it already exceeds 60 dB (A) hourly average. If not, other measures shall be implemented in consultation with the biologist and the City Manager, as necessary, to reduce noise levels to below 60 dB(A) hourly average or to the ambient noise level if it already exceeds 60 dB(A) hourly average. Such measures may include, but are not limited to, limitations on the placement of construction equipment and the simultaneous use of equipment.
- B. If least Bell's vireo are not detected during the protocol survey, the Qualified Biologist shall submit substantial evidence to the City Manager and applicable resource agencies which demonstrates whether or not mitigation measures such as noise walls are necessary between March 15 and September 15 as follows:
- I. If this evidence indicates the potential is high for least Bell's vireo to be present based on historical records or site conditions, then condition A.III shall be adhered to as specified above.
 - II. If this evidence concludes that no impacts to this species are anticipated, no mitigation measures would be necessary.

7.5.3 Mitigation and Monitoring Recommendations for Western Red Bat and Western Yellow Bat

The following avoidance measures are recommended to avoid direct impacts to western red bat and western yellow bat:

AM-BIO-6. Measures for Occupied Western Red Bat and Western Yellow Bat Habitat

- A. A biologist with expertise and experience with bats shall be retained as a Designated Bat Biologist. The Designated Bat Biologist shall have at least 3 years of experience in conducting bat habitat assessments, day roosting surveys, and acoustic monitoring, and have adequate experience identifying local bat species (visual and acoustic identification), type of habitat, and differences in roosting behavior and types (i.e., day, night, maternity).
- B. The removal of trees or their branches, both during initial construction and any future maintenance of the spillway, shall be performed outside the bat maternity season (May

through August 15) to avoid impacts to flightless young. If tree removal or trimming is necessary during the bat maternity season, the Designated Bat Biologist shall monitor the removal or trimming and examine the branches for nonvolant (nonflying) juvenile bats prior to stockpiling/disposal. Any injured or potentially injured bats shall be transported by the Designated Bat Biologist to a CDFW-licensed bat rehabilitator within 48 hours.

- C. The Designated Bat Biologist shall survey any trees with potential to support western red bat and western yellow bat that are proposed for removal on the same day of and immediately prior to the vegetation removal activities. If any trees/habitat areas are determined to be occupied by either species, construction activities shall avoid these areas to the maximum extent practicable until the individuals have left of their own accord. If construction activities must occur within occupied habitat, the Designated Bat Biologist shall be present during the work.

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APPENDICES

APPENDIX A

Results of the 2018 Coastal California Gnatcatcher Presence/Absence Survey for El Capitan Dam Spillway Vegetation Removal Project



An Employee-Owned Company

July 26, 2018

Ms. Stacey Love
Recovery Permit Coordinator
Carlsbad Fish and Wildlife Office
2177 Salk Avenue, Suite 250
Carlsbad, CA 92008

Reference: Results of the 2018 Coastal California Gnatcatcher Presence/Absence Survey for El Capitan Dam Spillway Vegetation Removal Project (RECON Number 8863)

Dear Ms. Love:

This letter is to notify the U.S. Fish and Wildlife Service (USFWS) of the results of the 2018 focused presence/absence survey for the federally threatened coastal California gnatcatcher (*Polioptila californica californica*; gnatcatcher) conducted for the City of San Diego's El Capitan Dam Spillway Vegetation Removal Project (project). The survey methods, survey area conditions, and results are discussed in detail below. No gnatcatchers were detected within the project survey area during the 2018 survey.

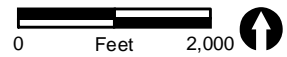
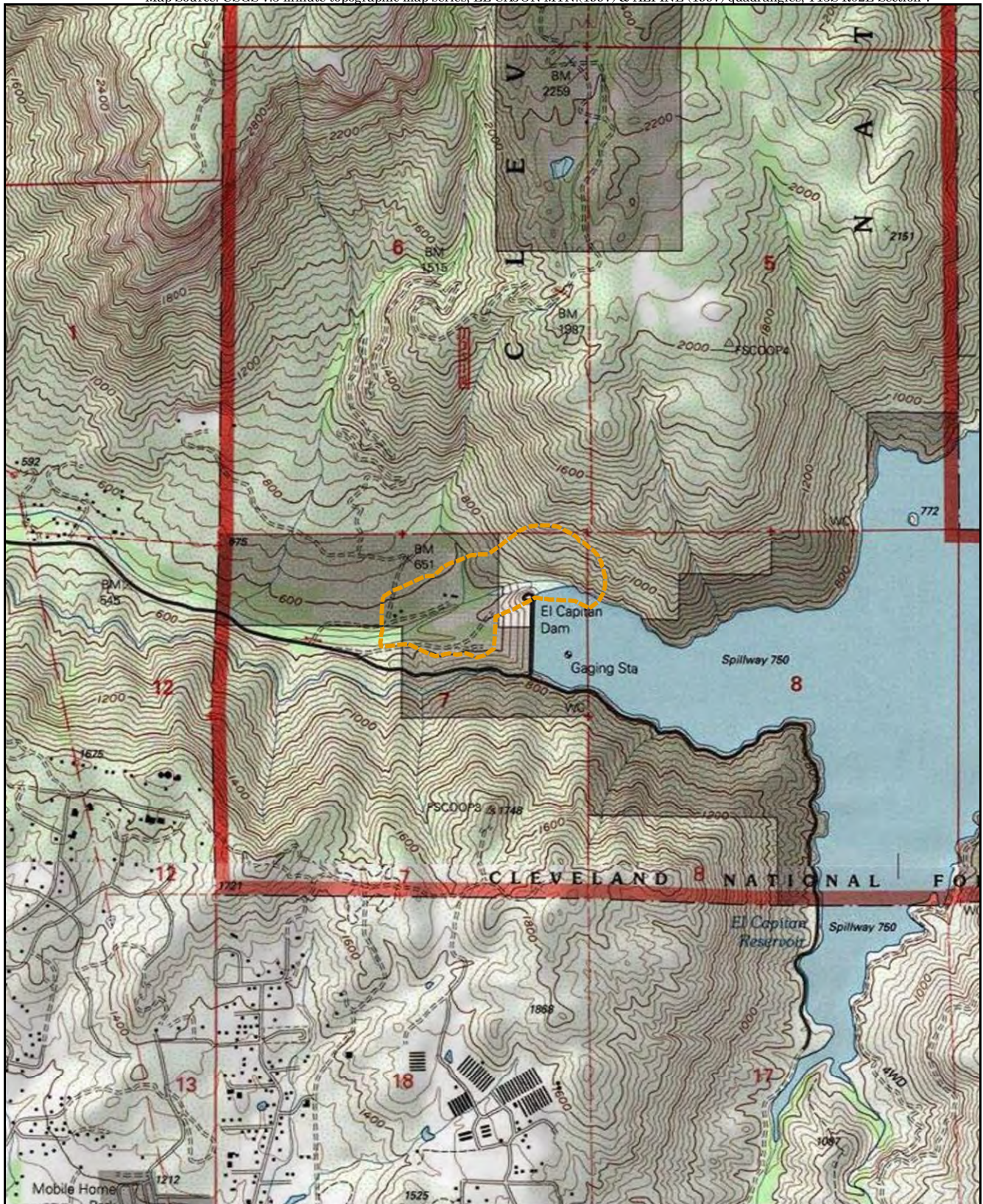
SURVEY AREA LOCATION

The project is currently in the design phase and is located immediately downstream of El Capitan Dam at the east end of El Monte Valley in an unincorporated area of central San Diego County, California, northwest of the community of Alpine and northeast of the community of Flinn Springs. Although the project area is not yet finalized, it will be encompassed entirely by the "project survey area" shown on Figures 1, 2, and 3. The project survey area is mostly found in the northeast quarter of Section 7, with a small portion in the southeast quarter of Section 6 and the northwest quarter of Section 8, Township 15 South, Range 02 East, of the U.S. Geological Survey 7.5-minute topographic map, El Cajon Mtn. quadrangle (see Figure 2; U.S. Geological Survey 1997). The project survey area comprises portions of Assessor's Parcel Numbers 4020700500, 4020700400, 4020700300, 4020800400, and 4020200700.

SURVEY METHODS

Prior to initiating the focused surveys, RECON Environmental, Inc. (RECON) biologists Brenna Ogg and Kayo Valenti conducted a general biological survey of the project survey area in November 2017. Using vegetation mapping completed as part of the general biological survey, potentially suitable habitat for gnatcatcher within the survey area was identified. During the focused survey visits, species composition, height, and density of the vegetation communities within the suitable habitat areas were further assessed for their potential to support gnatcatcher.

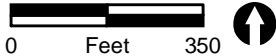
Ms. Ogg conducted three survey visits to 47.2 acres of habitat considered potentially suitable for gnatcatcher (see "gnatcatcher survey area" on Figure 3) within the project survey area. Three survey visits were conducted per the protocol survey guidelines (USFWS 1997), because the City of San Diego has an approved Multiple Species Conservation Program Subarea Plan. The survey visits were conducted a minimum of seven days apart and scattered throughout the breeding season in order to increase the likelihood of detecting early breeding season behavior (e.g., nest building) as well as fledgling dispersal in the latter part of the season. City of San Diego Public Utilities Department Biologists Mark Berninger and Cheryl Jenkins accompanied Ms. Ogg during the first survey visit.



 Project Survey Area

FIGURE 1
El Capitan Dam Spillway
Vegetation Removal Project Survey
Area Location on USGS Map

Image source: USDA FSA NAIP (flown June 2016)




 Project Survey Area

FIGURE 2
El Capitan Dam Spillway Vegetation Removal
Project Survey Area Location on Aerial Photograph






-  Project Survey Area
-  Gnatcatcher Survey Area
-  Brown-headed Cowbird Observation



FIGURE 3

Coastal California Gnatcatcher 2018 Survey Area

In accordance with USFWS protocol survey guidelines for this species (USFWS 1997), the surveying biologist walked all portions of suitable habitat and periodically used taped gnatcatcher vocalizations in an attempt to elicit initial calls. However, taped vocalizations were used infrequently due to the prevalence of potential avian nest predators—northern mockingbird (*Mimus polyglottos polyglottos*), California scrub-jay (*Aphelocoma californica*), and common raven (*Corvus corax clarionensis*)—throughout the survey area. Use of any taped vocalizations was suspended when potential nest predators were detected in the vicinity. A total of 16.4 hours of field effort was devoted to the survey. The surveying biologist compiled lists of wildlife species detected and recorded the location of any observed sensitive wildlife species on a one-inch-equals-150-foot aerial map or using a hand-held global positioning system unit. The survey visit numbers, dates, personnel, times, and weather conditions are provided in Table 1. Ms. Ogg is authorized to conduct presence/absence gnatcatcher surveys under USFWS 10(a)(1)(A) permit TE-134338.

Survey Number	Date	Surveyor	Times	Acres Surveyed per Hour	Weather Conditions
1	4/26/2018	B. Ogg	06:00–12:00	7.87	55–75°F, 100% (marine layer) clearing to 5% cloud cover, wind 2–8 mph
2	5/23/2018	B. Ogg	06:00–11:15	9.00	60–77°F, 100% (marine layer) clearing to 0% cloud cover, wind 0–5 mph
3	6/19/2018	B. Ogg	06:00–11:10	9.14	59–77°F, 100% (marine layer) clearing to 0% cloud cover, wind 2–8 mph

^oF = degrees Fahrenheit; % = percent; mph = miles per hour.

SURVEY AREA DESCRIPTION

The project survey area is generally centered on El Capitan Dam spillway and an associated manufactured channel that extends westward from the spillway for approximately 1,200 linear feet, where it merges with the main San Diego River channel. Within the survey area, elevations range from 560 feet above mean sea level in the San Diego River-bottom in the western portion of the survey area to 1,200 feet above mean sea level on the large hillside in the northeastern portion of the survey area. This hillside is generally south-facing and contains open vegetation with a number of small upland drainages. The central portion of the project survey area, northwest and immediately south of the spillway, contains a series of previously graded terraces with open vegetation and concentrations of large rocks. The western portion, north of the San Diego River riparian corridor, is generally flat and contains a series of manufactured berms, dirt roads, and the remnants of an old homestead among open vegetation. A triangular plateau occurs between the northern and southern riparian corridors and the base of the dam. The southern portion of the project survey area contains a small amount of open vegetation south of the riparian corridor and along dirt roads.

The project survey area supports the following vegetation communities/land cover types (following Holland 1986 as updated by Oberbauer et al. [2008] and City of San Diego [2012]): southern cottonwood-willow riparian forest (including disturbed stands), southern riparian woodland, southern coast live oak riparian forest, Diegan coastal sage scrub (including disturbed stands), non-native grassland, eucalyptus woodland, scrub oak chaparral, coastal and valley freshwater marsh, Arundo-dominated riparian, fresh water, disturbed land, and urban/developed land. Of these, vegetation communities mapped as potentially suitable gnatcatcher habitat include Diegan coastal sage scrub, disturbed Diegan coastal sage scrub, and scrub oak chaparral, which total 47.2 acres. These vegetation communities are described in detail below, and the 47.2-acre gnatcatcher survey area is shown on Figure 3.

Diegan coastal sage scrub occurs in many portions of the survey area with a variety of shrub densities and species composition and, therefore, provides a range of habitat suitability for gnatcatcher. The Diegan coastal sage scrub that occurs in the western half of the project survey area provides moderate to high

quality habitat for gnatcatcher. The habitat that occurs west of the base of the dam between the riparian corridors is dense (approximately 60 percent shrub cover), averages between three and five feet tall, and is dominated by California buckwheat (*Eriogonum fasciculatum*) with deerweed (*Acemison glaber*) (Photograph 1). The Diegan coastal sage scrub in the northwestern portion of the project survey area is dominated by California sagebrush and California buckwheat, averaging three to four feet in height, with scattered laurel sumac at six to eight feet in height (Photograph 2).

The Diegan coastal sage scrub on the steep slopes in the northeastern portion of the survey area provides low quality habitat for gnatcatcher. This area contains shrub cover ranging between 10 and 30 percent that is generally dominated by laurel sumac (*Malosma laurina*) (Photographs 3 and 4). Co-dominant and sub-dominant shrub species on this slope vary and include chamise (*Adenostoma fasciculatum*), rush sweetbush (*Bebbia juncea*), matchweed (*Gutierrezia* sp.), California sagebrush (*Artemisia californica*), white sage (*Salvia apiana*), wishbone bush (*Mirabilis laevis* var. *crassifolia*), California croton (*Croton californicus*), California brickellbush (*Brickellia californica*), and peak rush-rose (*Crocantemum scoparium*). On this slope, the space between shrubs contains a variety of short perennial and annual natives such as chia (*Salvia columbariae*), smallseed sandmat (*Euphorbia polycarpa*), odora (*Porophyllum gracile*), shining peppergrass (*Lepidium nitidum*), and Bigelow's spike-moss (*Selaginella bigelovii*), as well as a substantial cover of non-native annuals such as short-pod mustard (*Hirschfeldia incana*), oats (*Avena* spp.), and brome grasses (*Bromus* spp.).

The terraced slopes in the north-central portion of the survey area, northwest of the spillway, provide low to moderate quality habitat for gnatcatcher. The upper terrace supports a nearly monotypic stand of dense, three- to four-foot-high deerweed, while the middle and lower terraces support a mix of native shrubs including California sagebrush, laurel sumac, California buckwheat, deerweed, and rush sweetbush, which vary in density and height (Photograph 5). Open areas with low-growing native annuals such as dot-seed plantain (*Plantago erecta*) occur on the lowest terrace. Higher density shrub cover (50 percent or greater) occurs on the middle and upper terraces. Boulder piles occur on the eastern middle terraces. Disturbed Diegan coastal sage scrub, with lower native shrub cover and a higher cover of non-native annuals and crimson fountain grass (*Pennisetum setaceum*), occurs on the steep slopes between the terraces.

Additional patches of disturbed Diegan coastal sage scrub occur throughout the survey area and provide low to moderate quality habitat for gnatcatcher. Overall, these areas of disturbed Diegan coastal sage scrub show signs of previous or ongoing disturbance and contain a notably higher proportion of non-native plant species, including non-native grasses (*Bromus* spp.) and mustards (*Brassica* and *Hirschfeldia* spp.), with some portions dominated by crimson fountain grass. A patch in the west-central portion of the survey area contains an overgrown staging area with a stockpile of large concrete pipes and the native broom baccharis (*Baccharis sarothroides*) shrub dominating the space surrounding the pipes (Photograph 6). Shrubs in this area average four to six feet high.

Scrub oak chaparral occurs on north-facing slopes along the southern edge of the project survey area and provides moderate quality habitat for gnatcatcher. It is dominated by scrub oak (*Quercus berberidifolia*); other common shrub species include mission manzanita (*Xylococcus bicolor*), birch-leaf mountain-mahogany (*Cercocarpus betuloides*), and hollyleaf redberry (*Rhamnus ilicifolia*) with an understory of veldt grass (*Ehrharta* sp.) (Photograph 7). Overall shrub cover is over 50 percent, and shrub height averages four to five feet.



PHOTOGRAPH 1
Diegan Coastal Sage Scrub West of Dam, Facing Southwest



PHOTOGRAPH 2
Diegan Coastal Sage Scrub in North-Central Portion of Survey Area,
Facing East-Southeast



PHOTOGRAPH 3
Diegan Coastal Sage Scrub in Northeastern Portion of Survey Area,
Facing North



PHOTOGRAPH 4
Diegan Coastal Sage Scrub in Northeastern Portion of Survey Area,
Facing Northeast



PHOTOGRAPH 5

Diegan Coastal Sage Scrub and Disturbed Diegan Coastal Sage Scrub on the Terraced Slopes Northwest of the Spillway, Facing Northwest



PHOTOGRAPH 6

Disturbed Diegan Coastal Sage Scrub in Western Portion of Survey Area, Includes Staging Area, Facing Northeast



PHOTOGRAPH 7
Scrub Oak Chaparral along Southern Edge of Survey Area,
Facing East-Northeast

SURVEY RESULTS

No gnatcatchers were detected within or adjacent to the project survey area during the three 2018 focused survey visits. In addition, no gnatcatchers have been detected in the project survey area during any other general or biological surveys conducted by RECON between November 2017 and July 2018. A complete list of avian species detected during the surveys is provided in Table 2.

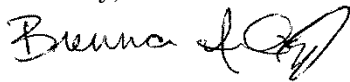
Brown-headed cowbird (*Molothrus ater*), a brood parasite, was detected by vocalization within the riparian vegetation in the project survey area during each of the three survey visits. The approximate locations are depicted on Figure 3.

The following four sensitive avian species were detected within the project survey area during the 2018 focused surveys: southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*; California Department of Fish and Wildlife [CDFW] Watch List), Cooper's hawk (*Accipiter cooperii*; CDFW Watch List), yellow warbler (*Setophaga [=Dendroica] petechia*; CDFW Species of Special Concern [SSC]), and yellow-breasted chat (*Icteria virens auricollis*; CDFW SSC). In addition, least Bell's vireo (*Vireo bellii pusillus*; federally and state endangered, CDFW SSC) was detected outside the project survey area to the north, and bald eagle (*Haliaeetus leucocephalus*; state endangered, CDFW Fully Protected) was observed flying overhead. Focused surveys for least Bell's vireo are being completed for this project in 2018. In addition, a biological technical report will be prepared for this project following completion of 2018 biological surveys. Therefore, these sensitive species observations will be addressed in the associated survey report and/or biological technical report. Data for these additional sensitive species occurrences will be submitted to the California Natural Diversity Database concurrent with completion of the biological technical report.

CERTIFICATION

I certify that the information in this survey report and attached exhibits fully and accurately represent my work. Please contact me at bogg@reconenvironmental.com with any questions regarding this survey.

Sincerely,



July 26, 2018
Date

Brenna Ogg
Senior Biologist
USFWS Permit Number TE-134338
CDFW Scientific Collecting Permit SC-9997

BAO:jg

cc: Mark Berninger, City of San Diego
Esther Burkett, California Department of Fish and Wildlife
Justin Garcia, California Department of Fish and Wildlife

Table 2
Avian Species Detected

Scientific Name	Common Name	Evidence of Occurrence
ODONTOPHORIDAE	NEW WORLD QUAIL	
<i>Callipepla californica californica</i>	California quail	O, V
ARDEIDAE	HERONS & BITTERNS	
<i>Ardea alba</i>	great egret	O
ACCIPITRIDAE	HAWKS, KITES, & EAGLES	
<i>Accipiter cooperii</i>	Cooper's hawk	O, V
<i>Buteo jamaicensis</i>	red-tailed hawk	O, V
<i>Haliaeetus leucocephalus</i>	bald eagle	O
COLUMBIDAE	PIGEONS & DOVES	
<i>Streptopelia decaocto</i>	Eurasian collared-dove (I)	O, V
<i>Zenaida macroura marginella</i>	mourning dove	O, V
APODIDAE	SWIFTS	
<i>Aeronautes saxatalis</i>	white-throated swift	O, V
TROCHILIDAE	HUMMINGBIRDS	
<i>Calypte anna</i>	Anna's hummingbird	O, V
<i>Calypte costae</i>	Costa's hummingbird	O, V
PICIDAE	WOODPECKERS & SAPSUCKERS	
<i>Colaptes auratus</i>	northern flicker	V
<i>Melanerpes formicivorus bairdi</i>	acorn woodpecker	V
<i>Picoides nuttallii</i>	Nuttall's woodpecker	O, V
TYRANNIDAE	TYRANT FLYCATCHERS	
<i>Empidonax difficilis</i>	Pacific-slope flycatcher	O, V
<i>Myiarchus cinerascens cinerascens</i>	ash-throated flycatcher	O, V
<i>Sayornis nigricans semiatra</i>	black phoebe	O, V
<i>Tyrannus verticalis</i>	western kingbird	O, V
<i>Tyrannus vociferans vociferans</i>	Cassin's kingbird	O, V
VIREONIDAE	VIREOS	
<i>Vireo bellii pusillus</i>	least Bell's vireo	V
<i>Vireo gilvus swainsonii</i>	warbling vireo	O
CORVIDAE	CROWS, JAYS, & MAGPIES	
<i>Aphelocoma californica</i>	California scrub-jay	O, V
<i>Corvus corax clarionensis</i>	common raven	O, V
HIRUNDINIDAE	SWALLOWS	
<i>Petrochelidon pyrrhonota tachina</i>	cliff swallow	O, V
<i>Stelgidopteryx serripennis</i>	northern rough-winged swallow	O, V
AEGITHALIDAE	BUSHTIT	
<i>Psaltriparus minimus melanurus</i>	bushtit	O, V
TROGLODYTIDAE	WRENS	
<i>Catherpes mexicanus conspersus</i>	canyon wren	O, V
<i>Salpinctes obsoletus obsoletus</i>	rock wren	O, V
<i>Thryomanes bewickii</i>	Bewick's wren	O, V
<i>Troglodytes aedon parkmanii</i>	house wren	O, V, N
SYLVIIDAE	GNATCATCHERS	
<i>Poliophtila caerulea</i>	blue-gray gnatcatcher	O, V
TIMALIIDAE	BABLERS	
<i>Chamaea fasciata henshawi</i>	wrenit	O, V
MIMIDAE	MOCKINGBIRDS & THRASHERS	
<i>Mimus polyglottos polyglottos</i>	northern mockingbird	O, V
STURNIDAE	STARLINGS & MYNAS	
<i>Sturnus vulgaris</i>	European starling (I)	O, V
PTILOGONATIDAE	SILKY FLYCATCHERS	
<i>Phainopepla nitens lepida</i>	phainopepla	O, V
PARULIDAE	WOOD WARBLERS	
<i>Setophaga [=Dendroica] petechia</i>	yellow warbler	O, V

Table 2
Avian Species Detected

Scientific Name	Common Name	Evidence of Occurrence
<i>Geothlypis trichas</i>	common yellowthroat	V
<i>Oreothlypis [=Vermivora] celata</i>	orange-crowned warbler	O, V
<i>Icteria virens auricollis</i>	yellow-breasted chat	V
EMBERIZIDAE	EMBERIZIDS	
<i>Aimophila ruficeps canescens</i>	southern California rufous-crowned sparrow	O, V
<i>Melospiza melodia</i>	song sparrow	O, V
<i>Melozona [=Pipilo] crissalis</i>	California towhee	O, V
<i>Pipilo maculatus</i>	spotted towhee	O, V
<i>Spizella atrogularis cana</i>	black-chinned sparrow	O, V
CARDINALIDAE	CARDINALS & GROSBEAKS	
<i>Passerina caerulea salicaria</i>	blue grosbeak	O, V
<i>Pheucticus melanocephalus maculatus</i>	black-headed grosbeak	O, V
ICTERIDAE	BLACKBIRDS & NEW WORLD ORIOLES	
<i>Icterus bullockii</i>	Bullock's oriole	O, V
<i>Icterus cucullatus nelsoni</i>	hooded oriole	O, V
<i>Molothrus ater</i>	brown-headed cowbird	O, V
FRINGILLIDAE	FINCHES	
<i>Spinus [=Carduelis] psaltria hesperophilus</i>	lesser goldfinch	O, V
<i>Haemorhous [=Carpodacus] mexicanus frontalis</i>	house finch	O, V
Nomenclature from American Ornithologists' Union 2015 and Unitt 2004.		
(I) = Introduced species		
EVIDENCE OF OCCURRENCE		
N = Nest		
O = Observed		
V = Vocalization		

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U.S. Geological Survey (USGS)

- 1997 El Cajon Mtn., California Quadrangle 7.5-Minute Topographic Map.

APPENDIX B

2020 Coastal California Gnatcatcher (*Polioptila californica californica*) Survey Report for the City of San Diego Dam Maintenance Program Project

July 9, 2020

SDD-32.20

Ms. Stacey Love
U.S. Fish and Wildlife Service
2177 Salk Ave., Suite 250
Carlsbad, CA 92008

Subject: 2020 Coastal California Gnatcatcher (*Polioptila californica californica*) Survey Report for the City of San Diego Dam Maintenance Program Project

Dear Ms. Love:

This letter presents the results of a U.S. Fish and Wildlife Service (USFWS) protocol presence/absence survey for the federally listed as threatened coastal California gnatcatcher (*Polioptila californica californica*; CAGN) conducted by HELIX Environmental Planning, Inc. (HELIX) for the proposed City of San Diego Dam Maintenance Program Project (project). The proposed project includes routine maintenance of 13 City dams and associated infrastructure, and the approximately 13-mile Dulzura Conduit. This report describes the methods used to perform the survey and the results for the proposed dam maintenance areas and is being submitted to the USFWS as a condition of HELIX's Threatened and Endangered Species Permit TE778195-14.

PROJECT LOCATION

The proposed project includes routine maintenance of 13 City dams and associated infrastructure, including the approximately 13-mile Dulzura Conduit located through San Diego County (County), California (Figure 1, *Regional Location*). Habitat assessments for CAGN were conducted at 10 of the dam sites (Barrett, Chollas, El Capitan, Hodges, Miramar, Murray, San Vicente, Savage [Lower Otay], Sutherland, and Upper Otay). Potential CAGN habitat was present at nine of the dam sites and surveys were conducted for those study areas (surveys were not conducted at Barrett Dam due to the lack of suitable habitat). The location of each of these study areas are detailed below.

Barrett Dam is located in the eastern portion of the County, in the unincorporated community of Dulzura (Figure 1). It lies within Section 22 of Township 17 South, Range 3 East, on the U.S. Geological Survey (USGS) 7.5-minute Barrett Lake quadrangle map (Figure 2a, *USGS Topography – Barrett Dam*). Barrett Dam is located at the outlet of Barrett Lake along Barrett Lake Road to the north of Campo Road (State Route [SR] 94), south of Skye Valley Road, east of Lyons Valley Road, and west of Horizon View Drive (Figure 3a, *Aerial Photograph – Barrett Dam*). The study area occurs in the City's Barrett Reservoir

Open Space area and Cleveland National Forest. The Barrett Dam study area is not located within USFWS-designated critical habitat for the CAGN.

Chollas Dam is located in the central portion of the City (Figure 1). It lies in unsectioned lands of Township 16 South, Range 2 West, on the USGS 7.5-minute National City quadrangle map (Figure 2b, *USGS Topography – Chollas Dam*). Chollas Dam is located at the outlet of Chollas Heights Reservoir to the north of College Grove Road, south of Fauna Drive, east of Chollas Station Road, and west of College Grove Way (Figure 3b, *Aerial Photograph – Chollas Dam*). The study area occurs in the City's Chollas Lake Park. The Chollas Dam study area is not located within USFWS-designated critical habitat for the CAGN.

El Capitan Dam is located in the eastern portion of the County, in the unincorporated community of Lakeside (Figure 1). It lies within Sections 7 and 8 of Township 15 South, Range 2 East, on the USGS 7.5-minute El Cajon Mountain quadrangle map (Figure 2c, *USGS Topography – El Capitan Dam*). El Capitan Dam is located at the outlet of El Capitan Reservoir along El Monte Road to the north of Interstate (I-) 8, south of Featherstone Canyon Road, east of Lake Jennings Road, and west of Peutz Valley Road (Figure 3c, *Aerial Photograph – El Capitan Dam*). The study area occurs in City's El Capitan Reservoir Open Space Area and Cleveland National Forest. The majority of the El Capitan study area, excluding the dam and open El Capitan Reservoir, is located within USFWS-designated critical habitat for the CAGN (Figure 3c).

Hodges Dam is located in the northern portion of the City (Figure 1). It lies within Sections 7 and 8 of Township 13 South, Range 2 West, on the USGS 7.5-minute Escondido and Rancho Santa Fe quadrangle maps (Figure 2d, *USGS Topography – Hodges Dam*). Hodges Dam is located at the outlet of Lake Hodges to the north of Camino Santa Fe, south of Del Dios Road, east of Lake Drive, and west of Calle Ambiente (Figure 3d, *Aerial Photograph – Hodges Dam*). The study area occurs in the City's Hodges Reservoir Open Space area. The Hodges Dam study area is not located within USFWS-designated critical habitat for the CAGN.

Miramar Dam is located in the northern portion of the City (Figure 1). It lies within Section 32 of Township 14 South, Range 2 West, on the USGS 7.5-minute Poway quadrangle map (Figure 2e, *USGS Topography – Miramar Dam*). Miramar Dam is located at the outlet of Miramar Reservoir to the north of Scripps Lake Drive, south and east of Scripps Ranch Boulevard, and west of Mira Lago Terrace (Figure 3e, *Aerial Photograph – Miramar Dam*). The study area occurs in the City's Miramar Reservoir Open Space area. The Miramar Dam study area is not located within USFWS-designated critical habitat for the CAGN.

Murray Dam is located in the central portion of the City (Figure 1). It lies within unsectioned lands of Township 16 South, Range 2 West, on the USGS 7.5-minute La Mesa quadrangle map (Figure 2f, *USGS Topography – Murray Dam*). Murray Dam is located at the outlet of Lake Murray to the north of Lake Murray Boulevard, south of Jackson Drive, east of Del Cerro Boulevard, and west of Baltimore Drive (Figure 3f, *Aerial Photograph – Murray Dam*). The study area occurs in the City's Lake Murray Open Space area. The Murray Dam study area is not located within USFWS-designated critical habitat for the CAGN.

San Vicente Dam is located in the central portion of the County, in the unincorporated community of Lakeside (Figure 1). It lies within Sections 31 and 36 of Township 14 South, Ranges 1 West and 1 East, on the USGS 7.5-minute San Vicente Reservoir quadrangle map (Figure 2g, *USGS Topography – San Vicente Dam*). The study area is located at the outlet of San Vicente Reservoir to the north of Morena Avenue,

south of Foster Truck Trail, east of SR-67, and west of Muth Valley Road (Figure 3g, *Aerial Photograph – San Vicente Dam*). The study area occurs in the City’s San Vicente Reservoir recreation area. San Vicente Dam study area is not located within USFWS-designated critical habitat for the CAGN.

Savage (Lower Otay) Dam is located in the southern portion of the County, in the unincorporated community of Otay (Figure 1). It lies within Sections 13 and 18 and unsectioned lands of Township 18 South, Ranges 1 West and 1 East, on the USGS 7.5-minute Otay Mesa quadrangle map (Figure 2h, *USGS Topography – Savage Dam*). The study area is located at the outlet of Lower Otay Reservoir to the north of Alta Road, south of Otay Lakes Road, east of Wueste Road and Otay Lakes County Park, and west of the Otay Open Space Preserve (Figure 3h, *Aerial Photograph – Savage Dam*). The study area occurs in the City’s Otay lakes recreation area. Savage Dam study area is not located within USFWS-designated critical habitat for the CAGN.

Sutherland Dam is located in the northern portion of the County, in the unincorporated community of Ramona (Figure 1). It lies within Sections 20 and 21 of Township 12 South, Range 2 East, on the USGS 7.5-minute Ramona quadrangle map (Figure 2i, *USGS Topography – Sutherland Dam*). The dam is located at the outlet of Lake Sutherland along Sutherland Dam Road to the north of SR-78, south and east of Black Canyon Road, and west of Rancho Ballena Road (Figure 3i, *Aerial Photograph – Sutherland Dam*). The study area occurs in the City’s Sutherland Reservoir Open Space area and Cleveland National Forest. The Sutherland Dam study area is not located within USFWS-designated critical habitat for the CAGN.

Upper Otay Dam is located in the southern portion of the County, in the unincorporated community of Otay (Figure 1). It lies within unsectioned lands of Township 17 South, Range 1 West, on the USGS 7.5-minute Jamul Mountains quadrangle map (Figure 2j, *USGS Topography – Upper Otay Dam*). The dam is located at the outlet of Upper Otay Reservoir to the north of Otay Lakes Road, south of Proctor Valley Road, east of Centennial Trail, and west of Wueste Road (Figure 3j, *Aerial Photograph – Upper Otay Dam*). The study area occurs in the City’s Otay Lakes recreation area. The Upper Otay study area is not located within USFWS-designated critical habitat for the CAGN.

METHODS

The survey consisted of three visits that were performed by HELIX biologists Katie Bellon (TE 778195-14) and Mandy Mathews (TE 778195-14) in accordance with the current USFWS protocol¹. HELIX biologist Dane van Tamelen participated as a supervised individual on several of the surveys (Table 1, *Survey Information*). The CAGN survey area included all potential CAGN habitat located within the dam study areas (except for the Barrett Dam site). A habitat assessment was conducted by Ms. Bellon at the Barrett Dam site on February 24, 2020 and it was determined that no suitable habitat was present; therefore, no surveys were conducted at the Barrett Dam study area (Figure 4a, *2020 Coastal California Gnatcatcher Habitat Assessment Results – Barrett Dam*). Approximately 212.7 acres of potential CAGN habitat was surveyed consisting of Diegan coastal sage scrub (including disturbed, Baccharis dominated,

¹ U.S. Fish and Wildlife Service (USFWS). 1997. Coastal California Gnatcatcher (*Poliioptila californica californica*) Presence/Absence Survey Protocol. 5pp.

and laurel sumac dominated) and coastal sage-chaparral scrub (Figures 4b through 4j, *2020 Coastal California Gnatcatcher Survey Results*).

The surveys were conducted by walking within and along the perimeter of suitable CAGN habitat present within the study areas (Figures 4b through 4j). The survey route was arranged to ensure complete survey coverage of habitat with potential for occupancy by CAGN. Surveys were conducted with binoculars to aid in bird detection. Recorded CAGN vocalizations were played sparingly and only if other means of detection had failed. If a CAGN was detected before playing recorded vocalizations, the recordings were not played. Once CAGNs were initially detected in an area, use of playback was discontinued. The approximate survey route is depicted on Figures 4b through 4j.

Table 1 details the survey dates, times, and conditions.

Table 1
SURVEY INFORMATION

Site Visit	Survey Date	Biologist(s)	Start/Stop Time	Approx. Acres Surveyed/ Acres per Hour	Start/Stop Weather Conditions	Survey Results
Barrett Dam						
N/A	2/24/20	Katie Bellon ¹	0840/1040	N/A	48°F, wind 2-4 mph, 0% cloud cover 69°F, wind 5-7 mph, 0% cloud cover	A habitat assessment was conducted at the site on February 24. No suitable habitat with potential to support CAGN was found to occur within the study area and no CAGN was detected. Vegetation within the study area consists of granitic southern mixed chaparral. Therefore, no surveys were conducted at this site.
Chollas Dam						
1	4/29/20	Katie Bellon ¹	0830/1100	12.0 ac/ 5.0 ac/hr	65°F, wind 0-1 mph, 100% cloud cover 68°F, wind 3-5 mph, 100% cloud cover	<ul style="list-style-type: none"> • Single male, presumed to be the same male belonging to Pair No. 1, observed foraging and calling approximately 510 feet west of the dam and 430 feet south of the dirt access road. • Single male, presumed to be the same male belonging to Pair No. 2, observed foraging and calling approximately 270 feet west of the dam and 250 feet east of male from Pair No. 1. • Single male, presumed to be the same male belonging to Pair No. 3, observed foraging and calling approximately 245 feet north of the dam. • Single male, presumed to be the same male belonging to Pair No. 4, observed outside of the study area approximately 0.3-mile west of the dam and 55 feet north of the dirt access path.

**Table 1 (cont.)
SURVEY INFORMATION**

Site Visit	Survey Date	Biologist(s)	Start/Stop Time	Approx. Acres Surveyed/ Acres per Hour	Start/Stop Weather Conditions	Survey Results
Chollas Dam (cont.)						
1 (cont.)	4/29/20	Katie Bellon ¹	0830/1100	12.0 ac/ 5.0 ac/hr	65°F, wind 0-1 mph, 100% cloud cover 68°F, wind 3-5 mph, 100% cloud cover	<ul style="list-style-type: none"> • Single male, presumed to be the same male belonging to Pair No. 5, observed foraging outside of the study area approximately 840 feet west of the dam, 230 feet south of the dirt access road, and 315 feet northwest of male from Pair No. 1. • Single male (Male No. 1) observed approximately 615 feet west of the dam and 130 feet southwest of male from Pair No. 1. • Single CAGN, presumed to be the same male from Male No. 2, heard calling approximately 360 feet northwest of the dam and 310 feet west of male from Pair No. 2.
2	5/11/20	Katie Bellon ¹ Dane van Tamelen ²	0730/1200	12.0 ac/ 2.8 ac/hr	67°F, wind 1-3 mph, 15% cloud cover 70°F, wind 3-5 mph, 0% cloud cover	<ul style="list-style-type: none"> • Pair (Pair No. 1) observed carrying nesting material in the same general area where male was previously detected. • Pair (Pair No. 2) observed foraging together in the same general area where male previously detected. Female also observed carrying nesting material. • Pair (Pair No. 3) observed in the same general area where male was previously detected. Male also observed carrying nesting material.

**Table 1 (cont.)
SURVEY INFORMATION**

Site Visit	Survey Date	Biologist(s)	Start/Stop Time	Approx. Acres Surveyed/ Acres per Hour	Start/Stop Weather Conditions	Survey Results
Chollas Dam (cont.)						
2 (cont.)	5/11/20	Katie Bellon ¹ Dane van Tamelen ²	0730/1200	12.0 ac/ 2.8 ac/hr	67°F, wind 1-3 mph, 15% cloud cover 70°F, wind 3-5 mph, 0% cloud cover	<ul style="list-style-type: none"> • Single male, presumed to be the same male belonging to Pair No. 4, observed in the same general area where previously detected. • Single CAGN, presumed to be the same male belonging Pair No. 5, heard calling in the same general area where male was previously detected. • Male No. 2 observed foraging in the same general area where previously detected. • Single CAGN, presumed to be from Male No. 3, heard calling outside the study area approximately 0.3-mile west of the dam, 160 feet south of the dirt access road, and 270 feet south of male from Pair No. 4.
3	6/1/20	Katie Bellon ¹ Dane van Tamelen ²	0730/1200	12.0 ac/ 2.8 ac/hr	61°F, wind 0-1 mph, 20% cloud cover 77°F, wind 5-10 mph, 50% cloud cover	<ul style="list-style-type: none"> • Pair No. 1 observed foraging and carrying food material in the same general area where previously detected. • Pair No. 3 observed foraging and carrying food material to the east of where previously detected. • Pair (Pair No. 4) heard calling in the same general area where single male previously detected.

**Table 1 (cont.)
SURVEY INFORMATION**

Site Visit	Survey Date	Biologist(s)	Start/Stop Time	Approx. Acres Surveyed/ Acres per Hour	Start/Stop Weather Conditions	Survey Results
Chollas Dam (cont.)						
3 (cont.)	6/1/20	Katie Bellon ¹ Dane van Tamelen ²	0730/1200	12.0 ac/ 2.8 ac/hr	61°F, wind 0-1 mph, 20% cloud cover 77°F, wind 5-10 mph, 50% cloud cover	<ul style="list-style-type: none"> • Adult female, presumed to belong to Pair No. 5, observed foraging with and feeding a single juvenile in the same general area where male previously detected. • Single CAGN, presumed to be Male No. 2, heard calling in the same general area where male previously detected. • Single male (Male No. 3) observed in the same general area where individual previously heard calling.
El Capitan Dam						
1	2/26/20	Mandy Mathews ¹	0630/1130	40.7 ac/ 8.1 ac/hr	45°F, wind 0-2 mph, 0% cloud cover 71°F, wind 3-4 mph, 0% cloud cover	No CAGN detected.
2	3/5/20	Mandy Mathews ¹	0630/1030	40.7 ac/ 10.2 ac/hr	46°F, wind 1-4 mph, 5% cloud cover 70°F, wind 1-3 mph, 5% cloud cover	No CAGN detected.
3	3/16/20	Mandy Mathews ¹	0630/1030	40.7 ac/ 10.2 ac/hr	50°F, wind 1-4 mph, 100% cloud cover 60°F, wind 2-4 mph, 100% cloud cover	No CAGN detected.
Hodges Dam						
1	5/5/20	Katie Bellon ¹	0830/1130	14.6 ac/ 4.9 ac/hr	69°F, wind 2-5 mph, 0% cloud cover 87°F, wind 1-3 mph, 0% cloud cover	No CAGN detected.
2	5/15/20	Katie Bellon ¹	0900/1200	14.6 ac/ 4.9 ac/hr	68°F, wind 2-4 mph, 10% cloud cover 78°F, wind 5-7 mph, 10% cloud cover	No CAGN detected.
3	5/26/20	Katie Bellon ¹	0830/1130	14.6 ac/ 4.9 ac/hr	60°F, wind 1-3 mph, 100% cloud cover 78°F, wind 3-5 mph, 0% cloud cover	No CAGN detected.

**Table 1 (cont.)
SURVEY INFORMATION**

Site Visit	Survey Date	Biologist(s)	Start/Stop Time	Approx. Acres Surveyed/ Acres per Hour	Start/Stop Weather Conditions	Survey Results
Miramar Dam						
1	3/30/20	Katie Bellon ¹	0830/1030	15.2 ac/ 7.6 ac/hr	59°F, wind 1-3 mph, 0% cloud cover 59°F, wind 1-3 mph, 0% cloud cover	<ul style="list-style-type: none"> • Pair (Pair No. 1) observed foraging together approximately 480 feet southwest of the dam and 185 feet north of Scripps Lake Drive within the southern portion of the study area. • Pair (Pair No. 2) observed foraging together approximately 445 feet west of the dam and 820 feet northwest of Pair No. 1 in the western portion of the study area.
2	4/15/20	Katie Bellon ¹ Dane van Tamelen ²	0810/1010	15.2 ac/ 7.6 ac/hr	61°F, wind 1-2 mph, 0% cloud cover 72°F, wind 1-2 mph, 0% cloud cover	<ul style="list-style-type: none"> • Pair No. 1 observed foraging together and carrying nesting material in the same general area where previously detected. • Single male, presumed to be the same male belonging to Pair No. 2, heard calling in the same general area where previously detected.
3	4/22/20	Katie Bellon ¹ Dane van Tamelen ²	0750/1000	15.2 ac/ 7.0 ac/hr	62°F, wind 0-2 mph, 0% cloud cover 68°F, wind 1-2 mph, 0% cloud cover	<ul style="list-style-type: none"> • Pair No. 1 observed in the same general area where previously detected. Male observed foraging throughout area and trading places with the female near suspected nest site. • Single male, presumed to be the same male belonging to Pair No. 2, heard calling in same general area where previously detected.

**Table 1 (cont.)
SURVEY INFORMATION**

Site Visit	Survey Date	Biologist(s)	Start/Stop Time	Approx. Acres Surveyed/ Acres per Hour	Start/Stop Weather Conditions	Survey Results
Murray Dam						
1	4/14/20	Katie Bellon ¹	0850/1050	13.4 ac/ 6.7 ac/hr	57°F, wind 3-5 mph, 15% cloud cover 59°F, wind 1-3 mph, 60% cloud cover	<ul style="list-style-type: none"> • Pair (Pair No. 1) observed foraging together immediately west of the of the dam at the southern terminus of the Lake Murray Bike Path. • Pair (Pair No. 2) observed foraging together west of the Lake Murray Bike Path approximately 420 feet north of the dam and 430 feet northeast of Pair No. 1.
2	4/27/20	Katie Bellon ¹ Dane van Tamelen ²	0845/1045	13.4 ac/ 6.7 ac/hr	67°F, wind 0 mph, 0% cloud cover 73°F, wind 3-7 mph, 0% cloud cover	<ul style="list-style-type: none"> • Single male, presumed to be the same male belonging to Pair No. 1, observed on the west side of the dam in the same general area where previously detected. • Pair No. 2 observed foraging separately in same general area where previously detected.
3	5/7/20	Katie Bellon ¹ Dane van Tamelen ²	0715/0955	13.4 ac/ 5.0 ac/hr	66°F, wind 0-1 mph, 2% cloud cover 80°F, wind 1-3 mph, 2% cloud cover	<ul style="list-style-type: none"> • Pair No. 1 not detected. • Single male, presumed to be the same male belonging to Pair No. 2, observed on the west side of the dam in the same general area where previously detected.

**Table 1 (cont.)
SURVEY INFORMATION**

Site Visit	Survey Date	Biologist(s)	Start/Stop Time	Approx. Acres Surveyed/ Acres per Hour	Start/Stop Weather Conditions	Survey Results
San Vicente Dam						
1	4/28/20	Mandy Mathews ¹	0645/1200	57.7 ac/ 11.0 ac/hr	54°F, wind 0-1 mph, 0% cloud cover 77°F, wind 1-3 mph, 0% cloud cover	No CAGN detected.
2	5/12/20	Mandy Mathews ¹	0700/1200	57.7 ac/ 11.5 ac/hr	55°F, wind 0-1 mph, 0% cloud cover 80°F, wind 1-3 mph, 0% cloud cover	No CAGN detected.
3	5/22/20	Mandy Mathews ¹	0800/1200	57.7 ac/ 14.4 ac/hr	60°F, wind 3-4 mph, 90% cloud cover 75°F, wind 2-4 mph, 0% cloud cover	<ul style="list-style-type: none"> • Single CAGN (CAGN No. 1) heard calling approximately 0.27 mile west of the dam and 330 feet east of the road leading to the San Vicente Boat Launching Facility.
Savage (Lower Otay) Dam						
1	4/16/20	Mandy Mathews ¹	0730/1030	23.6 ac/ 7.9 ac/hr	55°F, wind, 0-1 mph, 0% cloud cover 68°F, wind, 0-1 mph, 0% cloud cover	No CAGN detected.
2	4/27/20	Mandy Mathews ¹	0830/1030	23.6 ac/ 11.8 ac/hr	64°F, wind 1-3 mph, 70% cloud cover 73°F, wind 0-2 mph, 0% cloud cover	No CAGN detected.
3	5/7/20	Mandy Mathews ¹	0800/1015	23.6 ac/ 10.5 ac/hr	68°F, wind 0-1 mph, 0% cloud cover 83°F, wind 0-1 mph, 10% cloud cover	No CAGN detected.
Sutherland Dam						
1	4/23/20	Mandy Mathews ¹	0900/1200	12.9 ac/ 4.3 ac/hr	62°F, wind 0 mph, 0% cloud cover 75°F, wind 1-2 mph, 0% cloud cover	No CAGN detected.
2	5/6/20	Mandy Mathews ¹	0900/1130	12.9 ac/ 5.2 ac/hr	79°F, wind 0 mph, 0% cloud cover 86°F, wind 0 mph, 0% cloud cover	No CAGN detected.
3	5/19/20	Mandy Mathews ¹	0900/1200	12.9 ac/ 4.3 ac/hr	53°F, wind 1-3 mph, 90% cloud cover 65°F, wind 2-5 mph, 30% cloud cover	No CAGN detected.

**Table 1 (cont.)
SURVEY INFORMATION**

Site Visit	Survey Date	Biologist(s)	Start/Stop Time	Approx. Acres Surveyed/ Acres per Hour	Start/Stop Weather Conditions	Survey Results
Upper Otay Dam						
1	3/26/20	Mandy Mathews ¹	0650/1015	22.6 ac/ 6.6 ac/hr	48°F, wind 2-5 mph, 30% cloud cover 54°F, wind 2-5 mph, 50% cloud cover	<ul style="list-style-type: none"> • Pair (Pair No. 1) observed foraging together approximately 230 feet southwest of the dam, to the east and west of the dirt access path. • Pair (Pair No. 2) observed foraging together approximately 315 feet southwest of the dam, to the east of the direct access path, and approximately 100 feet south of Pair No. 1.
2	4/14/20	Mandy Mathews ¹ Dane van Tamelen ²	0730/1015	22.6 ac/ 8.2 ac/hr	55°F, wind 1-2 mph, 60% cloud cover 63°F, wind 2-5 mph, 0% cloud cover	<ul style="list-style-type: none"> • Single male, presumed to be the same male belonging to Pair No. 1, observed carrying nesting material and constructing a nest approximately 275 feet southwest of the dam and 40 feet east of the dirt access path. • Single male, presumed to be the same male belonging to Pair No. 2, heard calling approximately 55 feet southwest of the study area.
3	4/21/20	Mandy Mathews ¹ Dane van Tamelen ²	0700/1000	22.6 ac/ 7.5 ac/hr	55°F, wind 0-1 mph, 95% cloud cover 61°F, wind 0-1 mph, 90% cloud cover	<ul style="list-style-type: none"> • Pair No. 1 observed in same general area where previously detected. Previously detected nest completely constructed. • Pair No. 2 not detected.

¹ USFWS Permit TE-778195-14

² Supervised Individual

COASTAL CALIFORNIA GNATCATCHER HABITAT

Diegan coastal sage scrub (including disturbed, Baccharis dominated, and laurel sumac dominated) and coast sage-chaparral scrub were the only vegetation communities within the study areas determined to be suitable for CAGN (Figures 4b through 4j).

Diegan Coastal Sage Scrub (including disturbed, Baccharis Dominated, Laurel Sumac Dominated)

Coastal sage scrub is one of the two major shrub types that occur in southern California, occupying xeric sites characterized by shallow soils (the other is chaparral). Four distinct coastal sage scrub geographical associations (northern, central, Venturan, and Diegan) are recognized along the California coast. Diegan coastal sage scrub may be dominated by a variety of species depending upon soil type, slope, and aspect. Typical species found within Diegan coastal sage scrub include California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), laurel sumac (*Malosma laurina*), and black sage (*Salvia mellifera*). Disturbed Diegan coastal sage scrub contains many of the same shrub species as undisturbed Diegan coastal sage scrub but is sparser and has a higher proportion of non-native, annual species. Baccharis dominated Diegan coastal sage scrub is a subtype of coastal sage scrub that is dominated by broom baccharis (*Baccharis sarothroides*) or coyote brush (*B. pilularis*). It often occurs on disturbed sites and areas with nutrient-poor soils, and on upper terraces of streams and in detention basins, where it may include goldenbush (*Isocoma menziesii*). Laurel sumac dominated Diegan coastal sage scrub is a subtype of coastal sage scrub that is dominated by laurel sumac.

Diegan coastal sage scrub within the survey area is dominated by California sagebrush, California buckwheat, black sage, white sage (*Salvia apiana*), San Diego County sunflower (*Bahiopsis laciniata*), and California encelia (*Encelia californica*). Diegan coastal sage scrub occurs within the Chollas Dam, El Capitan Dam, Hodges, Dam, Miramar Dam, Murray Dam, Savage Dam, Sutherland Dam, and Upper Otay Dam study areas. Disturbed Diegan coastal sage scrub within the survey area is dominated by mustard (*Brassica nigra* and *Hirschfeldia incana*), crown daisy (*Glebionis coronaria*), and thistles (*Sonchus* spp. and *Centaurea* sp.) with abundant non-native grass (*Avena* spp. and *Bromus* spp.). Disturbed Diegan coastal sage scrub occurs within the Chollas, El Capitan, Hodges, San Vicente, and Sutherland study areas. Baccharis dominated Diegan coastal sage scrub within the survey area was dominated by broom baccharis and is present within the El Capitan Dam and Murray Dam study areas. Laurel sumac dominated Diegan coastal sage scrub occurs within the Savage Dam study area.

Coastal Sage-Chaparral Scrub

Coastal sage-chaparral scrub is a mixture of sclerophyllous chaparral shrubs and drought-deciduous sage scrub species regarded as an ecotone (transition) between two vegetation communities. This singular community contains floristic elements of both communities in the survey area including California sagebrush, California buckwheat, black sage, chaparral beardtongue (*Keckiella antirrhinoides*), chamise (*Adenostoma fasciculatum*), Mission manzanita (*Xylococcus bicolor*), and scrub oak (*Quercus berberidifolia*).

Coastal sage-chaparral scrub within the survey area is dominated by California sagebrush, California buckwheat, black sage, white sage, San Diego County sunflower, and California encelia. Coastal sage-chaparral scrub occurs within the El Capitan, Miramar, and Sutherland study areas.

RESULTS

Survey information and results for each dam site are presented separately below.

Barrett Dam

A habitat assessment for the coastal California gnatcatcher was conducted at the Barrett Dam study area on February 24, 2020. No suitable coastal sage scrub habitat with potential to support the species was observed within the study area during the site visit and no CAGN were detected (Figure 4a).

Vegetation within the Barrett Dam study area is characterized by southern mixed chaparral dominated by chamise and lilac (*Ceanothus* spp.). Due to the lack of suitable habitat at Barrett Dam, no focused surveys were conducted at this site.

Chollas Dam

A total of five pairs of CAGN, three single males, and one juvenile were detected during the Chollas Dam survey effort, although not all individuals were detected during each survey visit (Figure 4b, *2020 Coastal California Gnatcatcher Survey Results – Chollas Dam*). Three CAGN pairs (Pair No. 1, Pair No. 2, and Pair No. 3) and two male gnatcatchers (Male No. 1 and Male No. 2) were detected within the study area. Two CAGN pairs (Pair No. 4 and Pair No. 5), one male gnatcatcher (Male No. 3), and one juvenile gnatcatcher were detected outside of the study area. A detailed description of CAGN locations and observations within the Chollas Dam study area is included below.

A gnatcatcher pair (Pair No. 1) was detected in the southwestern portion of the study area approximately 510 feet west of the dam and 430 feet south of the dirt access road (Figure 4b). A single male, presumed to be the same male belonging to Pair No. 1, was observed foraging and calling during the first survey. Both the male and female were detected during the second survey and were observed carrying nesting material into a lemonade berry (*Rhus integrifolia*) shrub. During the third survey, the pair was observed foraging over a large area and carrying food material suggesting that the pair was in the process of feeding nestlings.

Another pair of CAGN (Pair No. 2) was detected in the southern portion of the study area approximately 270 feet west of the dam and 250 feet east of male from Pair No. 1 (Figure 4b). A single male, presumed to be the same male belonging to the male from Pair No. 2, was observed foraging and calling during the first survey visit. During the second survey, both the male and female were observed foraging together and the female was also observed carrying nesting material. Neither the male nor female were detected during the third survey.

A gnatcatcher pair (Pair No. 3) was detected in the northern portion of the study area approximately 245 feet north of the dam (Figure 4b). During the first survey, a single male, presumably the same male belonging to Pair No. 3, was observed foraging and calling. Both the male and female were detected during the second and third surveys in the same general area. The male was observed carrying nesting material during the second survey. Both the male and female were observed foraging over a large area and carrying food material during the third survey suggesting that they were in the process of feeding nestlings.

A gnatcatcher pair (Pair No. 4) was detected outside of the study area approximately 0.3-mile west of the dam and 55 feet north of the dirt access path (Figure 4b). A single male was detected within area

during the first and second survey visits. During the third survey, two gnatcatchers were heard calling within the area indicating that a pair was present.

A gnatcatcher pair (Pair No. 5) was detected outside of the study area approximately 840 feet west of the dam, 230 feet south of the dirt access road, and 315 feet northwest of male from Pair No. 1 (Figure 4b). A single male was observed foraging within the area during the first survey. A gnatcatcher was heard calling from the same general area during the second survey but was not visually identified. During the third survey, an adult female gnatcatcher was observed feeding a single juvenile in the same general area and is presumed to be associated with the previously detected male.

A single male gnatcatcher (Male No. 1) was observed along the southwestern boundary of the study area approximately 615 feet west of the dam and 130 feet southwest of Pair No. 1 (Figure 4b). A single male was observed foraging during the first survey but was not detected during the second and third surveys.

A single male gnatcatcher (Male No. 2) was observed in the northwestern portion of the study area approximately 360 feet northwest of the dam and 310 feet west of Pair No. 2 (Figure 4b). A single gnatcatcher was heard calling during the first survey and a male was observed foraging within area during the second survey. A gnatcatcher was heard calling within the dense vegetation during the third survey visit but was not visually identified. It was assumed that the calling individual was the same male observed during the previous survey.

A single male gnatcatcher (Male No. 3) was detected outside of the study area approximately 0.3-mile west of the dam, 160 feet south of the dirt access road, and 270 feet south of Pair No. 4 (Figure 4b). No gnatcatchers were detected within the area during the first survey visit. A single gnatcatcher was heard calling within the area during the second visit but was not visually identified. A single male was observed foraging in the area during the third survey and is assumed to represent the same individual heard calling during the previous survey.

El Captain Dam

No coastal California gnatcatchers were detected within the El Capitan Dam study area during the surveys (Figure 4c, *2020 Coastal California Gnatcatcher Survey Results – El Capitan Dam*). The CAGN is assumed to be absent from the El Capitan Dam study area.

Hodges Dam

No coastal California gnatcatchers were detected within the Hodges study area during the surveys (Figure 4d, *2020 Coastal California Gnatcatcher Survey Results – Hodges Dam*). The CAGN is assumed to be absent from the Hodges Dam study area.

Miramar Dam

A total of two pairs of CAGN were detected within the Miramar Dam study area during the survey effort, although not all individuals were detected during each survey visit (Figure 4e, *2020 Coastal California Gnatcatcher Survey Results – Miramar Dam*). A detailed description of CAGN locations and observations within the Miramar Dam study area is included below.

One pair of CAGN (Pair No. 1) was detected approximately 480 feet southwest of the dam and 185 feet north of Scripps Lake Drive (Figure 4e). The pair was observed during all three surveys. During the first survey, the pair was detected calling and foraging on both sides of an asphalt access road located at the bottom of the dam. The pair was observed carrying nesting material and constructing a nest within a San Diego County viguiera (*Bahiopsis laciniata*) shrub just north of the access road during the second survey. The pair was observed in the same general area during the third survey. The male was observed foraging throughout area and was observed entering the same San Diego County viguiera shrub where the pair was previously detected carrying nest material. A female gnatcatcher was observed exiting the same shrub shortly after the male entered suggesting the pair was incubating a nest.

A second pair of CAGN (Pair No. 2) was detected approximately 445 feet west of the dam and 820 feet northwest of Pair No. 1 (Figure 4e). The pair was detected calling and foraging on both sides of an asphalt access road located at the bottom of the dam during the first survey; however, only a single individual presumably belonging to the same pair was heard calling second survey. A single male, presumably the same male belonging the Pair No. 2, was observed in the same general area during the third survey visit.

Murray Dam

A total of two pairs of CAGN were detected within the Murray Dam study area during the survey effort, although not all individuals were detected during each survey visit (Figure 4f, *2020 Coastal California Gnatcatcher Survey Results – Murray Dam*). A detailed description of CAGN locations and observations within the Murray Dam study area is included below.

One pair of CAGN (Pair No. 1) was detected immediately west of the dam at the southern terminus of Lake Murray Bike Path (Figure 4f). The pair was observed foraging together during the first survey and a single male, presumably the same male belonging to pair No. 1, was detected during the second survey in the same general area. Neither the male nor female from Pair No. 1 was detected during the third survey.

A second pair of CAGN (Pair No. 2) was detected approximately 420 feet north of the dam and west of the Lake Murray Bike Path, and 430 feet northeast of Pair No. 1 (Figure 4f). The pair was detected foraging just west of the existing fence line during the first and second surveys. A single male, presumably the same male belonging to Pair No. 2, was detected during the third survey in the same general area.

San Vicente Dam

A single CAGN was detected within the San Vicente Dam study area during the survey effort (Figure 4g, *2020 Coastal California Gnatcatcher Survey Results – San Vicente Dam*). No gnatcatchers were detected within the study area during the first and second surveys. During the third survey, a single gnatcatcher (CAGN No. 1) was heard calling approximately 0.27-mile west of the dam and 300 feet east of the road leading the San Vicente Boat Launching Facility.

Savage Dam

No CAGN were detected within the Savage (Lower Otay) Dam study area during the surveys (Figure 4h, *2020 Coastal California Gnatcatcher Survey Results – Savage Dam*). The CAGN is assumed to be absent from the Savage Dam study area.

Sutherland Dam

No CAGN were detected within the Sutherland Dam study area during the surveys (Figure 4i, *2020 Coastal California Gnatcatcher Survey Results – Sutherland Dam*). The CAGN is assumed to be absent from the Sutherland Dam study area.

Upper Otay Dam

A total of two pairs of CAGN were detected within the Upper Otay Dam study area during the survey effort, although not all individuals were detected during each survey visit (Figure 4j, *2020 Coastal California Gnatcatcher Survey Results – Upper Otay Dam*). A detailed description of CAGN locations and observations within the Upper Otay Dam study area is included below.

One pair of CAGN (Pair No. 1) was detected in the western portion of the study area approximately 230 feet southwest of the dam (Figure 4j). The male and female were observed foraging together during the first survey to the east and west of the dirt access path that leads to the dam. During the second survey, a male was observed carrying nesting material and constructing a nest approximately 275 feet southwest of the dam and 40 feet east of the direct access path; the female was not detected. The nest was located approximately two feet off the ground within a Munz's sage (*Salvia munzii*) shrub. The pair was observed foraging within same general area during the third survey and flying to the previously detected nest. The nest was observed to be completely constructed.

A second pair of CAGN (Pair No. 2) was detected approximately 315 feet southwest of the dam to the east of the direct access path leading the dam and south of Pair No. 1 (Figure 4j). The pair was detected foraging throughout the area during the first survey. A single male, presumably belonging to Pair No. 2, was heard calling approximately 55 feet southwest of the study area during the second survey. The pair was not detected during the third survey.

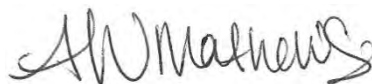
CERTIFICATION

I certify that the information in this survey report and enclosed exhibit fully and accurately represent our work. Please contact Shelby Howard or Erica Harris at (619) 462-1515 if you have any questions.

Sincerely,



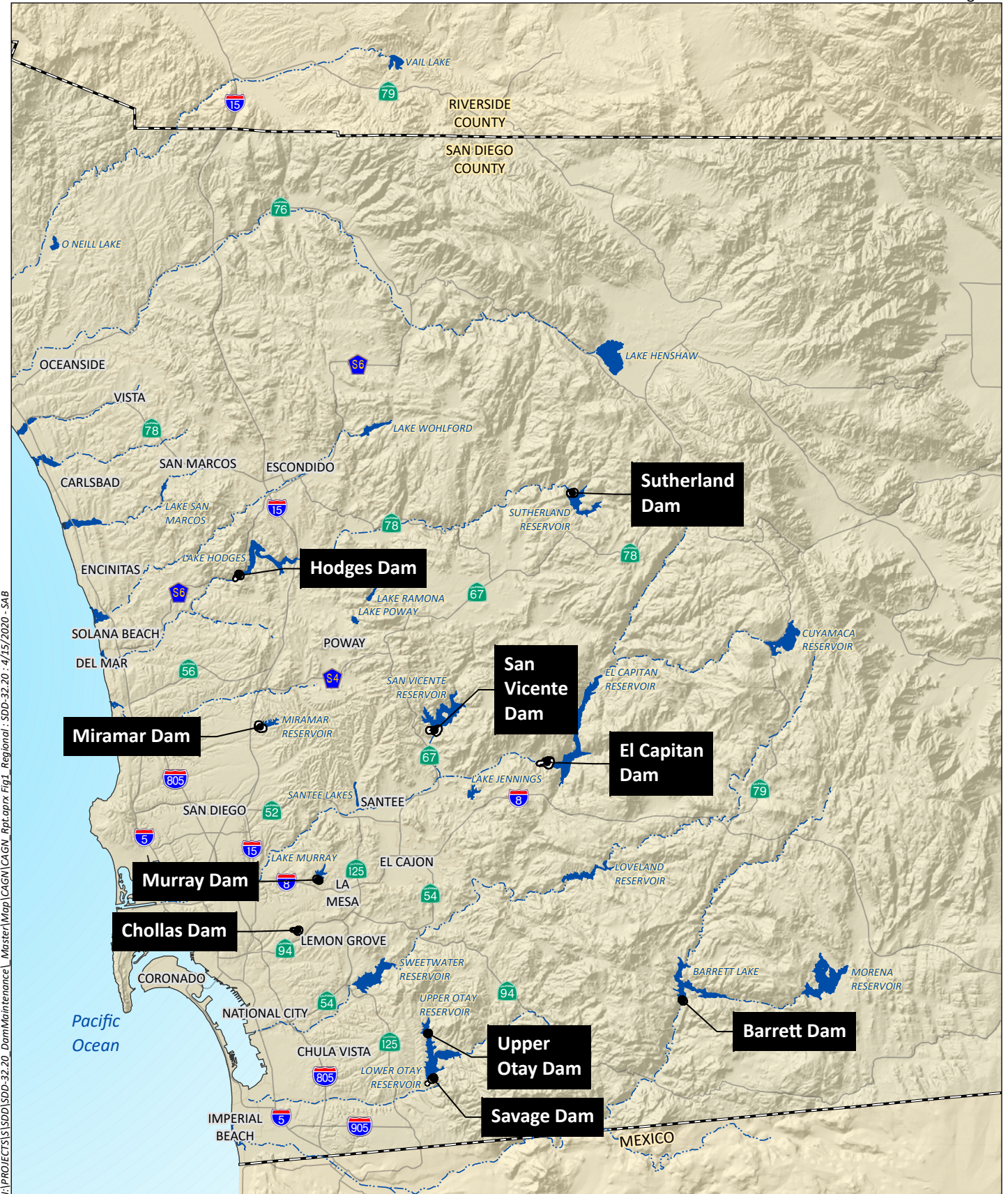
Katie Bellon
Biologist



Mandy Mathews
Biologist

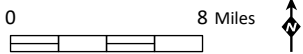
Attachments:

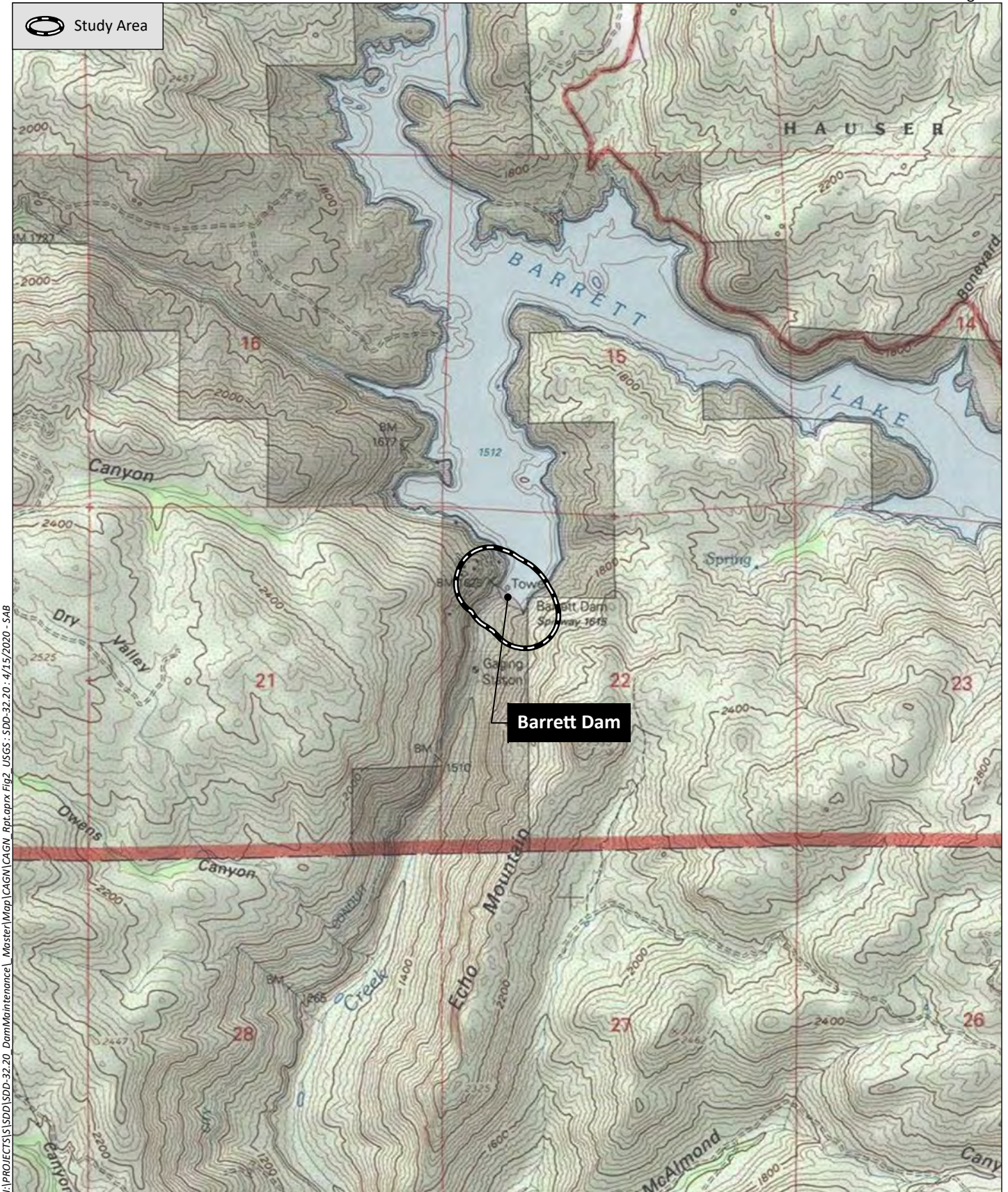
- Figure 1: Regional Location
- Figure 2a: USGS Topography – Barrett Dam
- Figure 2b: USGS Topography – Chollas Dam
- Figure 2c: USGS Topography – El Capitan Dam
- Figure 2d: USGS Topography – Hodges Dam
- Figure 2e: USGS Topography – Miramar Dam
- Figure 2f: USGS Topography – Murray Dam
- Figure 2g: USGS Topography – San Vicente Dam
- Figure 2h: USGS Topography – Savage Dam
- Figure 2i: USGS Topography – Sutherland Dam
- Figure 2j: USGS Topography – Upper Otay Dam
- Figure 3a: Aerial Photograph – Barrett Dam
- Figure 3b: Aerial Photograph – Chollas Dam
- Figure 3c: Aerial Photograph – El Capitan Dam
- Figure 3d: Aerial Photograph – Hodges Dam
- Figure 3e: Aerial Photograph – Miramar Dam
- Figure 3f: Aerial Photograph – Murray Dam
- Figure 3g: Aerial Photograph – San Vicente Dam
- Figure 3h: Aerial Photograph – Savage Dam
- Figure 3i: Aerial Photograph – Sutherland Dam
- Figure 3j: Aerial Photograph – Upper Otay Dam
- Figure 4a: 2020 Coastal California Gnatcatcher Habitat Assessment Results – Barrett Dam
- Figure 4b: 2020 Coastal California Gnatcatcher Survey Results – Chollas Dam
- Figure 4c: 2020 Coastal California Gnatcatcher Survey Results – El Capitan Dam
- Figure 4d: 2020 Coastal California Gnatcatcher Survey Results – Hodges Dam
- Figure 4e: 2020 Coastal California Gnatcatcher Survey Results – Miramar Dam
- Figure 4f: 2020 Coastal California Gnatcatcher Survey Results – Murray Dam
- Figure 4g: 2020 Coastal California Gnatcatcher Survey Results – San Vicente Dam
- Figure 4h: 2020 Coastal California Gnatcatcher Survey Results – Savage Dam
- Figure 4i: 2020 Coastal California Gnatcatcher Survey Results – Sutherland Dam
- Figure 4j: 2020 Coastal California Gnatcatcher Survey Results – Upper Otay Dam



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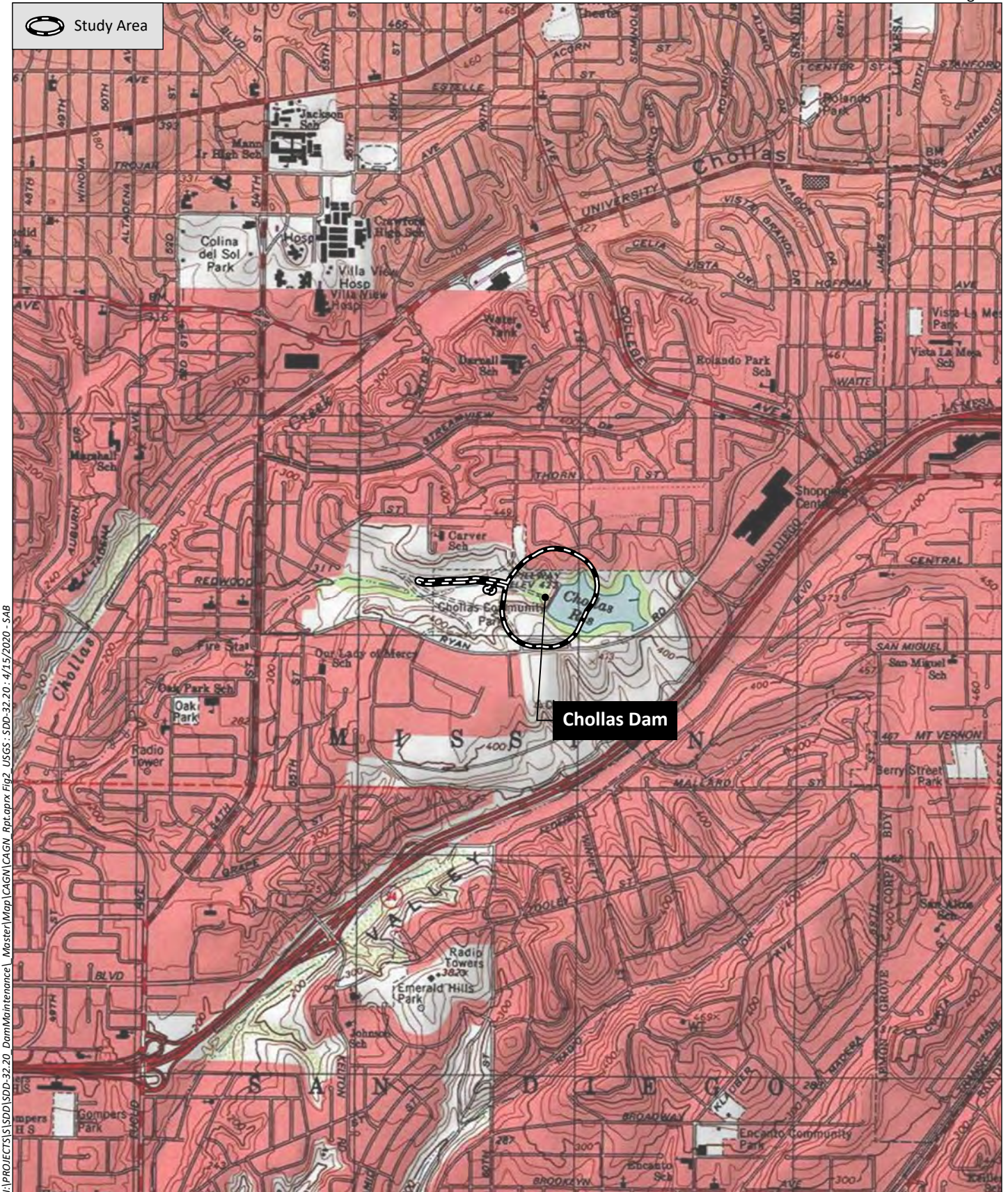
Source: Base Map Layers (SanGIS, 2016)





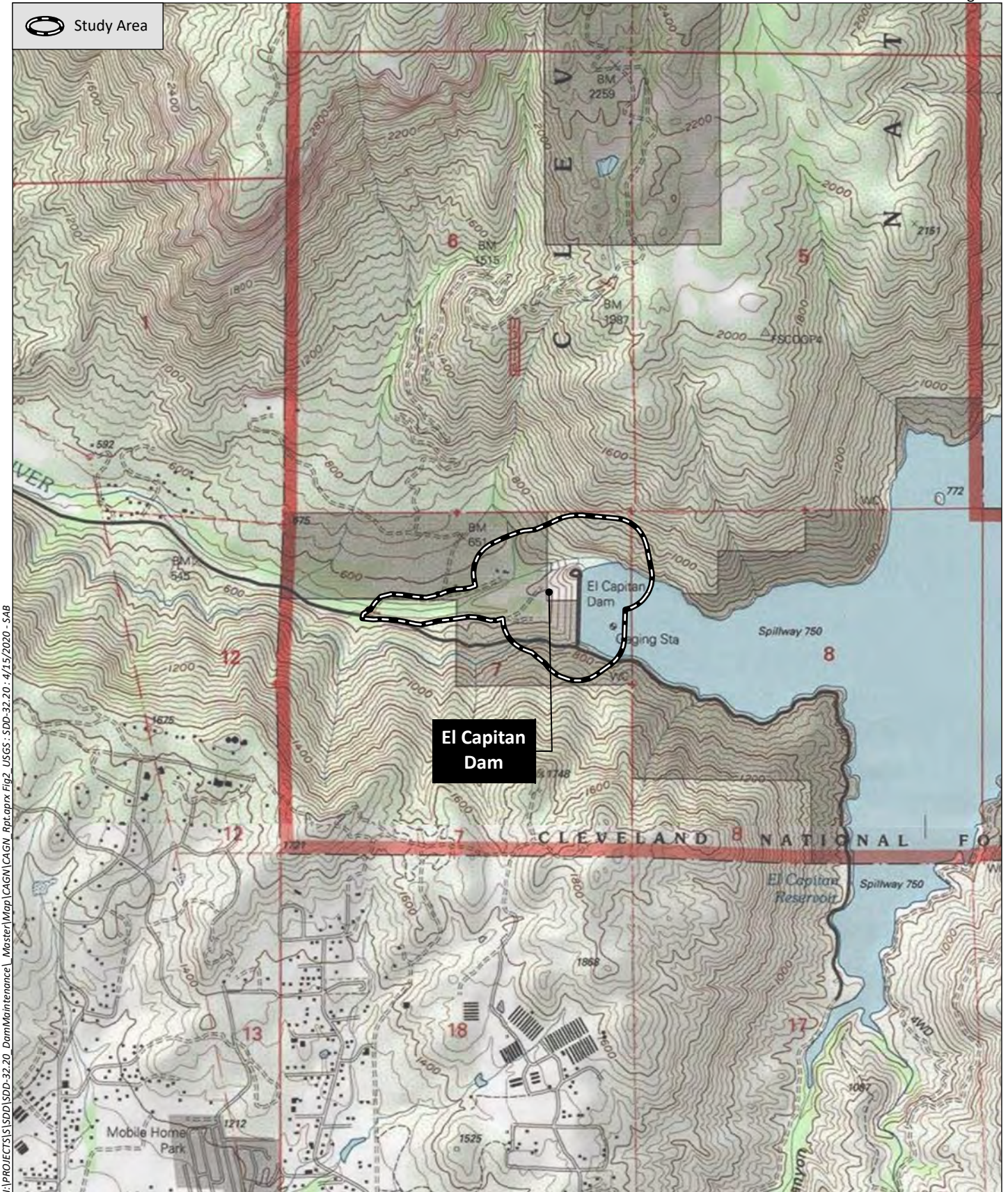
I:\PROJECTS\1501\SDD\SDD-32.20 DamMaintenance\Master\Map\CAGN\CAGN_Rpt.aprx Fig2 USGS : SDD-32.20 : 4/15/2020 - SAB

Source: BARRETT LAKE 7.5' Quad (USGS)

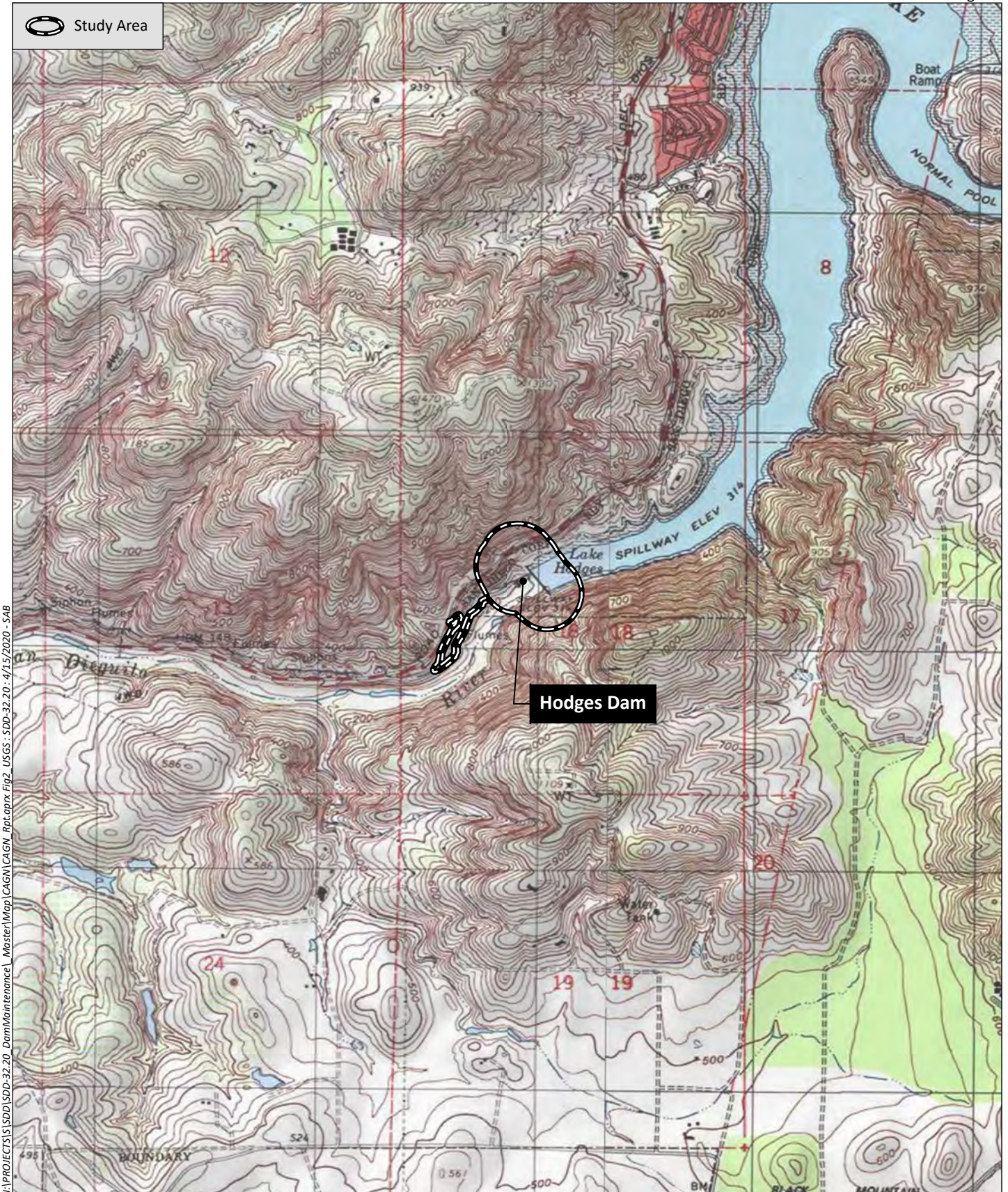


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Source: NATIONAL CITY 7.5' Quad (USGS)

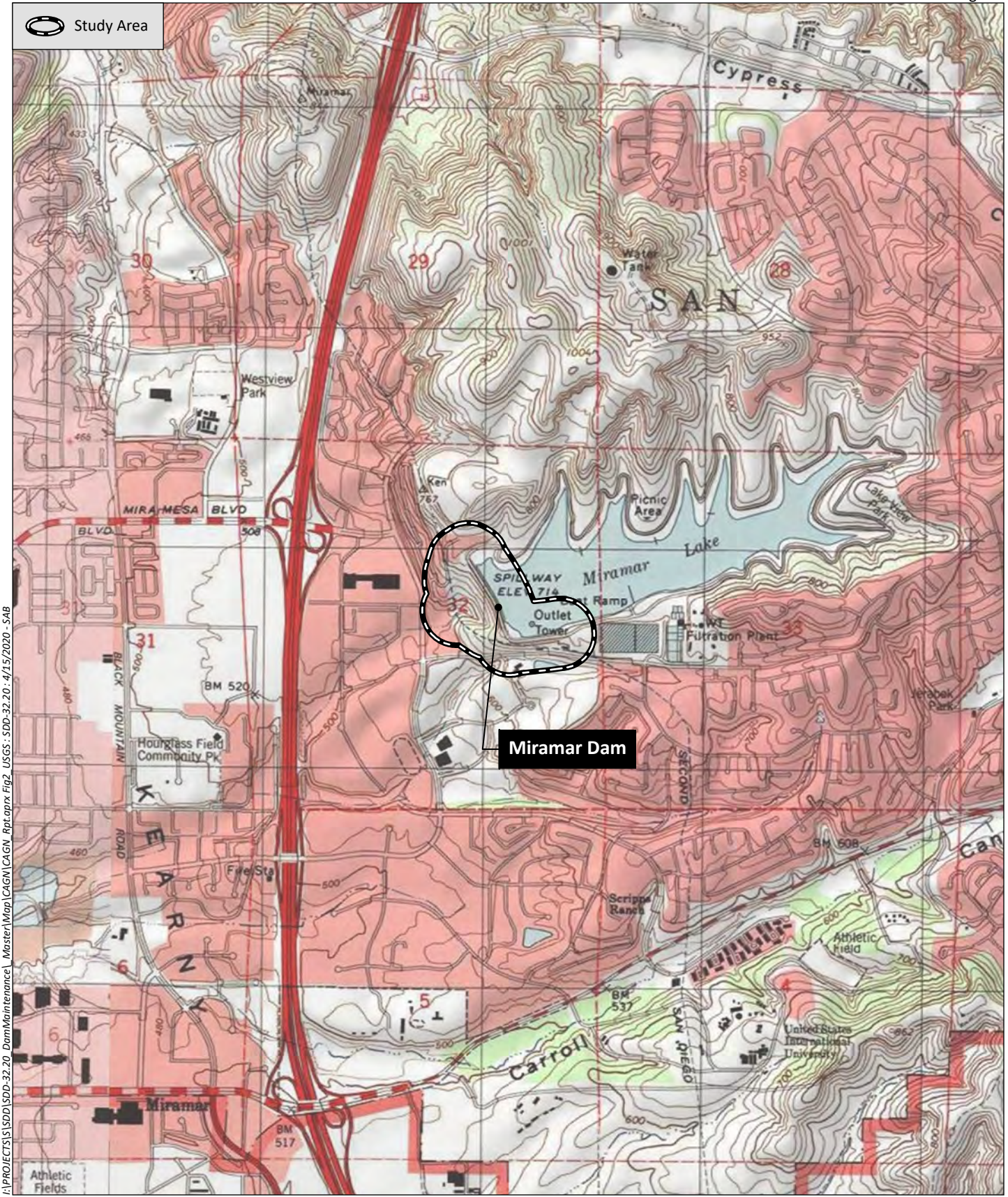


Source: EL CAJON MTN. 7.5' Quad (USGS)



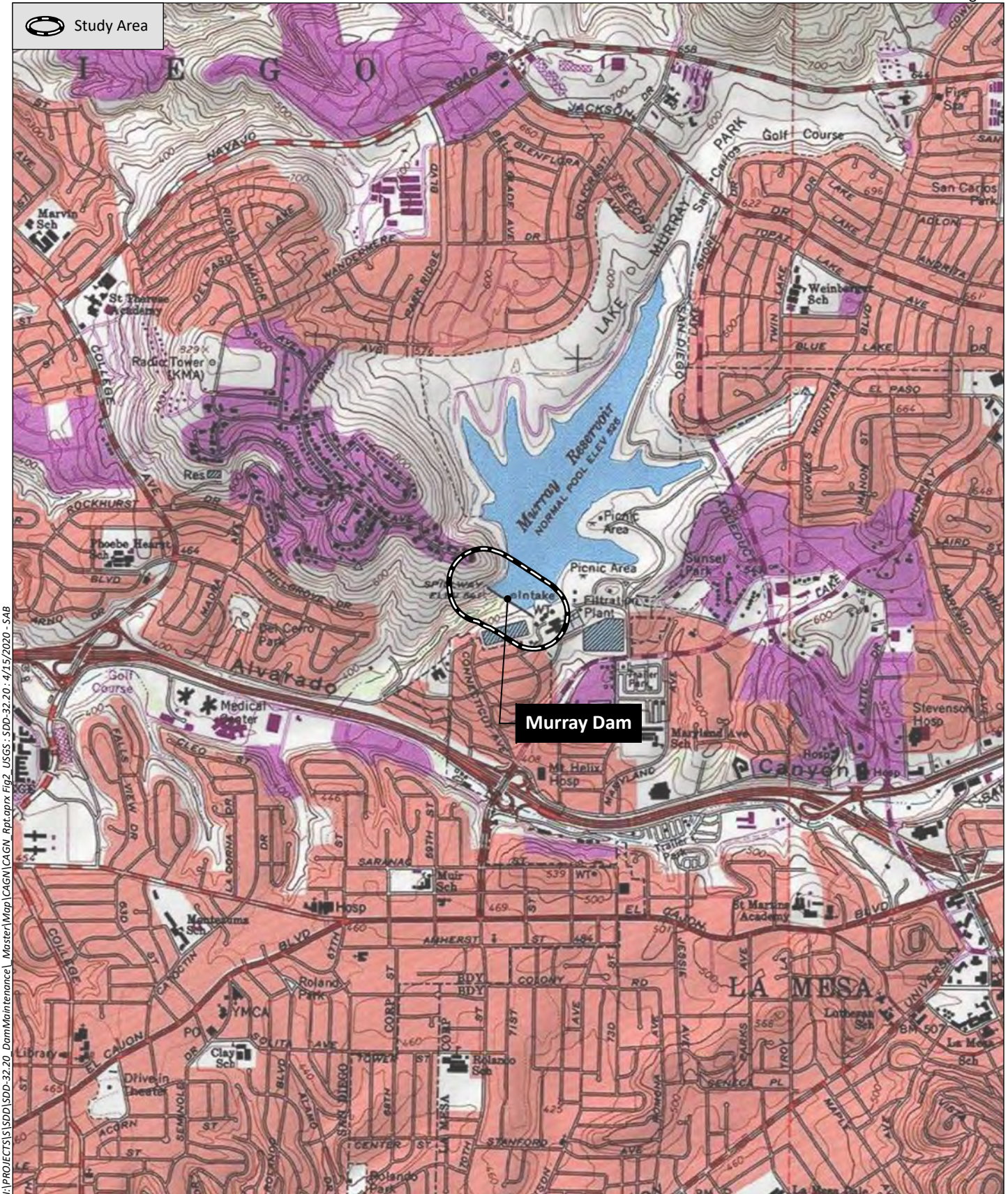
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Source: RANCHO SANTA FE 7.5' Quad (USGS)

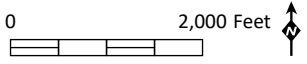


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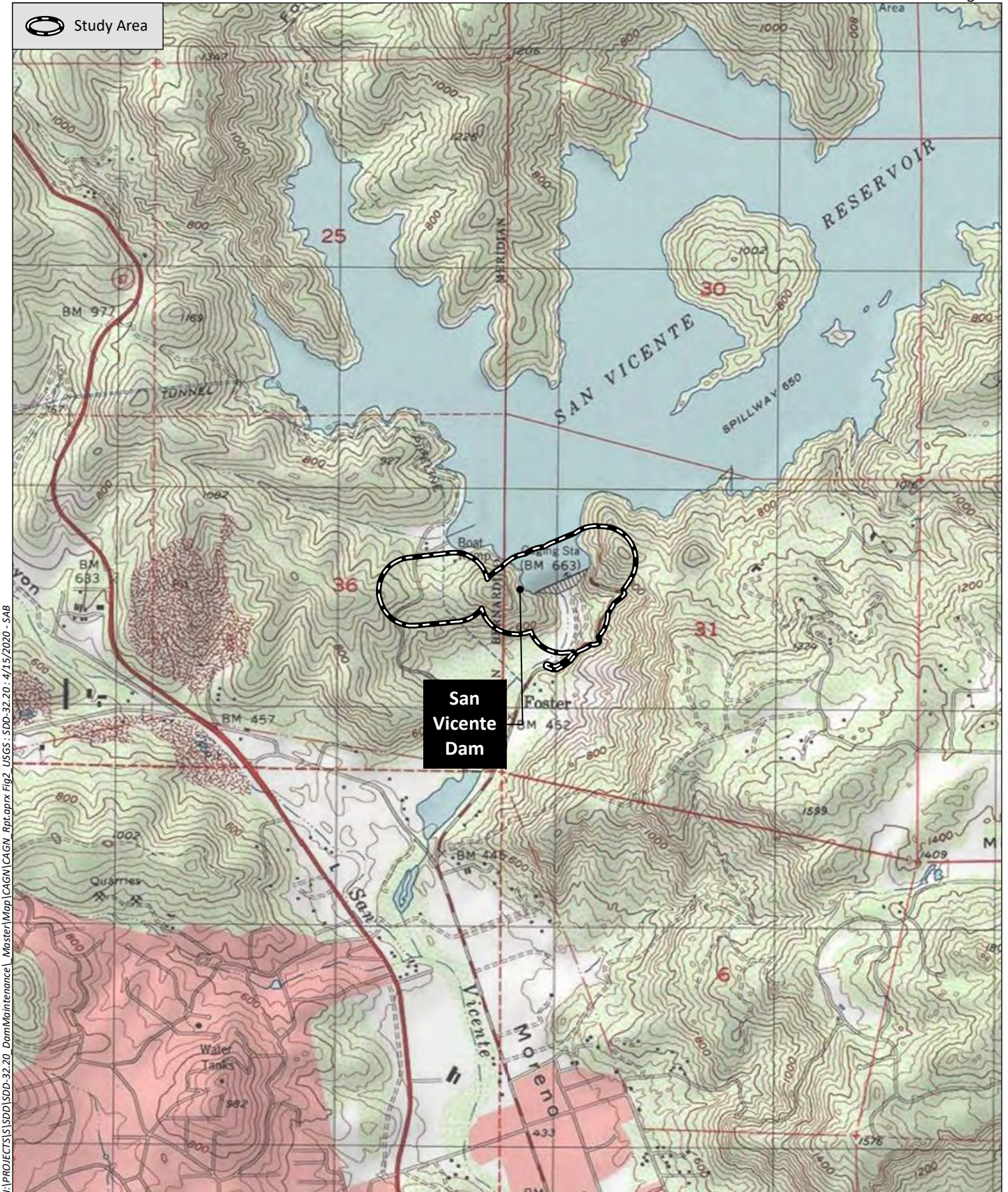
Source: POWAY 7.5' Quad (USGS)



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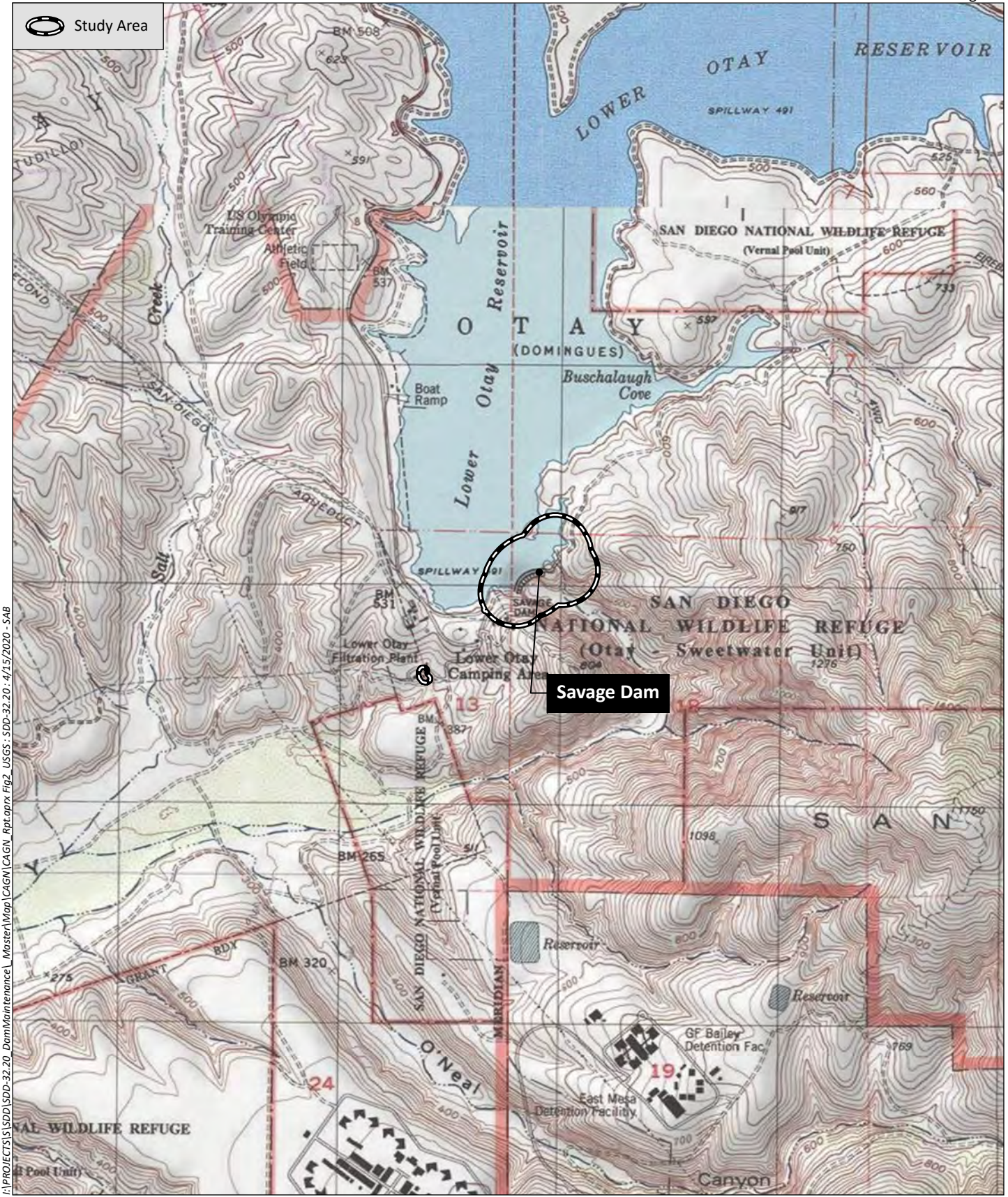


Source: LA MESA 7.5' Quad (USGS)



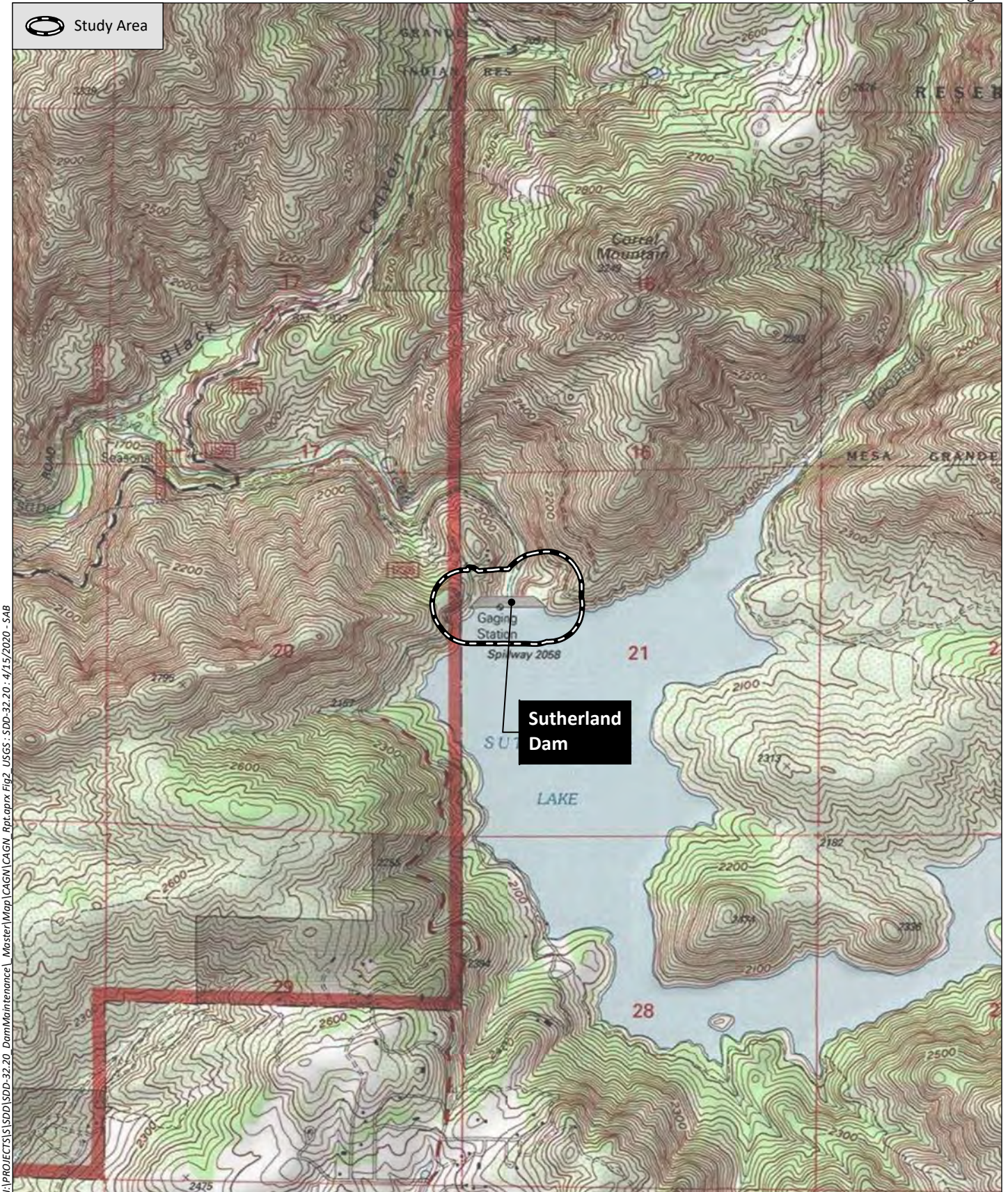
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Source: SAN VICENTE RESERVOIR 7.5' Quad (USGS)



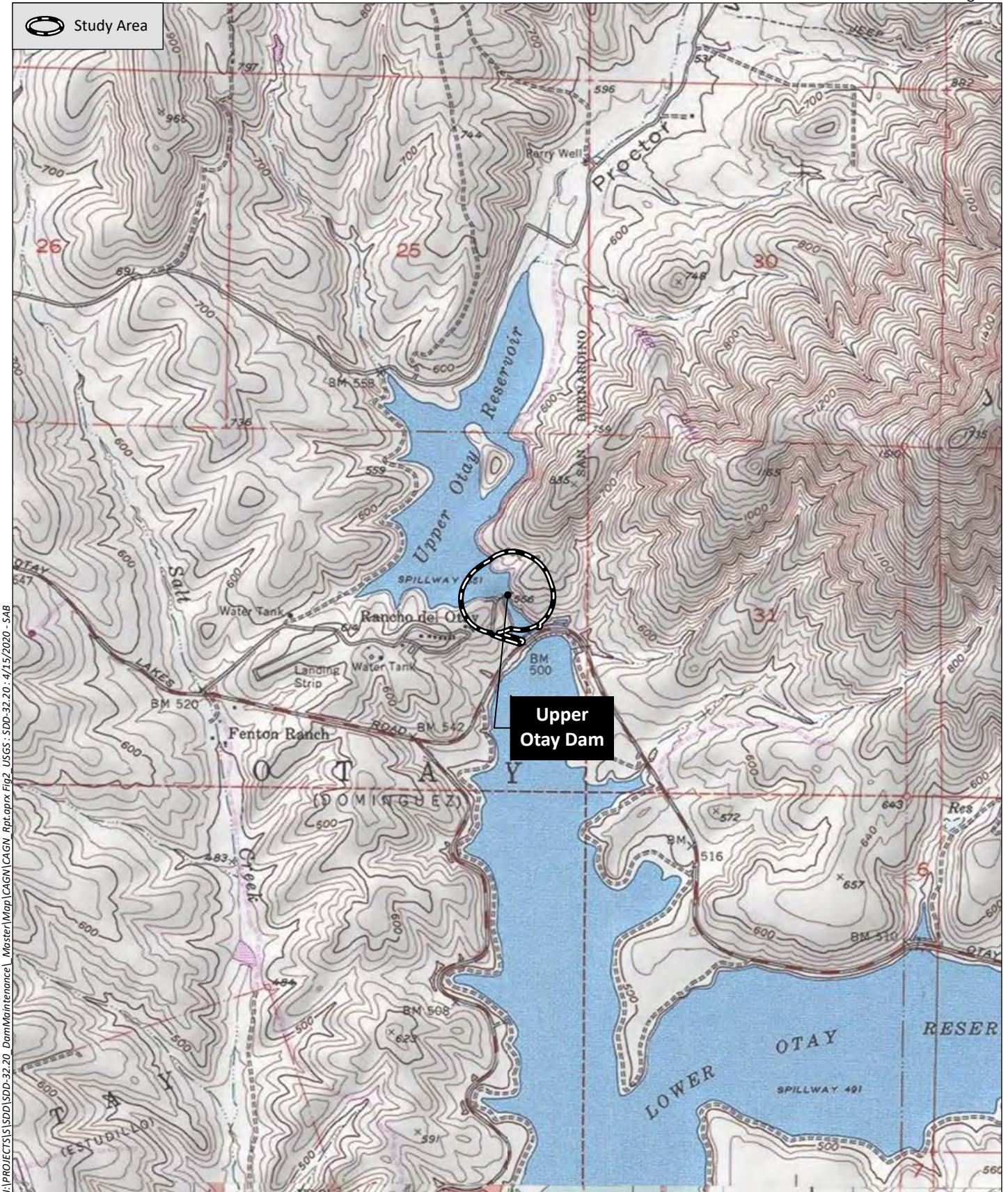
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Source: OTAY MESA 7.5' Quad (USGS)



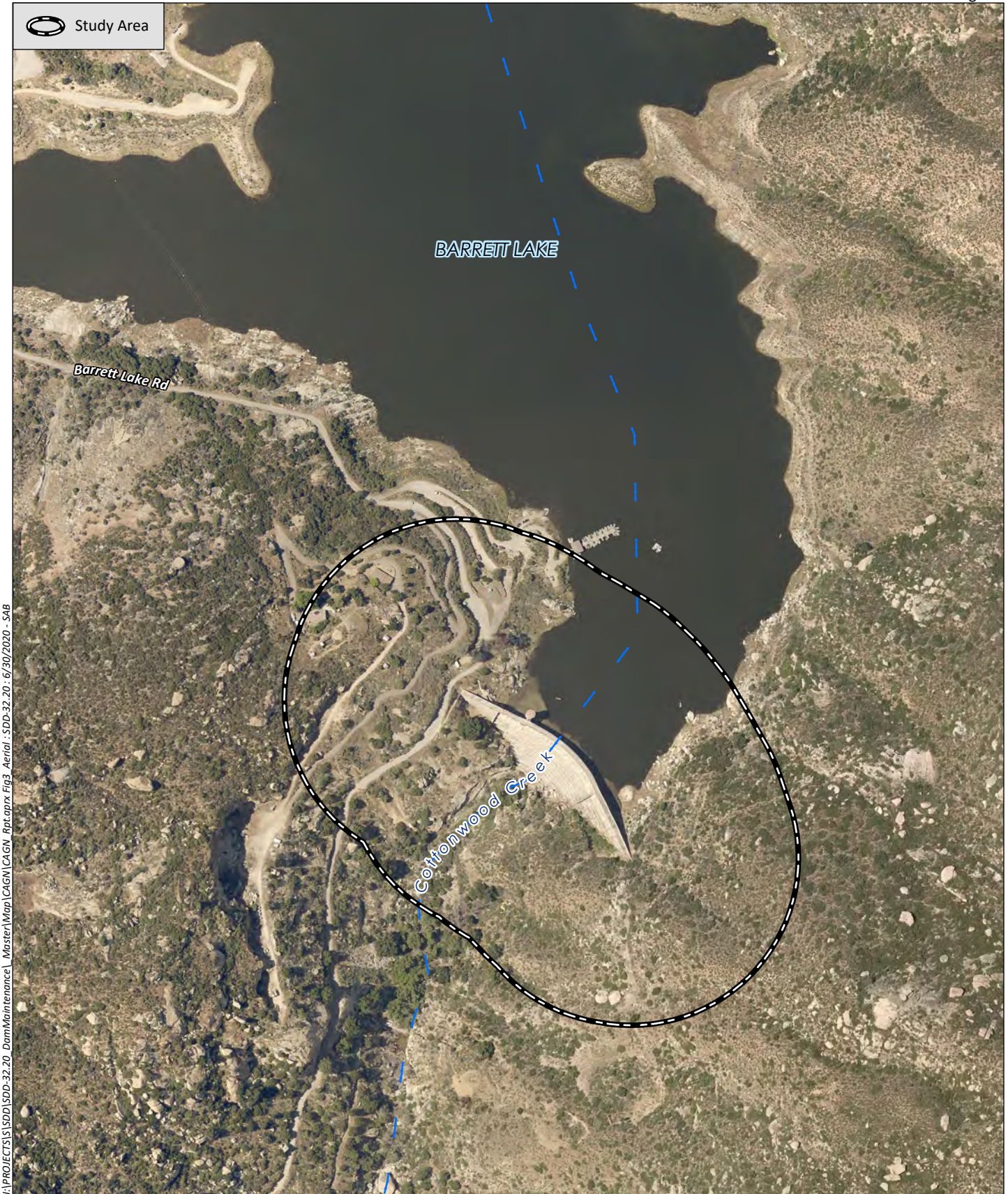
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Source: RAMONA 7.5' Quad (USGS)



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Source: JAMUL MOUNTAINS 7.5' Quad (USGS)



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0 400 Feet

Source: Aerial (SanGIS, 2017)

Project Vicinity Aerial Photograph - Barrett Dam



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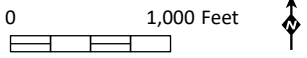
Source: Aerial (SanGIS, 2017)

Project Vicinity Aerial Photograph - Chollas Dam

Figure 3b



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Source: Aerial (SanGIS, 2017)

Project Vicinity Aerial Photograph - El Capitan Dam

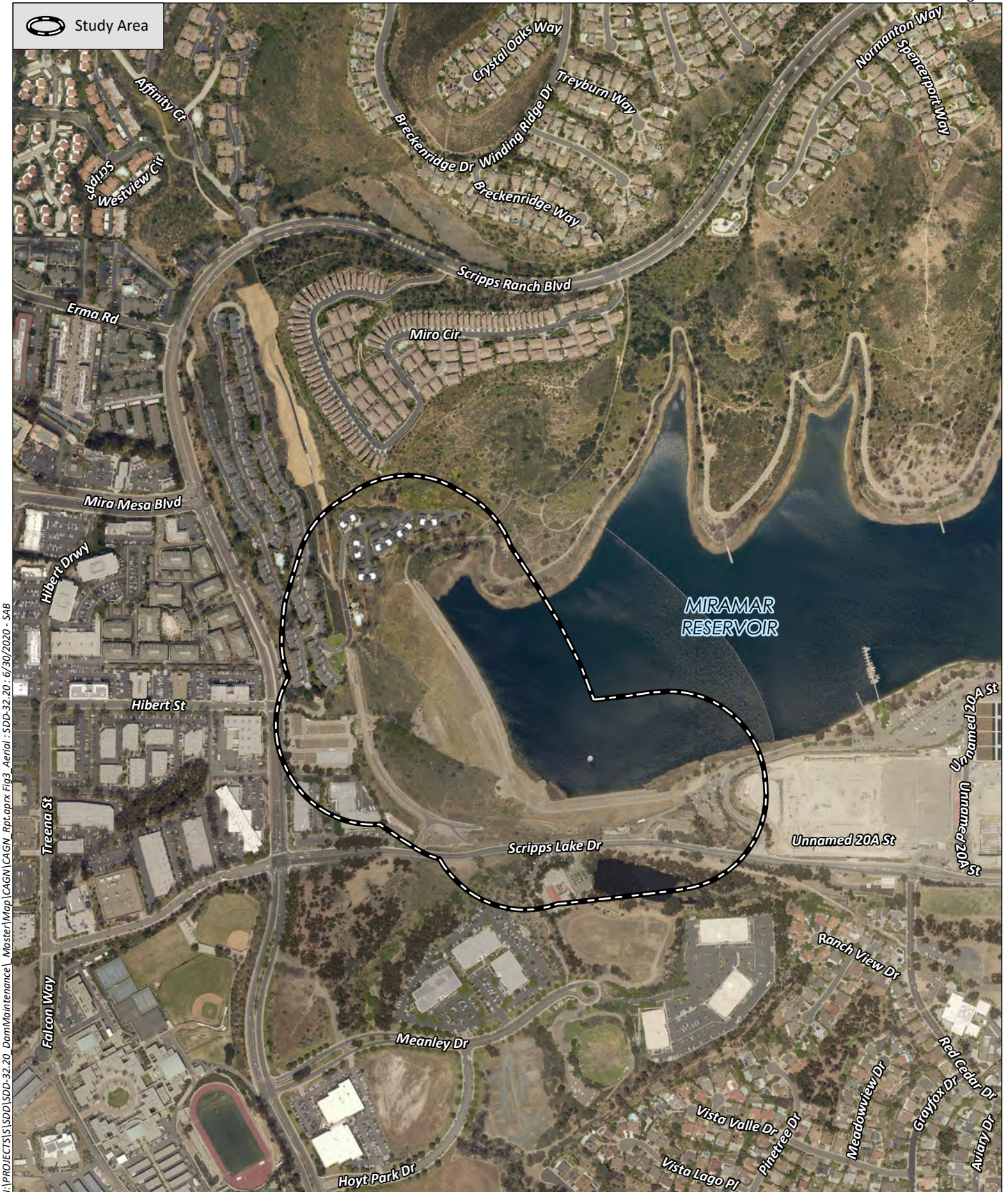


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Source: Aerial (SanGIS, 2017)

Project Vicinity Aerial Photograph - Hodges Dam

Figure 3d



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Source: Aerial (SanGIS, 2017)

Project Vicinity Aerial Photograph - Miramar Dam

Figure 3e



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Project Vicinity Aerial Photograph - Murray Dam

Figure 3f



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Source: Aerial (SanGIS, 2017)

Project Vicinity Aerial Photograph - San Vicente Dam

Figure 3g

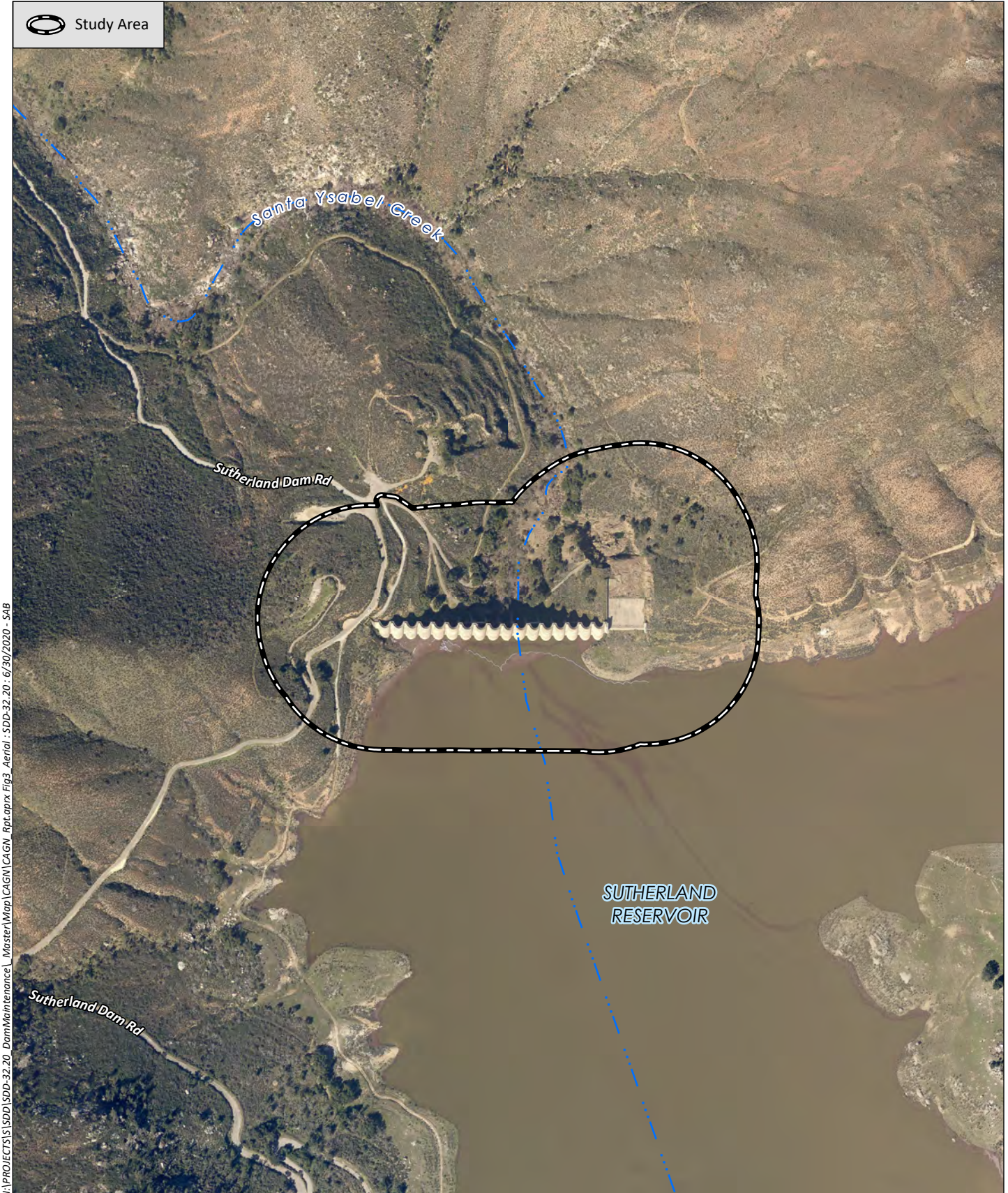


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Source: Aerial (SanGIS, 2017)

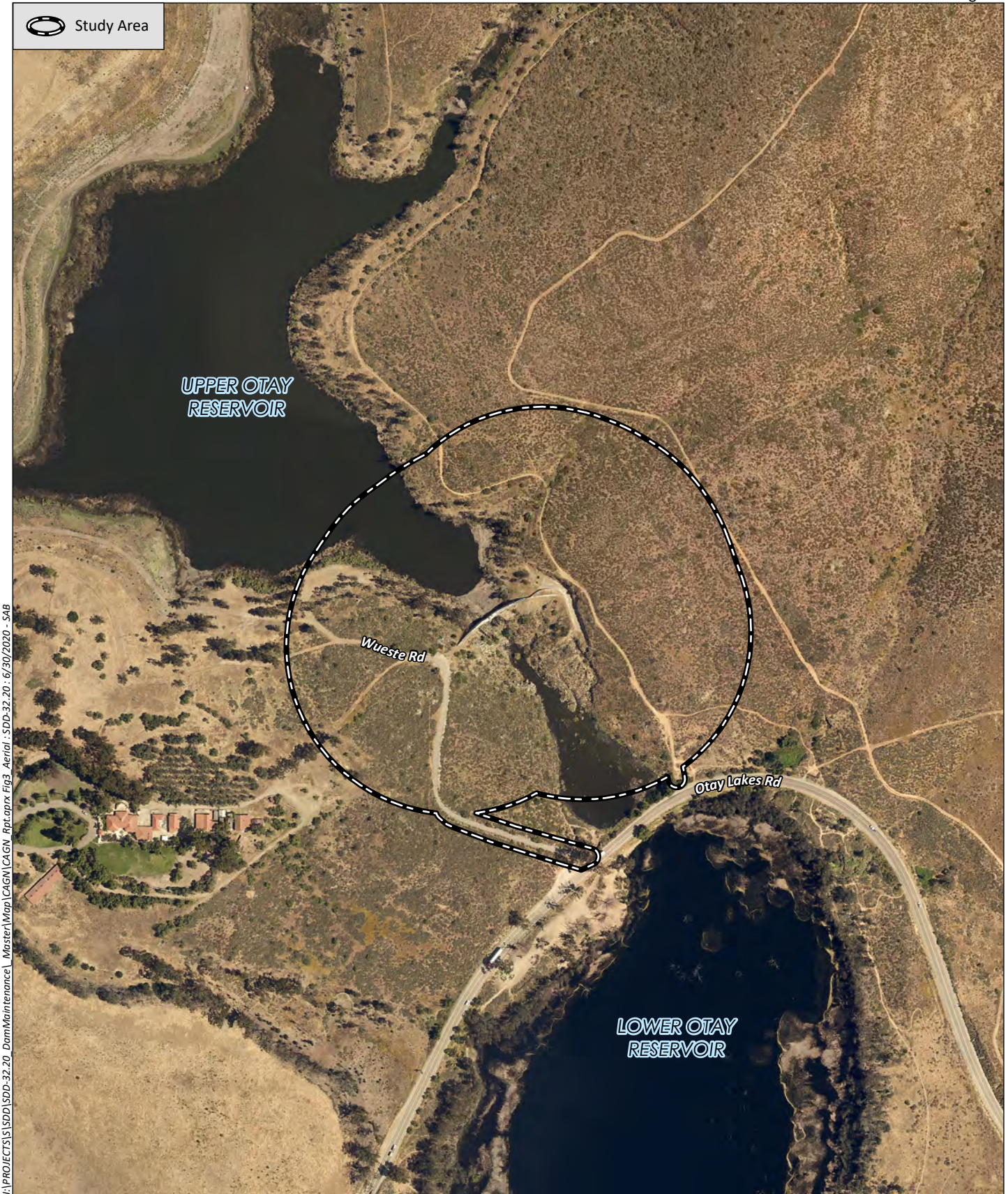
Project Vicinity Aerial Photograph - Savage Dam

Figure 3h



Project Vicinity Aerial Photograph - Sutherland Dam


Figure 3i









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0 400 Feet

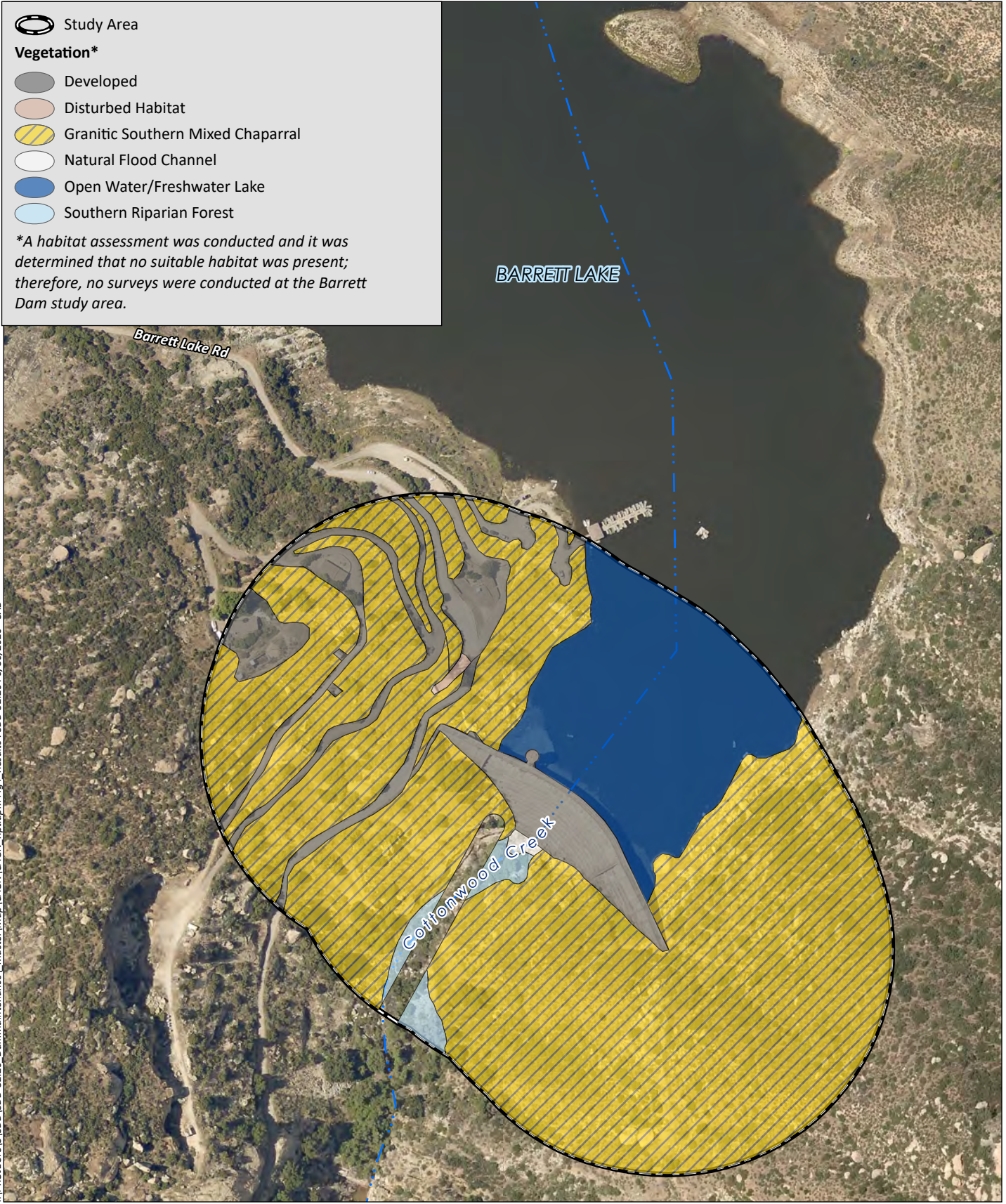
Source: Aerial (SanGIS, 2017)

 Study Area

Vegetation*

-  Developed
-  Disturbed Habitat
-  Granitic Southern Mixed Chaparral
-  Natural Flood Channel
-  Open Water/Freshwater Lake
-  Southern Riparian Forest

**A habitat assessment was conducted and it was determined that no suitable habitat was present; therefore, no surveys were conducted at the Barrett Dam study area.*



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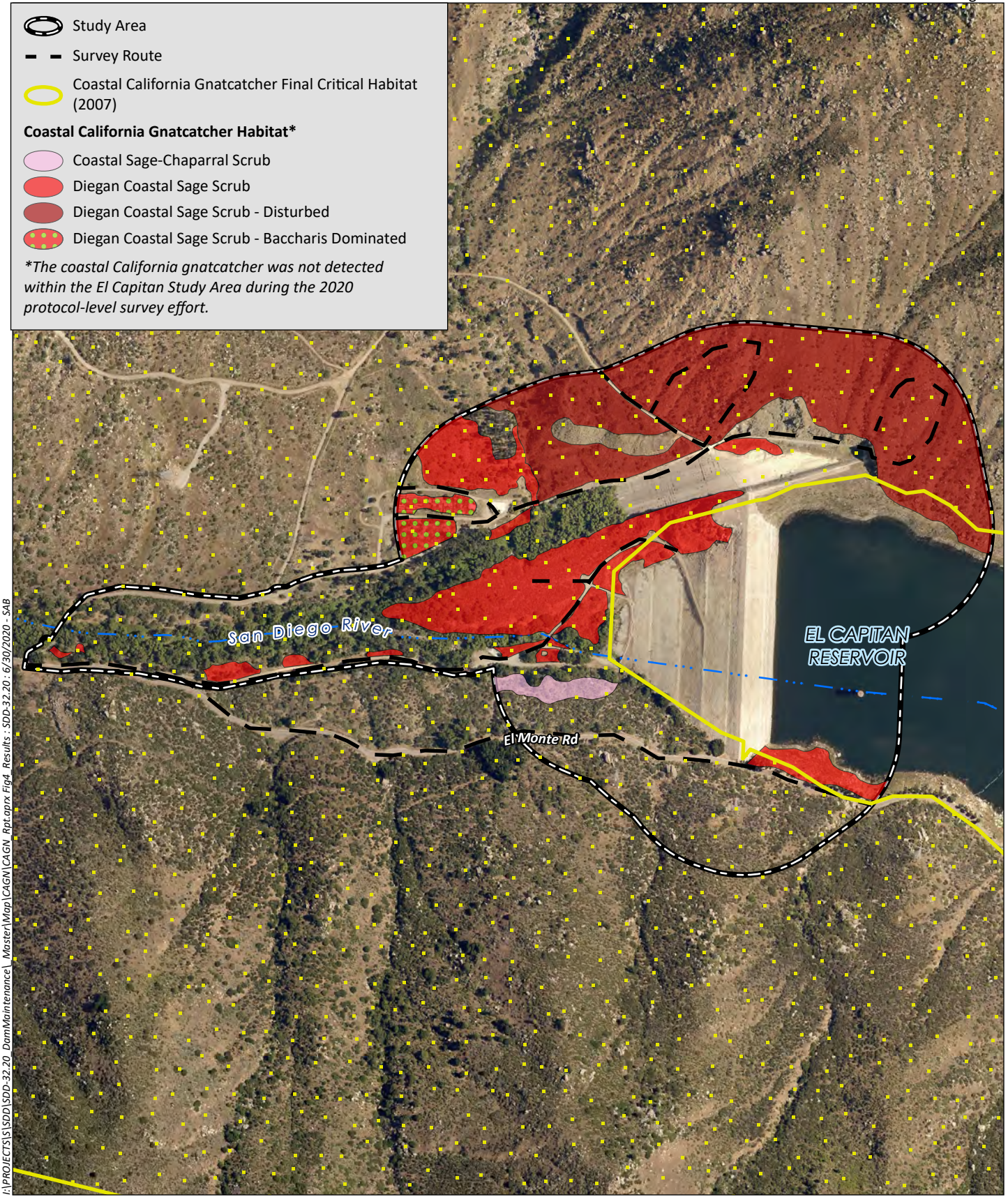
Source: Aerial (SanGIS, 2017)

2020 Coastal California Gnatcatcher Habitat Assessment – Barrett Dam







2020 Coastal California Gnatcatcher Survey Results – Chollas Dam

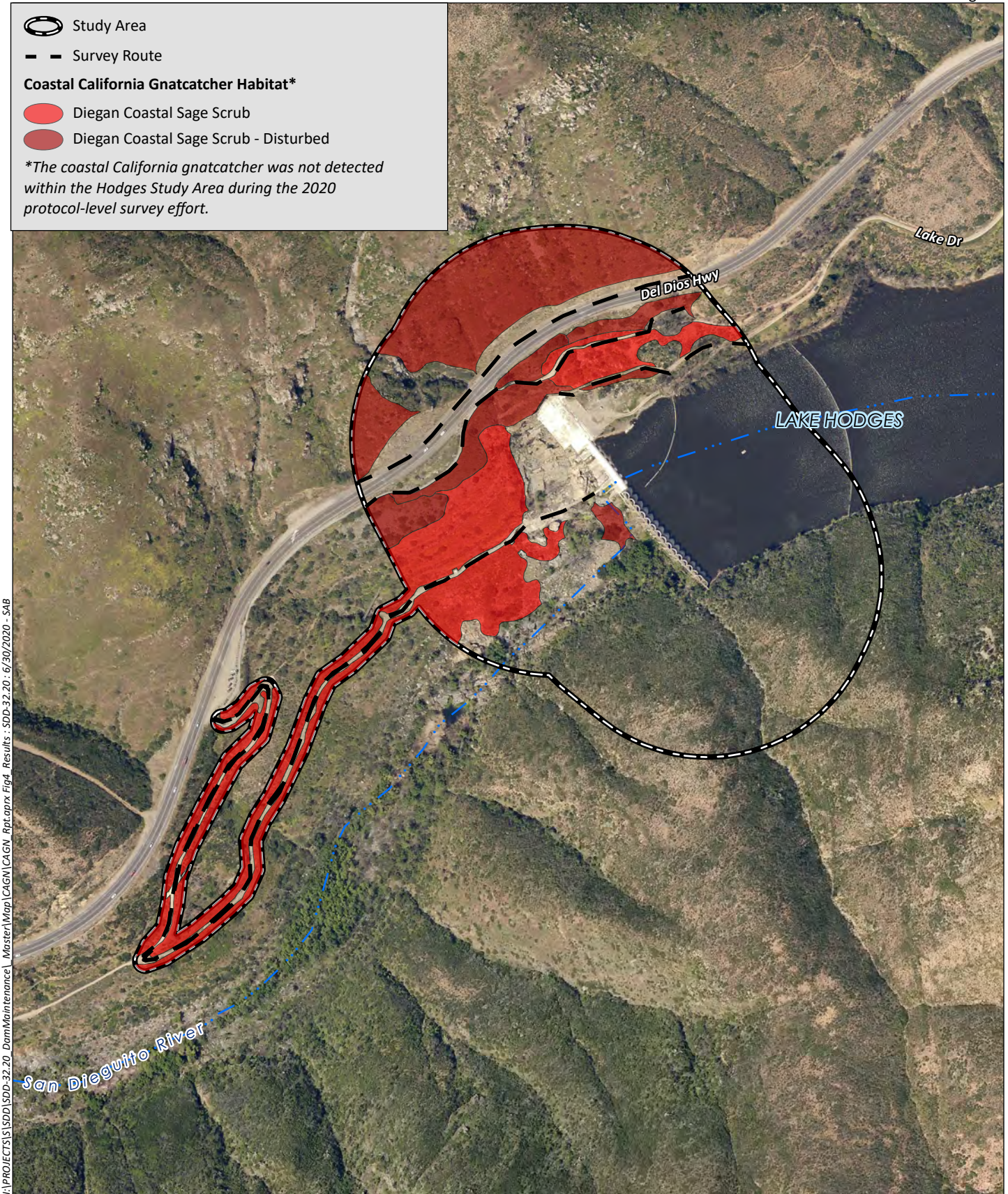
Figure 4b



2020 Coastal California Gnatcatcher Survey Results – El Capitan Dam

-  Study Area
-  Survey Route
- Coastal California Gnatcatcher Habitat***
-  Diegan Coastal Sage Scrub
-  Diegan Coastal Sage Scrub - Disturbed

**The coastal California gnatcatcher was not detected within the Hodges Study Area during the 2020 protocol-level survey effort.*









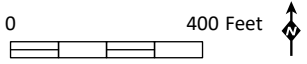
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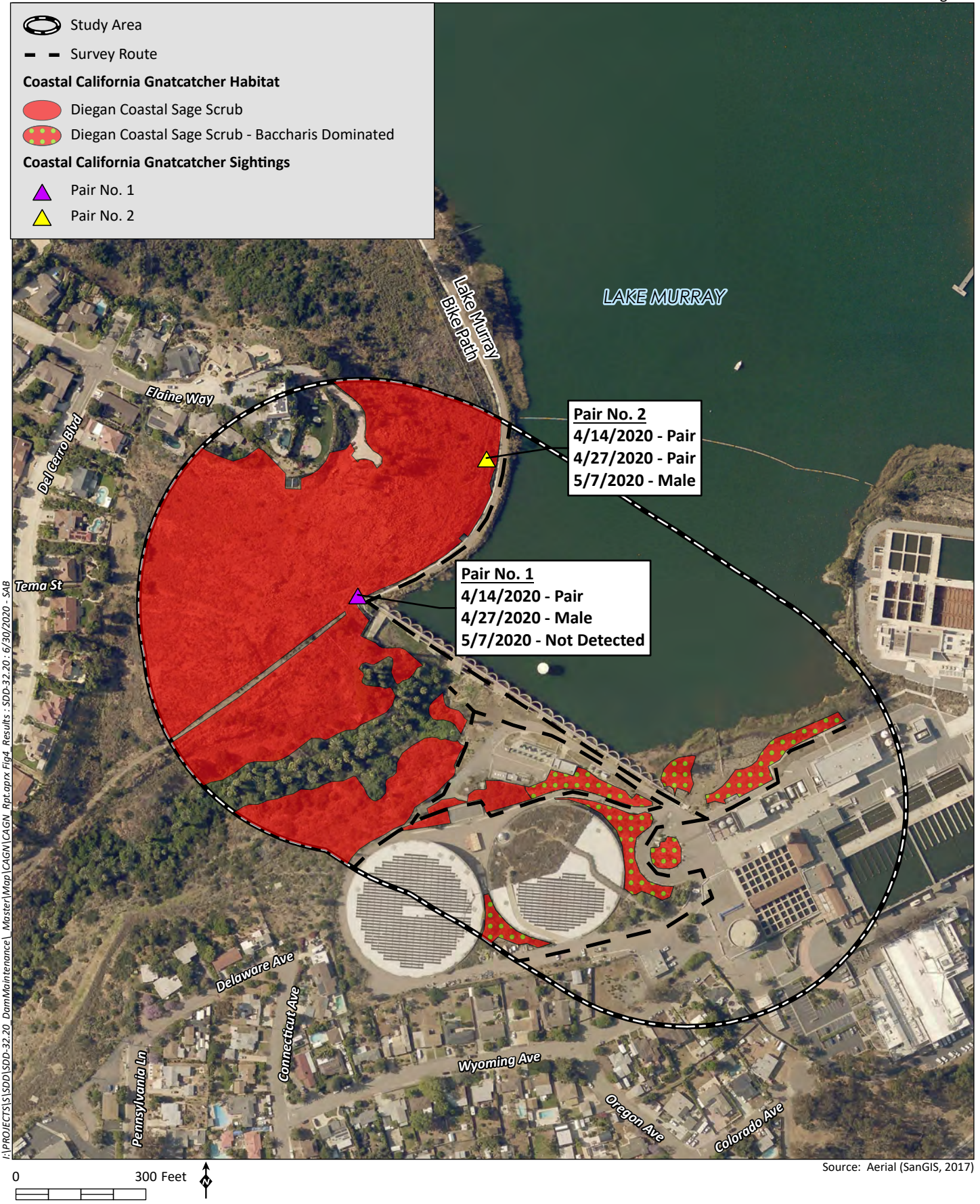
Source: Aerial (SanGIS, 2017)

2020 Coastal California Gnatcatcher Survey Results – Hodges Dam

 Study Area
 Survey Route
Coastal California Gnatcatcher Habitat
 Coastal Sage-Chaparral Scrub
 Diegan Coastal Sage Scrub
Coastal California Gnatcatcher Sightings
 Pair No. 1
 Pair No. 2








2020 Coastal California Gnatcatcher Survey Results – Miramar Dam



2020 Coastal California Gnatcatcher Survey Results – Murray Dam

Figure 4f

 Study Area
 Survey Route
Coastal California Gnatcatcher Habitat
 Diegan Coastal Sage Scrub
 Diegan Coastal Sage Scrub - Disturbed
Coastal California Gnatcatcher Sightings
 CAGN No. 1







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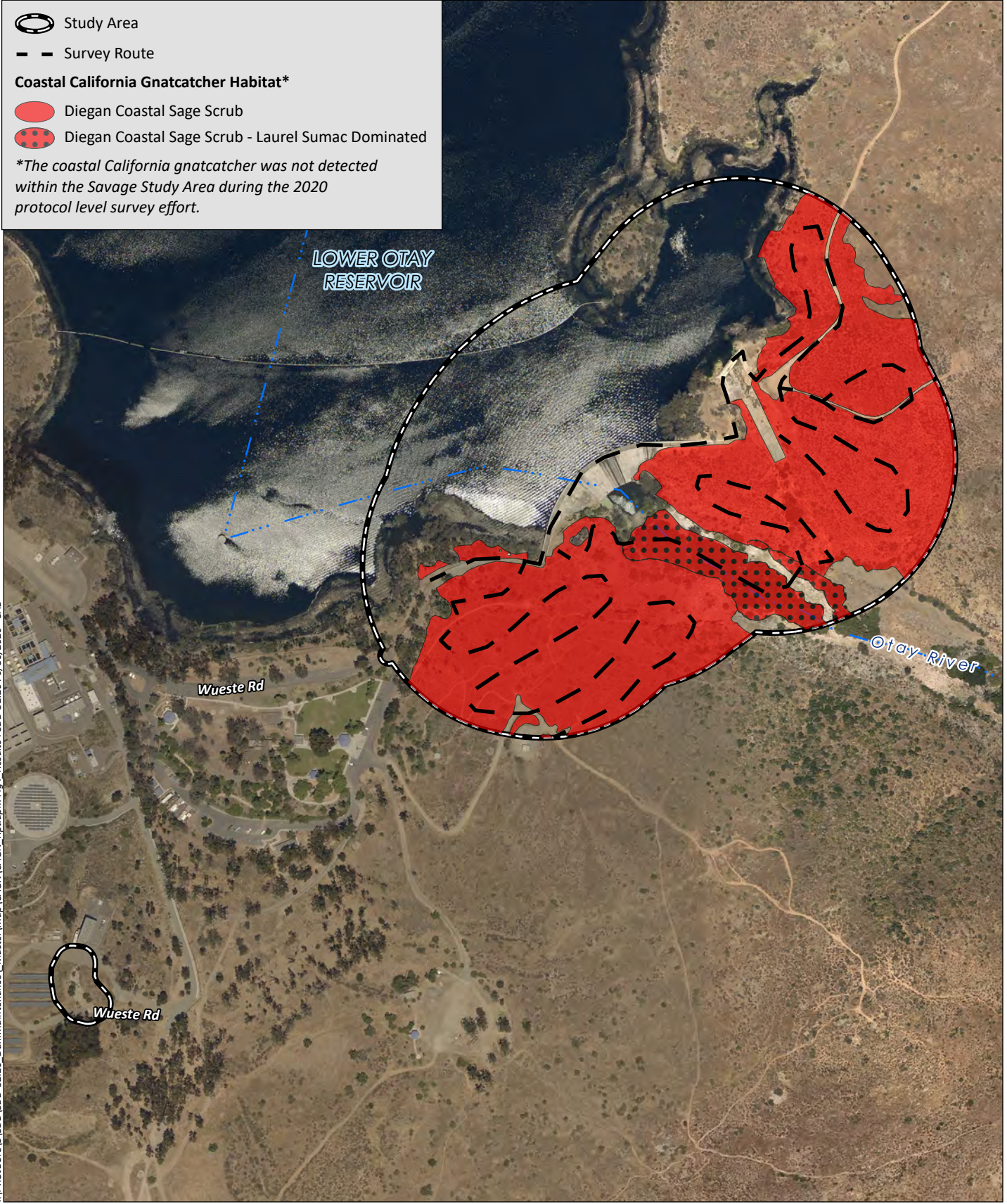


Source: Aerial (SanGIS, 2017)

2020 Coastal California Gnatcatcher Survey Results – San Vicente Dam

-  Study Area
-  Survey Route
- Coastal California Gnatcatcher Habitat***
-  Diegan Coastal Sage Scrub
-  Diegan Coastal Sage Scrub - Laurel Sumac Dominated

*The coastal California gnatcatcher was not detected within the Savage Study Area during the 2020 protocol level survey effort.

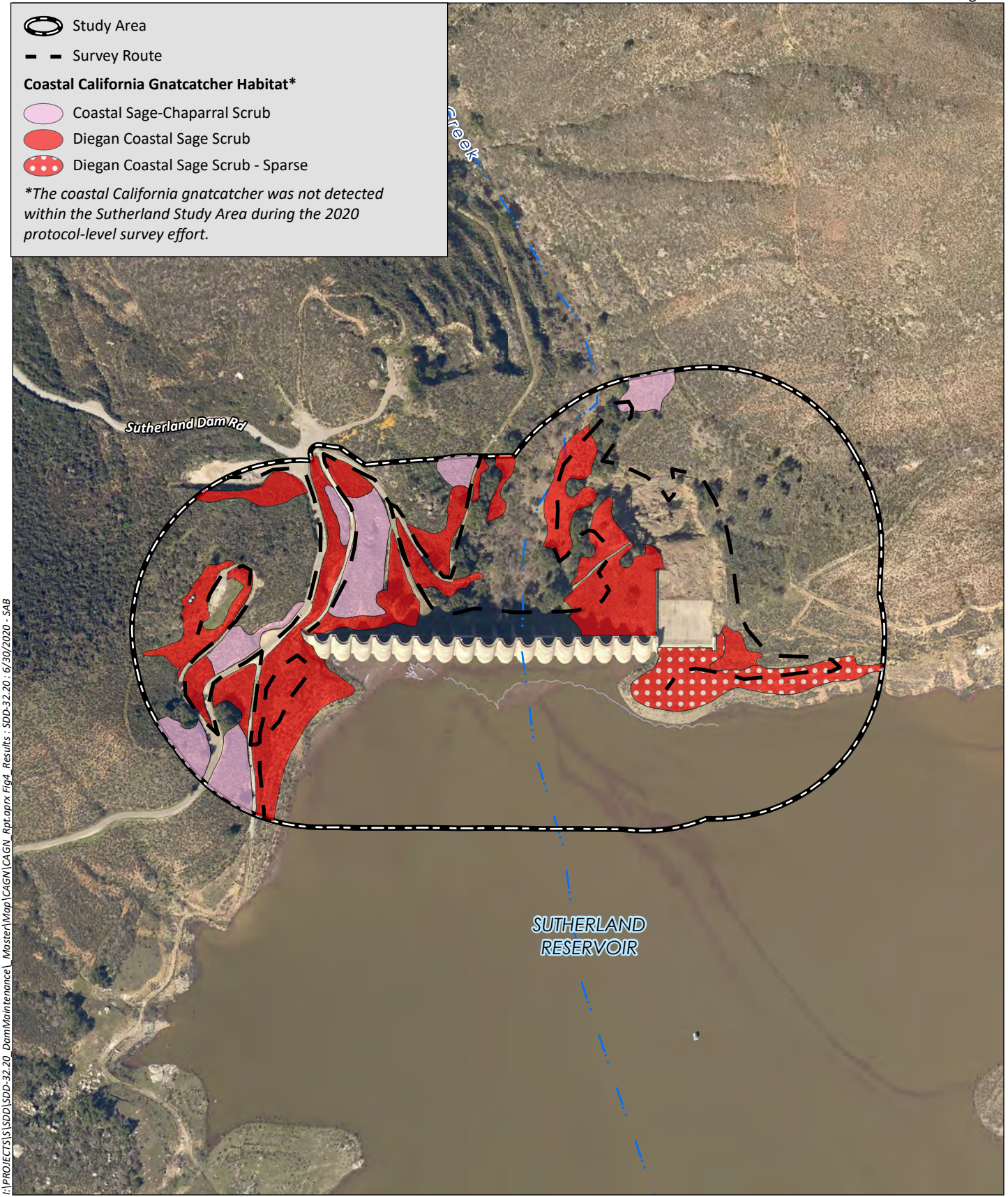


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Source: Aerial (SanGIS, 2017)

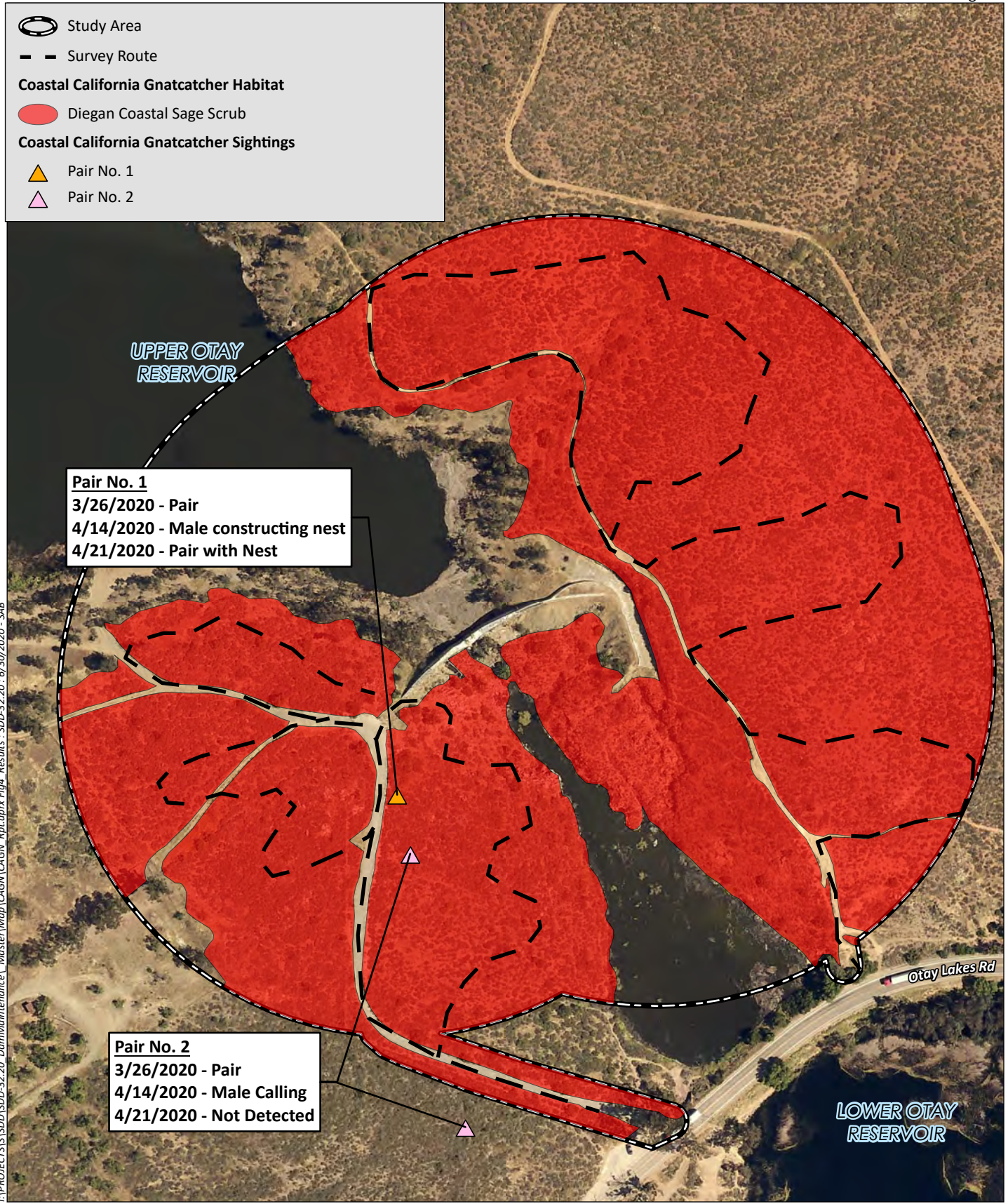


2020 Coastal California Gnatcatcher Survey Results – Savage Dam



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2020 Coastal California Gnatcatcher Survey Results – Sutherland Dam



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2020 Coastal California Gnatcatcher Survey Results – Upper Otay Dam

APPENDIX C

2018 Least Bell's Vireo and Southwestern Willow Flycatcher Survey Summary Report for the Proposed El Capitan Dam Spillway Vegetation Removal Project



October 2, 2018

Ms. Stacey Love
Recovery Permit Coordinator
Carlsbad Fish and Wildlife Office
2177 Salk Avenue, Suite 250
Carlsbad, California 92008

**RE: 2018 LEAST BELL'S VIREO AND SOUTHWESTERN WILLOW FLYCATCHER
SURVEY SUMMARY REPORT FOR THE PROPOSED EL CAPITAN DAM
SPILLWAY VEGETATION REMOVAL PROJECT, SAN DIEGO COUNTY,
CALIFORNIA**

Ms. Love:

This letter report summarizes the results of the 2018 focused, protocol-level, presence/absence surveys for the federally and state-listed endangered least Bell's vireo (*Vireo bellii pusillus*) and southwestern willow flycatcher (*Empidonax traillii extimus*) that were conducted by Busby Biological Services, Inc. (BBS) and Konecny Biological Services (KBS) on behalf of RECON Environmental, Inc. (RECON) for the proposed El Capitan Dam Spillway Vegetation Removal Project (Proposed Project). The Proposed Project is located in central, unincorporated San Diego County, California (Attachment 1: Figure 1).

PROJECT INFORMATION

The Proposed Project is currently in the design phase and is located immediately downstream of El Capitan Dam at the east end of El Monte Valley, northwest of the community of Alpine and northeast of the community of Lakeside (Attachment 1: Figures 1 and 2). Although the Proposed Project area is not yet finalized, the Proposed Project will be encompassed entirely by the "Project Survey Area" shown on Figures 2 and 3 in Attachment 1. The survey area comprises portions of Assessor's Parcel Numbers 4020700500, 4020700400, 4020700300, 4020800400, and 4020200700, and occurs in Section 7, with a small portion in the southeast quarter of Section 6 and the northwest quarter of Section 8, Township 15 South, and Range 2 East of the U.S. Geological Survey (USGS) 7.5-minute El Cajon Mountain topographic quadrangle (see Attachment 1: Figure 2).

SPECIES INFORMATION

Physical descriptions, distribution, natural history, listing status, and threats for least Bell's vireo and southwestern willow flycatcher are provided below.

Least Bell's Vireo

The least Bell's vireo is a small, olive-gray-colored, migratory songbird that is federally and state-listed as endangered. One of four subspecies of Bell's vireo, the least Bell's vireo is endemic to California and Baja California, Mexico. This highly migratory species arrives in

California in mid-March and departs by late September to fly south to wintering grounds near the tip of Baja California, Mexico. This species formally bred in lowland riparian habitat ranging from coastal southern California through the Sacramento and San Joaquin valleys as far north as Redbluff, and other scattered locations east of the Sierra Nevada (United States Fish and Wildlife Service [USFWS] 1998; Grinnell and Miller 1986).

The least Bell's vireo is dependent upon riparian habitat during the breeding season and prefers willow-dominated woodland or scrub that typically exists along streams and rivers. Other habitat types used include baccharis scrub, mixed oak/willow woodland, mesquite woodland, and elderberry scrub. Vegetation characteristics that appear to be essential for vireo occupation include the presence of dense cover between heights of 3 and 6 feet for nesting and foraging, and a stratified canopy providing both foraging habitat and song perches for territorial advertisement.

By the time the least Bell's vireo was listed by the California Department of Fish and Wildlife (CDFW) in 1984, it had been extirpated from much of its former range and was restricted to eight counties south from Santa Barbara with just 300 pairs statewide (Unitt 2004). Declines were caused by widespread clearing of riparian habitat combined with brood parasitism by brown-headed cowbirds (*Molothrus ater*), whose increase in California was as dramatic as the least Bell's vireo's decline. Currently, with restrictions on habitat destruction, extensive cowbird trapping, and protection from the federal and state endangered species acts, populations have recovered in some areas of cismontane southern California. As of 2002, populations are expanding into former ranges, with the northernmost sighting from Santa Clara County, California (Brown 1993, Kus 2002). As of 2004, San Diego County held the largest breeding population of least Bell's vireo in the state, where it was a fairly common breeder in appropriate habitats, primarily in the coastal lowlands (Unitt 2004).

Southwestern Willow Flycatcher

The southwestern willow flycatcher is a small, olive-colored, migratory songbird that is federally and state-listed as endangered. One of four subspecies of willow flycatcher (*Empidonax traillii*), it is distinguished by breeding distribution, song, call, and plumage. The southwestern willow flycatcher is a neotropical migrant that is endemic to the Americas and is a summer breeding resident in the southwestern U.S., specifically within Arizona, New Mexico, southern California, southern portions of Nevada and Utah, southwestern Colorado, and far western Texas, as well as in extreme northwestern Mexico (USFWS 2002). It is the only race of willow flycatcher that is known to breed in southern California, ranging from Kern County to San Diego County. This species arrives on breeding territories by late April to early May and migrates southward again to wintering areas in southern Mexico, Central America, and northern South America in August and September. The other two subspecies of willow flycatcher (i.e., *E. t. brewsteri* and *E. t. adastus*) migrate through southern California in the spring and fall to and from their breeding grounds in northern California.

The southwestern willow flycatcher typically breeds in patchy to dense, well-developed riparian woodlands that occur along streams, rivers, lakes, or other wetlands; are below 8,000 feet in elevation; and provide surface water and/or saturated soil during mid-summer (Sedgwick 2000; Sogge et al. 1997; USFWS 2002). Typical breeding habitat for southwestern willow flycatcher is composed of native riparian plant species such as willows

(*Salix* spp.) and mule fat (*Baccharis salicifolia*) in patches at least 2 acres in size or in linear-shaped habitats at least 10 meters (33 feet) wide (Sogge et al. 1997). However, the species has also been observed successfully breeding in riparian communities dominated by extensive patches of non-native species such as tamarisk (*Tamarix ramosissima*) and Russian olive (*Eleagnus angustifolia*) (USFWS 2002).

Once a common species in southern California, in the early 20th century the southwestern willow flycatcher population collapsed from the combined effects of habitat loss and nest parasitism by brown-headed cowbird (Craig and Williams 1998; Garrett and Dunn 1981; Sedgwick 2000; Unitt 2004; USFWS 2002). As of 2003, in southern California it was known to breed locally at 75 sites within 18 drainages from San Diego to Santa Barbara and Kern counties and the Owens Valley, most notably within the San Luis Rey, Santa Ana, Santa Ynez, Owens, and Kern rivers, which supported approximately 70 percent of known territories (Sogge et. al. 2003). As of 2004, of the estimated 200 breeding pairs in southern California nearly half of them occurred in San Diego County, primarily along the upper San Luis Rey River (Unitt 2004).

METHODS

The methods used for least Bell's vireo and southwestern willow flycatcher surveys are described below.

Habitat Assessment Methods

Prior to initiating the focused surveys for least Bell's vireo and southwestern willow flycatcher, a focused habitat assessment was conducted by qualified biologists to identify locations of suitable habitat for these species within the survey area (see Attachment 1: Figure 3). Biologists conducted the habitat assessment on foot using the vegetation mapping completed as part of the general biological survey. During the focused survey visits, species composition, height, and density of the vegetation communities within the suitable habitat areas were further assessed for their potential to support least Bell's vireo and southwestern willow flycatcher.

Focused Survey Methods

Least Bell's Vireo

Qualified biologists conducted focused surveys for the least Bell's vireo in accordance with the current USFWS survey protocol, titled Least Bell's Vireo Survey Guidelines (USFWS 2001). Eight surveys were conducted at least 10 days apart during the protocol survey window of April 10 to July 31. All surveys were conducted between approximately dawn and 1100 and avoided periods of adverse weather conditions (e.g., excessively hot or cold temperatures, high winds, steady rain, dense fog, and other inclement weather conditions) that may impede detection of the least Bell's vireo.

Surveyors slowly walked throughout the suitable habitat within the survey area and used visual and auditory cues to detect the least Bell's vireo. Various routes were utilized to conduct an unbiased survey of the potentially suitable habitat within the survey area, while taking care not to disturb sensitive habitat or potential nest areas.

Sensitive species detections were recorded electronically using a hand-held global positioning system (GPS) device and/or by hand onto a high-resolution aerial image of the survey area, and relevant information about each detection (e.g., age, sex, and number of individuals detected) was noted when possible. In addition, numbers and locations of parasitic brown-headed cowbirds were recorded, and other wildlife species observed directly or detected indirectly by sign, including scat, tracks, calls, and other evidence, were recorded.

Southwestern Willow Flycatcher

A permitted biologist conducted focused surveys for the southwestern willow flycatcher in accordance with the current USFWS-accepted survey protocol, titled A Natural History Summary and Survey Protocol for the Southwestern Willow Flycatcher (Sogge et al. 2010). The survey protocol entails intensive surveys of suitable habitat as well as detailed datasheets documenting detections, habitat, and other information about the southwestern willow flycatcher.

Five surveys were conducted during the three survey periods outlined in the protocol, including one survey conducted during the first period (May 15 to May 31), two surveys conducted during the second period (June 1 to June 24), and two surveys conducted during the third period (June 25 to July 17). All surveys were conducted between approximately 0530 and 1030 and avoided periods of adverse weather conditions (e.g., excessively hot or cold temperatures, high winds, steady rain, dense fog, other inclement weather conditions) that may impede detection of the southwestern willow flycatcher.

Surveyors slowly walked throughout the suitable habitat within the survey area and used visual and auditory cues to detect the southwestern willow flycatcher. Various routes were utilized to conduct an unbiased survey of the potentially suitable habitat within the survey area, while taking care not to disturb sensitive habitat or potential nest areas. Pre-recorded southwestern willow flycatcher vocalization playbacks were used infrequently only to elicit initial calls from the southwestern willow flycatcher and were not used to elicit further behaviors. Pre-recorded vocalizations were played for a period of 10 to 15 seconds and were generally repeated approximately every 70 to 100 feet within the surveyed habitat.

Sensitive species detections were recorded electronically using a hand-held GPS device and/or by hand onto a high-resolution aerial image of the survey area, and relevant information about the detection (e.g., age, sex, number of individuals detected) was noted when possible. In addition, numbers and locations of parasitic brown-headed cowbirds were recorded, and other wildlife species observed directly or detected indirectly by sign, including scat, tracks, calls, and other evidence, were recorded.

RESULTS

Habitat Assessment Results

Prior to initiating the focused least Bell's vireo and southwestern willow flycatcher surveys, qualified RECON biologists Brenna Ogg and Kayo Valenti conducted the habitat assessment during the general biological survey of the survey area in November 2017. A total of approximately 11.91 acres of suitable least Bell's vireo and southwestern willow

flycatcher habitat was identified within the survey area. Suitable habitat for these species within the survey area is described below.

The survey area is dominated by riparian vegetation communities, including southern cottonwood-willow riparian woodland, southern riparian woodland, southern coast live oak riparian forest, arundo-dominated riparian, Eucalyptus woodland, and coastal and valley freshwater marsh. The combination of these vegetation communities provides moderate to high quality habitat for least Bell's vireo and southwestern willow flycatcher, as it is dominated by native riparian plant species typically associated with these avian species.

Southern cottonwood-willow riparian forest is the dominant vegetation community within the survey area. This vegetation community is dominated by Goodding's black willow (*Salix gooddingii*), red willow (*Salix laevigata*), and arroyo willow (*Salix lasiolepis*), with scattered western sycamore (*Platanus racemosa*) and Fremont cottonwood (*Populus fremontii*). A portion of this community is considered disturbed, because it contains a high concentration of non-native trees such as sugar gum (*Eucalyptus cladocalyx*). The understory is dominated by patches of mule fat, desert wild grape (*Vitis girdiana*), dead cattail (*Typha* sp.), herbaceous species such as mariposa rush (*Juncus dubius*), and leaf litter. The trees in this community are tall and form a moderately dense to very dense canopy.

Southern riparian woodland occurs as a small patch within the survey area. This vegetation community contains a moderately dense canopy dominated by small shrubs such as mule fat, with scattered taller riparian trees such as arroyo willow and Fremont cottonwood.

Southern coast live oak riparian forest occurs slightly upslope of and predominately surrounding the southern cottonwood-willow riparian forest within the outer edges of the survey area. This vegetation community is dominated by coast live oak (*Quercus agrifolia*). Additional species present include laurel sumac (*Malosma laurina*) and scattered willows, Fremont cottonwood, western sycamore, and blue elderberry (*Sambucus nigra*). The understory contains leaf litter and non-native grasses such as bromes (*Bromus* spp.).

Arundo-dominated riparian occurs as two small patches in the survey area. This vegetation community forms a dense canopy that is dominated by giant reed (*Arundo donax*).

Eucalyptus woodland occurs in two patches in the survey area. This vegetation community is dominated by tall, mature sugar gum that form an open to moderately dense canopy cover. The open understory is dominated by leaf litter.

Coastal and valley freshwater marsh occurs as several small patches scattered throughout the southern cottonwood-willow riparian forest within the survey area. This vegetation community is dominated by cattails (*Typha* sp.), tule (*Schoenoplectus* sp.), San Diego sedge (*Carex spissa*), and western ragweed (*Ambrosia psilostachya*).

Focused Survey Results

Eight, focused, protocol-level least Bell's vireo surveys were conducted by BBS biologists Darin Busby, Erik LaCoste, and Andrew Kort between April 18 and July 12, 2018. Least Bell's vireo was not detected within the survey area. However, least Bell's vireo was incidentally detected by RECON biologist Brenna Ogg on two occasions north of the survey area. The first detection occurred on April 3, 2018, approximately 650 feet north of the

survey area. The second detection occurred on June 19, 2018, approximately 300 feet north of the survey area. Both of these detections were of single, singing males made auditorily from a distance. A summary of the dates, times, weather conditions, and surveyors for the least Bell's vireo surveys is provided in Table 1 below.

Table 1. Least Bell's Vireo Survey Details

Survey Number	Date	Time		Weather				Surveyor(s)
				Temp	Wind	Clouds	Precip	
				(°F)	(mph)	(% cover)		
1	4/18/18	Start	0710	52	4-7	0	0	Darin Busby
		End	0925	70	1-3	0	0	
2	5/3/18	Start	0840	61	0-2	0	0	Darin Busby
		End	1045	72	1-4	0	0	
3	5/15/18	Start	0715	58	1-3	100	0	Darin Busby
		End	0910	65	0-1	100	0	
4	5/25/18	Start	0700	61	0-1	100	0	Erik LaCoste & Andrew Kort
		End	1000	76	2-4	50	0	
5	6/4/18	Start	0630	64	2-4	0	0	Erik LaCoste & Andrew Kort
		End	0830	70	3-5	0	0	
6	6/14/18	Start	0730	66	1-3	0	0	Andrew Kort
		End	1000	75	1-3	0	0	
7	6/27/18	Start	0700	61	1-3	100	0	Andrew Kort
		End	0900	70	1-3	0	0	
8	7/12/18	Start	0700	71	1-3	20	0	Andrew Kort
		End	0900	72	1-3	20	0	

Temp = Temperature; °F = degrees Fahrenheit; mph = miles per hour; % = percent; Precip = precipitation

Five, focused, protocol-level southwestern willow flycatcher surveys were conducted by KBS biologist John Konecny (TE-837308-6) between May 25 and July 12, 2018, concurrent with five of the eight vireo surveys, which were conducted by Mr. Busby, Mr. LaCoste, and/or Mr. Kort. No willow flycatchers were detected within the survey area. A USFWS Willow Flycatcher Survey and Detection Form containing the results of the focused surveys is included as Attachment 2. A summary of the dates, times, weather conditions, and surveyors for the southwestern willow flycatcher surveys is provided in Table 2 below.

Table 2. Southwestern Willow Flycatcher Survey Details

Survey Number	Date	Time		Weather				Surveyor
				Temp	Wind	Clouds	Precip	
				(°F)	(mph)	(% cover)		
1	5/25/18	Start	0700	59	1-3	100	0	John Konecny
		End	1000	76	1-3	80	0	
2	6/4/18	Start	0635	64	3-5	100	0	John Konecny
		End	0830	70	3-5	10	0	
3	6/14/18	Start	0735	66	1-2	5	0	John Konecny
		End	1000	75	1-2	75	0	
4	6/27/18	Start	0700	61	1-3	100	0	John Konecny
		End	0900	73	1-3	0	0	
5	7/12/18	Start	0705	69	1-3	20	0	John Konecny
		End	0900	72	1-3	20	0	

Temp = Temperature; °F = degrees Fahrenheit; mph = miles per hour; % = percent; Precip = precipitation

A total of 52 wildlife species were detected within and adjacent to the survey area during the focused least Bell's vireo and southwestern willow flycatcher surveys, including the least Bell's vireo that were detected incidentally on April 3 and June 19, 2018 (Attachment 3). Besides the least Bell's vireo that were detected incidentally, four sensitive species—olive-sided flycatcher (*Contopus cooperi*; state species of special concern), yellow warbler (*Setophaga petechia*; state species of special concern), peregrine falcon (*Falco peregrinus*; state fully protected), and southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*; state watchlist)—were detected within and adjacent to the survey area (see Attachment 1: Figure 3). An olive-sided flycatcher was detected within the survey area on May 15, 2018; yellow warbler were detected within the survey area on May 3 and 14, and June 4, 14, and 27, 2018; a peregrine falcon was detected as a flyover occurrence outside the survey area on May 25, 2018; and a southern California rufous-crowned sparrow was detected within the survey area on May 25, 2018 (see Attachment 1: Figure 3). Figure 3 in Attachment 1 does not display locations of least Bell's vireo and peregrine falcon because these species were detected outside the survey area and southern California rufous-crowned sparrow because of the species' low sensitivity status. In addition, several male and female brown-headed cowbirds, a brood parasite, were detected within the survey area during all of the focused surveys with the exception of the first least Bell's vireo survey on April 18, 2018 (see Attachment 1: Figure 3).

It should be noted that the locations of sensitive species depicted in Figure 3 (Attachment 1) may represent a central location of several detections. For example, yellow warbler and brown-headed cowbird were detected during several least Bell's vireo and southwestern willow flycatcher surveys, generally in the same locations. A point representing those locations is shown in Figure 3 (see Attachment 1).

SUMMARY

No least Bell's vireo or southwestern willow flycatcher were detected within the survey area during the focused, protocol-level surveys conducted for each species during the 2018 breeding season. However, a single, singing male least Bell's vireo was detected incidentally on April 3 and June 19, 2018, approximately 650 feet and 300 feet, respectively, north of the survey area.

Please do not hesitate to contact me at darin@busbybiological.com or (858) 334-9508 or Melissa Busby at melissa@busbybiological.com or (858) 334-9507 if you have any questions.

Sincerely,



Darin Busby
Principal Biologist/Owner, Busby Biological Services, Inc.

cc: Brenna Ogg, RECON Environmental, Inc.
Mark Berninger, City of San Diego

ATTACHMENTS

Attachment 1: Figures
Attachment 2: USFWS Willow Flycatcher Survey and Detection Form
Attachment 3: Wildlife Species Detected

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1968 7.5-minute El Cajon Mountain Topographic Quadrangle (Photorevised 1975).

PROJECT BIOLOGIST SIGNATURE PAGE

The below project biologists performing focused, protocol-level, least Bell's vireo and southwestern willow flycatcher surveys for the Proposed Project were qualified to survey for least Bell's vireo, and permitted under Section 10(a)(1)(A) of the ESA to survey for southwestern willow flycatcher. The undersigned project biologists certify this report to be a complete and accurate account of the findings and conclusions of surveys for least Bell's vireo and southwestern willow flycatcher conducted for the Proposed Project during spring 2018.

John Konecny, ESA Permit Number TE-837308-6
Biologist
Konecny Biological Services, Inc.



Darin Busby, ESA Permit Number TE-115373-3
Principal Biologist / Owner
Busby Biological Services, Inc.



Erik LaCoste, ESA Permit Number TE-027736-6
Wildlife Biologist
Busby Biological Services, Inc.



Andrew Kort
Wildlife Biologist
Busby Biological Services, Inc.

ATTACHMENT 1 – Figures




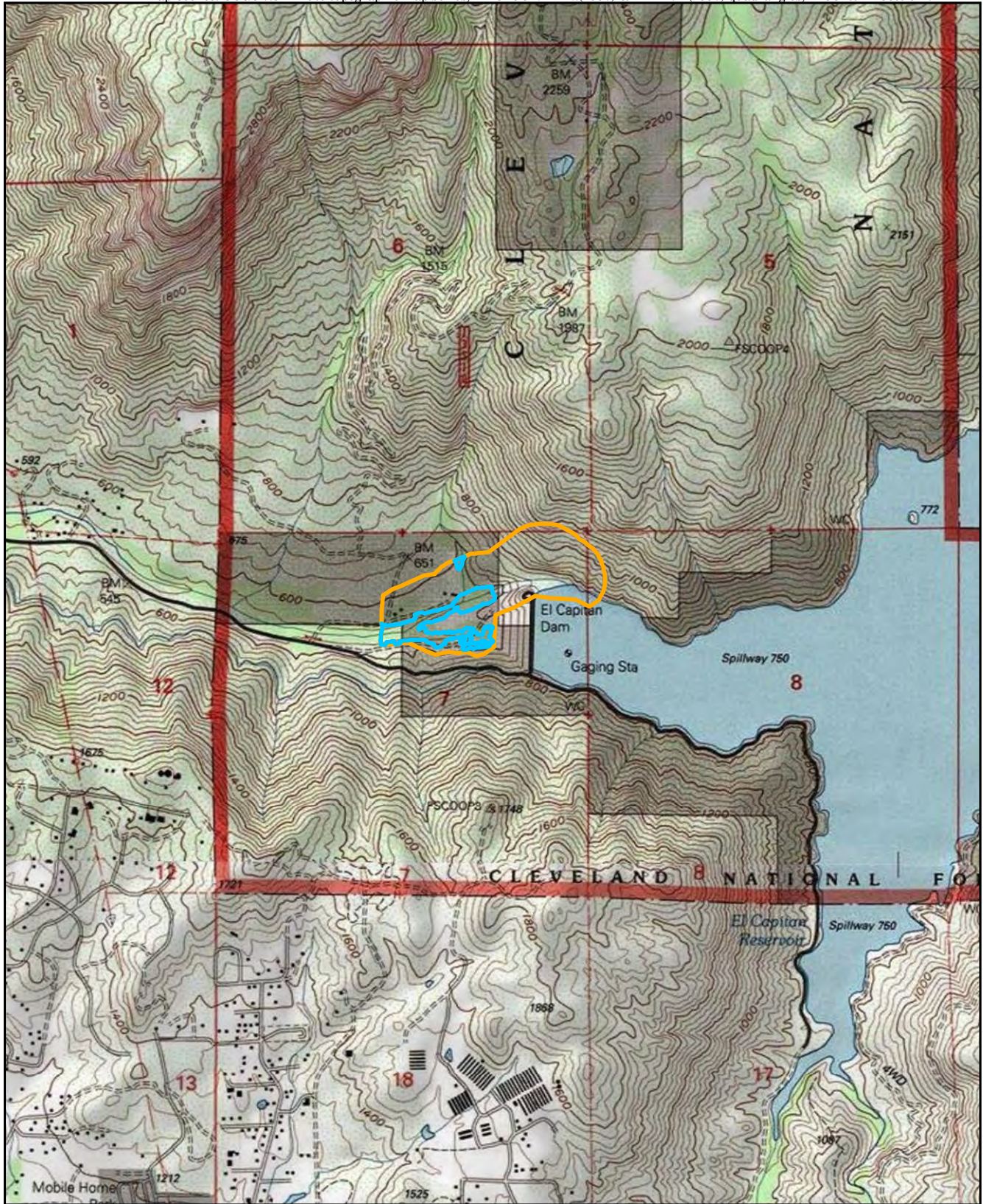


 Project Location

FIGURE 1
Regional Location



-  Project Survey Area
-  Least Bell's Vireo and Southwestern Willow Flycatcher Survey Area

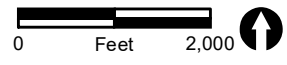






FIGURE 2

Project Location on USGS Map




 Project Survey Area
 Least Bell's Vireo and Southwestern Willow Flycatcher Survey Area

Sensitive Species Observations

-  Olive-sided Flycatcher
-  Yellow Warbler

Parasitic Species Observations

-  Brown-headed Cowbird

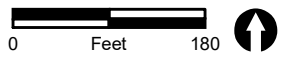


FIGURE 3
Least Bell's Vireo and Southwestern Willow Flycatcher 2018 Survey Results

ATTACHMENT 2 – USFWS Willow Flycatcher Survey and Detection Form

Willow Flycatcher (WIFL) Survey and Detection Form (revised April, 2010)

Site Name: El Capitan Dam Spillway State: California County: San Diego

USGS Quad Name: El Cajon Mountain, CA Elevation: 181 (meters)

Creek, River, or Lake Name: San Diego River

Is copy of USGS map marked with survey area and WIFL sightings attached (as required)? Yes No

Survey Coordinates: Start: E 517,689 N 3,638,565 UTM Datum: NAD83 (See instructions)

Stop: E 517,175 N 3,638,479 UTM Zone: 11S

If survey coordinates changed between visits, enter coordinates for each survey in comments section on back of this page.

****Fill in additional site information on back of this page****

Survey # Observer(s) (Full Name)	Date (m/d/y) Survey Time	Number of Adult WIFLs	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N If Yes, number of nests	Comments (e.g., bird behavior; evidence of pairs or breeding; potential threats [livestock, cowbirds, <i>Diorhabda</i> spp.]). If <i>Diorhabda</i> found, contact USFWS and State WIFL coordinator.	GPS Coordinates for WIFL Detections (this is an optional column for documenting individuals, pairs, or groups of birds found on each survey). Include additional sheets if necessary.			
							# Birds	Sex	UTM E	UTM N
Survey # 1 Observer(s): JK, EL, AK	Date: 5/25/2018	0	0	0	N	n/a	# Birds	Sex	UTM E	UTM N
	Start: 0:00						0	n/a	n/a	n/a
	Stop: 0:00									
	Total hrs: 3.0									
Survey # 2 Observer(s): JK, EL, AK	Date: 6/4/2018	0	0	0	N	n/a	# Birds	Sex	UTM E	UTM N
	Start: 0:00						0	n/a	n/a	n/a
	Stop: 0:00									
	Total hrs: 2.0									
Survey # 3 Observer(s): JK, AK	Date: 6/14/2018	0	0	0	N	n/a	# Birds	Sex	UTM E	UTM N
	Start: 0:00						0	n/a	n/a	n/a
	Stop: 0:00									
	Total hrs: 2.5									
Survey # 4 Observer(s): JK, AK	Date: 6/27/2018	0	0	0	N	n/a	# Birds	Sex	UTM E	UTM N
	Start: 0:00						0	n/a	n/a	n/a
	Stop: 0:00									
	Total hrs: 2.0									
Survey # 5 Observer(s): JK, AK	Date: 7/12/2018	0	0	0	N	n/a	# Birds	Sex	UTM E	UTM N
	Start: 0:00						0	n/a	n/a	n/a
	Stop: 0:00									
	Total hrs: 2.0									
Overall Site Summary Totals do not equal the sum of each column. Include only resident adults. Do not include migrants, nestlings, and fledglings. Be careful not to double count individuals. Total survey hrs: 11.5		Total Adult Residents	Total Pairs	Total Territories	Total Nests	Were any WIFLs color-banded? Yes _____ No <input checked="" type="checkbox"/>				
		0	0	0	0	If yes, report color combination(s) in the comments section on back of form and report to USFWS.				

Reporting Individual: John Konecny Date Report Completed: 8/21/2018

US Fish & Wildlife Service Permit #: TE837308-6 State Wildlife Agency Permit #: SC-1463

Submit form to USFWS and State Wildlife Agency by September 1st. Retain a copy for your records.

Fill in the following information completely. Submit form by September 1st. Retain a copy for your records.

Reporting Individual John Konecny Phone # 760 390-8959
 Affiliation Konecny Biological services E-mail jkonecny1234@gmail.com
 Site Name El Capitan Dam Spillway Date report Completed 8/21/2018
 Was this site surveyed in a previous year? Yes ___ No x Unknown ___
 Did you verify that this site name is consistent with that used in previous yrs? Yes ___ No ___ Not Applicable x
 If name is different, what name(s) was used in the past? n/a
 If site was surveyed last year, did you survey the same general area this year? Yes ___ No ___ If no, summarize below.
 Did you survey the same general area during each visit to this site this year? Yes x No ___ If no, summarize below.
 Management Authority for Survey Area: Federal ___ Municipal/County x State ___ Tribal ___ Private ___
 Name of Management Entity or Owner (e.g., Tonto National Forest) County of San Diego

Length of area surveyed: 0.5 (km)

Vegetation Characteristics: Check (only one) category that best describes the predominant tree/shrub foliar layer at this site:

- Native broadleaf plants (entirely or almost entirely, > 90% native)
x Mixed native and exotic plants (mostly native, 50 - 90% native)
 Mixed native and exotic plants (mostly exotic, 50 - 90% exotic)
 Exotic/introduced plants (entirely or almost entirely, > 90% exotic)

Identify the 2-3 predominant tree/shrub species in order of dominance. Use scientific name.

Salix gooddingii, Populus spp., Eucalyptus spp.

Average height of canopy (Do not include a range): 18 (meters)

- Attach the following: 1) copy of USGS quad/topographical map (REQUIRED) of survey area, outlining survey site and location of WIFL detections;
 2) sketch or aerial photo showing site location, patch shape, survey route, location of any detected WIFLs or their nests;
 3) photos of the interior of the patch, exterior of the patch, and overall site. Describe any unique habitat features in Comments.

Comments (such as start and end coordinates of survey area if changed among surveys, supplemental visits to sites, unique habitat features).
Attach additional sheets if necessary.

No least Bell's vireo was detected at same survey site. Otherwise good willow riparian habitat

Territory Summary Table. Provide the following information for each verified territory at your site.

Territory Number	All Dates Detected	UTM E	UTM N	Pair Confirmed? Y or N	Nest Found? Y or N	Description of How You Confirmed Territory and Breeding Status (e.g., vocalization type, pair interactions, nesting attempts, behavior)
n/a	n/a	n/a	n/a	n/an/a	n/a	n/a

Attach additional sheets if necessary

n/a

ATTACHMENT 3 – Wildlife Species List

Attachment 3 - Wildlife Species Detected

Scientific Name	Common Name
Birds	
<i>Callipepla californica</i>	California quail
<i>Ardea herodias</i>	great blue heron
<i>Ardea alba</i>	great egret
<i>Cathartes aura</i>	turkey vulture
<i>Buteo jamaicensis</i>	red-tailed hawk
<i>Falco sparverius</i>	American kestrel
<i>Falco peregrinus</i>	peregrine falcon
<i>Streptopelia decaocto</i>	Eurasian collared dove
<i>Zenaida macroura</i>	mourning dove
<i>Calypte anna</i>	Anna's hummingbird
<i>Melanerpes formicivorus</i>	acorn woodpecker
<i>Colaptes auratus</i>	northern flicker
<i>Sayornis nigricans</i>	black phoebe
<i>Contopus cooperi</i>	olive-sided flycatcher
<i>Empidonax difficilis</i>	Pacific-slope flycatcher
<i>Myiarchus cinerascens</i>	ash-throated flycatcher
<i>Contopus sordidulus</i>	western wood-pewee
<i>Tyrannus vociferans</i>	Cassin's kingbird
<i>Tyrannus verticalis</i>	western kingbird
<i>Vireo pusillus bellii</i>	least Bell's vireo
<i>Vireo huttoni</i>	Hutton's vireo
<i>Vireo gilvus</i>	warbling vireo
<i>Aphelocoma californica</i>	California scrub-jay
<i>Corvus corax</i>	common raven
<i>Stelgidopteryx serripennis</i>	northern rough-winged swallow
<i>Psaltirparus minimus</i>	bushtit
<i>Salpinctes obsoletus</i>	rock wren
<i>Catherpes mexicanus</i>	canyon wren
<i>Thryomanes bewickii</i>	Bewick's wren
<i>Troglodytes aedon</i>	house wren
<i>Mimus polyglottos</i>	northern mockingbird
<i>Phainopepla nitens</i>	phainopepla
<i>Sturnus vulgaris</i>	European starling
<i>Vermivora celata</i>	orange-crowned warbler
<i>Dendroica petechia</i>	yellow warbler
<i>Aimophila ruficeps canescens</i>	southern California rufous-crowned sparrow
<i>Geothlypis trichas</i>	common yellowthroat
<i>Pipilo maculatus</i>	spotted towhee
<i>Pipilo crissalis</i>	California towhee
<i>Melospiza melodia</i>	song sparrow
<i>Passerina caerulea</i>	blue grosbeak

Attachment 3 - Wildlife Species Detected

Scientific Name	Common Name
<i>Pheucticus melanocephalus</i>	black-headed grosbeak
<i>Passerine amoena</i>	Lazuli bunting
<i>Molothrus ater</i>	brown-headed cowbird
<i>Icterus cucullatus</i>	hooded oriole
<i>Icterus bullockii</i>	Bullock's oriole
<i>Carpodacus mexicanus</i>	house finch
<i>Carduelis psaltria</i>	lesser goldfinch
Mammals	
<i>Canis latrans</i>	coyote
<i>Mephitis mephitis</i>	striped skunk
<i>Odocoileus hemionus</i>	southern mule deer
Reptiles and Amphibians	
<i>Rana catesbeiana</i>	bullfrog

APPENDIX D

2020 Least Bell's Vireo (*Vireo bellii pusillus*) Survey Report the
City of San Diego Dam Maintenance Program Project

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August 27, 2020

SDD-32.20

Ms. Stacey Love
U.S. Fish and Wildlife Service
2177 Salk Avenue, Suite 250
Carlsbad, CA 92008

Subject: 2020 Least Bell's Vireo (*Vireo bellii pusillus*) Survey Report the City of San Diego Dam Maintenance Program Project

Dear Ms. Love:

This letter presents the results of a U.S. Fish and Wildlife Service (USFWS) protocol presence/absence survey for the federally endangered least Bell's vireo (*Vireo bellii pusillus*; LBVI) conducted by HELIX Environmental Planning, Inc. (HELIX) for the proposed City of San Diego Dam (City) Maintenance Program Project (project). This letter describes the survey methods and results and is being submitted to the USFWS in accordance with protocol survey guidelines.

PROJECT LOCATION

The proposed project includes routine maintenance of 13 City dams and associated infrastructure, including the approximately 13-mile Dulzura Conduit, located throughout San Diego County (County), California (Figure 1, *Regional Location*). Surveys for LBVI were conducted at seven of the dam sites (Chollas, El Capitan, Hodges, Murray, San Vicente, Savage [Lower Otay], and Sutherland) where suitable vireo habitat was determined to be present. The location of each of these survey areas is detailed below.

Chollas Dam is located in the central portion of the City (Figure 1). It lies in unsectioned lands of Township 16 South, Range 2 West, on the USGS 7.5-minute National City quadrangle map (Figure 2a, *USGS Topography – Chollas Dam*). Chollas Dam is located at the outlet of Chollas Heights Reservoir to the north of College Grove Road, south of Fauna Drive, east of Chollas Station Road, and west of College Grove Way (Figure 3a, *Aerial Photograph – Chollas Dam*). The study area occurs in the City's Chollas Lake Park. The Chollas Dam study area is not located within USFWS-designated critical habitat for the LBVI.

El Capitan Dam is located in the central portion of the County, in the unincorporated community of Lakeside (Figure 1). It lies within Sections 7 and 8 of Township 15 South, Range 2 East, on the USGS

7.5-minute El Cajon Mountain quadrangle map (Figure 2b, *USGS Topography – El Capitan Dam*). El Capitan Dam is located at the outlet of El Capitan Reservoir along El Monte Road to the north Interstate (I-) 8, south of Featherstone Canyon Road, east of Lake Jennings Road, and west of Peutz Valley Road (Figure 3b, *Aerial Photograph – El Capitan Dam*). The study area occurs in the City's El Capitan Reservoir Open Space Area and Cleveland National Forest. The El Capitan Dam study area is not located within USFWS-designated critical habitat for the LBVI.

Hodges Dam is located in the northern portion of the City (Figure 1). It lies within Sections 7 and 8 of Township 13 South, Range 2 West, on the USGS 7.5-minute Escondido and Rancho Santa Fe quadrangle maps (Figure 2c, *USGS Topography – Hodges Dam*). Hodges Dam is located at the outlet of Hodges Reservoir to the north of Camino Santa Fe, south of Del Dios Road, east of Lake Drive, and west of Calle Ambiente (Figure 3c, *Aerial Photograph – Hodges Dam*). The study area occurs in the City's Hodges Reservoir Open Space area. The Hodges Dam study area is not located within USFWS-designated critical habitat for the LBVI.

Murray Dam is located in the central portion of the City (Figure 1). It lies within unsectioned lands of Township 16 South, Range 2 West, on the USGS 7.5-minute La Mesa quadrangle map (Figure 2d, *USGS Topography – Murray Dam*). Murray Dam is located at the outlet of Murray Reservoir to the north of Lake Murray Boulevard, south of Jackson Drive, east of Del Cerro Boulevard, and west of Baltimore Drive (Figure 3d, *Aerial Photograph – Murray Dam*). The study area occurs in the City's Lake Murray Open Space area. The Murray Dam study area is not located within USFWS-designated critical habitat for the LBVI.

San Vicente Dam is located in the central portion of the County, in the unincorporated community of Lakeside (Figure 1). It lies within Sections 31 and 36 of Township 14 South, Ranges 1 West and 1 East, on the USGS 7.5-minute San Vicente Reservoir quadrangle map (Figure 2e, *USGS Topography – San Vicente Dam*). The study area is located at the outlet of San Vicente Reservoir to the north of Morena Avenue, south of Foster Truck Trail, east of SR-67, and west of Muth Valley Road (Figure 3e, *Aerial Photograph – San Vicente Dam*). The study area occurs in the City's San Vicente Reservoir Recreation Area. The San Vicente Dam study area is not located within USFWS-designated critical habitat for the LBVI.

Savage (Lower Otay) Dam is located in the southern portion of the City between the City of Chula Vista and the unincorporated community of Otay (Figure 1). It lies within Sections 13 and 18 and unsectioned lands of Township 18 South, Ranges 1 West and 1 East, on the USGS 7.5-minute Otay Mesa quadrangle map (Figure 2f, *USGS Topography – Savage Dam*). The study area is located at the outlet of Lower Otay Reservoir to the north of Alta Road, south of Otay Lakes Road, east of Wueste Road and Otay Lakes County Park, and west of the Otay Open Space Preserve (Figure 3f, *Aerial Photograph – Savage Dam*). The study area occurs in the City's Otay Lakes Recreation Area. The Savage Dam study area is not located within USFWS-designated critical habitat for the LBVI.

Sutherland Dam is located in the northern portion of the County, in the unincorporated community of Ramona (Figure 1). It lies within Sections 20 and 21 of Township 12 South, Range 2 East, on the USGS 7.5-minute Ramona quadrangle map (Figure 2g, *USGS Topography – Sutherland Dam*). The dam is located at the outlet of Sutherland Reservoir along Sutherland Dam Road to the north of SR-78, south and east of Black Canyon Road, and west of Rancho Ballena Road (Figure 3g, *Aerial Photograph – Sutherland Dam*). The study area occurs in the City's Sutherland Reservoir Open Space area and Cleveland National Forest. The Sutherland Dam study area is not located within USFWS-designated critical habitat for the LBVI.

METHODS

The survey consisted of eight site visits conducted by HELIX biologists Mandy Mathews, Katie Bellon, Laura Moreton, Erica Harris, and Dane van Tamelen between April 14 and July 30, 2020 (Table 1, *Survey Information*), in accordance with the current USFWS survey protocol.¹ The LBVI survey areas included all potential LBVI habitat located within the dam study areas. Approximately 24.99 acres of potential LBVI habitat composed of southern willow scrub, southern riparian forest, riparian woodland, and coast live oak woodland were surveyed (Figures 4a through 4g, *2020 Least Bell's Vireo Survey Results*).

The surveys were conducted by walking along the edges of, as well as within, potential LBVI habitat in the survey areas while listening for LBVI and viewing birds with the aid of binoculars. The survey route was designed to ensure complete survey coverage of habitat potentially occupied by LBVI.

Table 1, *Survey Information*, details the survey dates, times, weather conditions, and survey results.

¹ U.S. Fish and Wildlife Service (USFWS). 2001. Least Bell's Vireo Survey Guidelines. January 19.

Table 1
SURVEY INFORMATION

Site Visit	Survey Date	Biologist	Time (Start/Stop)	Approx. Acres Surveyed/Acres per Hour	Weather Conditions (Start/Stop)	Survey Results	
						Least Bell's Vireo (LBVI)	Brown-Headed Cowbird ¹
Chollas Dam							
1	4/29/20	Katie Bellon	0730/0830	0.22 ac/ 0.22 ac per hr.	64°F, wind 0-1 mph, 100% clouds 65°F, wind 0-1 mph, 100% clouds	• Single male vireo (Male No. 1) heard singing to south of dirt access path approx. 1,000 feet west (downstream) of the dam.	0
2	5/11/20	Dan van Tamelen	0600/0720	0.22 ac/ 0.17 ac per hr.	64°F, wind 0-2 mph, 80% clouds 67°F, wind 1-3 mph, 10% clouds	• Male No. 1 heard singing to south of dirt access path to the west of the dam.	1
3	5/21/20	Dan van Tamelen	0830/1000	0.22 ac/ 0.15 ac per hr.	63°F, wind 0-1 mph, 0% clouds 66°F, wind 0-1 mph, 0% clouds	No LBVI detected	0
4	6/1/20	Dane van Tamelen	0600/0730	0.22 ac/ 0.15 ac per hr.	61°F, wind 0-1 mph, 5% clouds 61°F, wind 0-1 mph, 20% clouds	No LBVI detected	0
5	6/22/20	Katie Bellon	0805/0935	0.22 ac/ 0.15 ac per hr.	65°F, wind 0-1 mph, 100% clouds 65°F, wind 1-2 mph, 75% clouds	No LBVI detected	0
6	7/2/20	Katie Bellon	0845/1015	0.22 ac/ 0.15 ac per hr.	65°F, wind 1-2 mph, 100% clouds 66°F, wind 2-4 mph, 50% clouds	No LBVI detected	0
7	7/13/20	Katie Bellon	0730/0900	0.22 ac/ 0.15 ac per hr.	72°F, wind 1-2 mph, 0% clouds 74°F, wind 1-2 mph, 0% clouds	No LBVI detected	0
8	7/23/20	Erica Harris	0730/0830	0.22 ac/ 0.22 ac per hr.	66°F, wind 0-1 mph, 100% clouds 66°F, wind 0-1 mph, 100% clouds	No LBVI detected	0
El Capitan Dam							
1	5/12/20	Dane van Tamelen	0700/1100	15.99 ac/ 4.00 ac per hr.	59°F, wind 1-3 mph, 25% clouds 77°F, wind 2-5 mph, 40% clouds	• Single male vireo (Male No. 1) heard singing within north fork of San Diego River approx. 1,000 feet west (downstream) of the dam's spillway.	1
2	5/22/20	Dane van Tamelen	0700/1100	15.99 ac/ 4.00 ac per hr.	59°F, wind 1-3 mph, 20% clouds 70°F, wind 1-3 mph, 0% clouds	• Male No. 1 heard singing in same general area west of the spillway.	4

**Table 1 (cont.)
SURVEY INFORMATION**

Site Visit	Survey Date	Biologist	Time (Start/Stop)	Approx. Acres Surveyed/Acres per Hour	Weather Conditions (Start/Stop)	Survey Results	
						Least Bell's Vireo (LBVI)	Brown-Headed Cowbird ¹
El Capitan Dam (cont.)							
3	6/2/20	Dane van Tamelen	0700/1100	15.99 ac/ 4.00 ac per hr.	65°F, wind 3-5 mph, 75% clouds 82°F, wind 1-3 mph, 80% clouds	• Male No. 1 heard singing in same general area west of the spillway.	3
4	6/12/20	Dane van Tamelen	0700/1100	15.99 ac/ 4.00 ac per hr.	63°F, wind 0-1 mph, 0% clouds 83°F, wind 1-3 mph, 0% clouds	• Male No. 1 heard singing in same general area west of the spillway.	4
5	6/22/20	Dane van Tamelen	0700/1100	15.99 ac/ 4.00 ac per hr.	65°F, wind 1-3 mph, 50% clouds 83°F, wind 2-5 mph, 0% clouds	No LBVI detected	3
6	7/7/20	Erica Harris	0700/1000	15.99 ac/ 5.33 ac per hr.	64°F, wind 0-1 mph, 100% clouds 77°F, wind 0-1 mph, 0% clouds	No LBVI detected	8
7	7/20/20	Dane van Tamelen	0700/1100	15.99 ac/ 4.00 ac per hr.	61°F, wind 0-1 mph, 0% clouds 82°F, wind 2-4 mph, 0% clouds	<ul style="list-style-type: none"> • Male No. 1 heard singing west of the spillway, slightly further east (upstream) of where previously detected. Heard singing at same time as Male No. 2. • Second single male vireo (Male No. 2) singing approx. 350 feet east of Male No. 1 within patch of eucalyptus (<i>Eucalyptus</i> spp.) located upslope. Heard singing at same time as Male No. 1. • Third single male vireo (Male No. 3) heard singing just west (downstream) of study area along San Diego River, approx. 0.3 mile west of Male No. 1. 	8
8	7/30/20	Dane van Tamelen	0700/1100	15.99 ac/ 4.00 ac per hr.	67°F, wind 0-2 mph, 85% clouds 86°F, wind 1-3 mph, 0% clouds	• Male No. 3 heard singing in same general area of where it was previously detected just west (downstream) of the study area.	0

**Table 1 (cont.)
SURVEY INFORMATION**

Site Visit	Survey Date	Biologist	Time (Start/Stop)	Approx. Acres Surveyed/Acres per Hour	Weather Conditions (Start/Stop)	Survey Results	
						Least Bell's Vireo (LBVI)	Brown-Headed Cowbird ¹
Hodges Dam							
1	5/5/20	Katie Bellon	0630/0830	1.77 ac/ 0.89 ac per hr.	64°F, wind 5-10 mph, 0% clouds 69°F, wind 2-5 mph, 0% clouds	No LBVI detected	1
2	5/15/20	Katie Bellon	0700/0900	1.77 ac/ 0.89 ac per hr.	65°F, wind 1-3 mph, 90% clouds 68°F, wind 2-4 mph, 10% clouds	No LBVI detected	0
3	5/26/20	Katie Bellon	0630/0830	1.77 ac/ 0.89 ac per hr.	60°F, wind 1-3 mph, 100% clouds 78°F, wind 3-5 mph, 0% clouds	No LBVI detected	0
4	6/9/20	Katie Bellon	0800/1000	1.77 ac/ 0.89 ac per hr.	75°F, wind 3-5 mph, 0% clouds 91°F, wind 5-10 mph, 0% clouds	No LBVI detected	0
5	6/24/20	Katie Bellon	0800/1000	1.77 ac/ 0.89 ac per hr.	65°F, wind 0-1 mph, 100% clouds 67°F, wind 1-3 mph, 100% clouds	No LBVI detected	2
6	7/6/20	Katie Bellon	0745/0945	1.77 ac/ 0.89 ac per hr.	69°F, wind 0-1 mph, 0% clouds 78°F, wind 1-2 mph, 0% clouds	No LBVI detected	0
7	7/16/20	Katie Bellon	0730/0930	1.77 ac/ 0.89 ac per hr.	68°F, wind 0-1 mph, 100% clouds 71°F, wind 1-3 mph, 90% clouds	No LBVI detected	0
8	7/27/20	Erica Harris	0750/0850	1.77 ac/ 1.77 ac per hr.	68°F, wind 0-1 mph, 100% clouds 68°F, wind 0-1 mph, 100% clouds	No LBVI detected	0
Murray Dam							
1	4/14/20	Katie Bellon	0750/0850	1.58 ac/ 1.58 ac per hr.	57°F, wind 3-5 mph, 15% clouds 59°F, wind 1-3 mph, 60% clouds	No LBVI detected	0
2	4/27/20	Katie Bellon	0745/0845	1.58 ac/ 1.58 ac per hr.	65°F, wind 0 mph, 100% clouds 67°F, wind 0 mph, 0% clouds	No LBVI detected	0
3	5/7/20	Katie Bellon	0955/1055	1.58 ac/ 1.58 ac per hr.	80°F, wind 1-3 mph, 2% clouds 83°F, wind 2-5 mph, 0% clouds	No LBVI detected	0
4	5/18/20	Katie Bellon	0730/0830	1.58 ac/ 1.58 ac per hr.	63°F, wind 1-3 mph, 98% clouds 65°F, wind 3-5 mph, 50% clouds	No LBVI detected	0
5	5/28/20	Katie Bellon	0730/0830	1.58 ac/ 1.58 ac per hr.	64°F, wind 0-1 mph, 95% clouds 66°F, wind 1-2 mph, 10% clouds	No LBVI detected	2

**Table 1 (cont.)
SURVEY INFORMATION**

Site Visit	Survey Date	Biologist	Time (Start/Stop)	Approx. Acres Surveyed/Acres per Hour	Weather Conditions (Start/Stop)	Survey Results	
						Least Bell's Vireo (LBVI)	Brown-Headed Cowbird ¹
Murray Dam (cont.)							
6	6/8/20	Katie Bellon	0740/0840	1.58 ac/ 1.58 ac per hr.	60°F, wind 0-1 mph, 0% clouds 64°F, wind 0-1 mph, 0% clouds	No LBVI detected	0
7	6/18/20	Katie Bellon	0900/1000	1.58 ac/ 1.58 ac per hr.	65°F, wind 0-1 mph, 100% clouds 65°F, wind 1-3 mph, 100% clouds	No LBVI detected	0
8	7/2/20	Katie Bellon	0730/0830	1.58 ac/ 1.58 ac per hr.	64°F, wind 0-1 mph, 100% clouds 65°F, wind 0-1 mph, 100% clouds	No LBVI detected	0
San Vicente Dam							
1	4/28/20	Mandy Mathews	0600/0645	0.37 ac/ 0.49 ac per hr.	53°F, wind 0-1 mph, 70% clouds 54°F, wind 0-1 mph, 0% clouds	No LBVI detected	0
2	5/12/20	Mandy Mathews	0600/0700	0.37 ac/ 0.37 ac per hr.	52°F, wind 0-1 mph, 10% clouds 55°F, wind 0-1 mph, 0% clouds	No LBVI detected	0
3	5/22/20	Mandy Mathews	0700/0800	0.37 ac/ 0.37 ac per hr.	58°F, wind 3-4 mph, 100% clouds 60°F, wind 3-4 mph, 90% clouds	No LBVI detected	0
4	6/2/20	Mandy Mathews	0830/0930	0.37 ac/ 0.37 ac per hr.	68°F, wind 2-4 mph, 80% clouds 73°F, wind 2-4 mph, 80% clouds	No LBVI detected	0
5	6/12/20	Mandy Mathews	0900/1000	0.37 ac/ 0.37 ac per hr.	70°F, wind 3-5 mph, 0% clouds 73°F, wind 3-5 mph, 0% clouds	No LBVI detected	0
6	6/23/20	Mandy Mathews	0945/1045	0.37 ac/ 0.37 ac per hr.	66°F, wind 1-3 mph, 30% clouds 72°F, wind 1-3 mph, 0% clouds	No LBVI detected	0
7	7/6/20	Mandy Mathews	0820/1030	0.37 ac/ 0.20 ac per hr.	61°F, wind 2-4 mph, 100% clouds 61°F, wind 2-4 mph, 100% clouds	<ul style="list-style-type: none"> • Single male vireo (Male No. 1) heard singing and observed foraging within riparian woodland approx. 470 feet south (downstream) of dam. 	0
8	7/16/20	Mandy Mathews	0800/0930	0.37 ac/ 0.25 ac per hr.	64°F, wind 0-1 mph, 100% clouds 67°F, wind 1-2 mph, 80% clouds	No LBVI detected	0

**Table 1 (cont.)
SURVEY INFORMATION**

Site Visit	Survey Date	Biologist	Time (Start/Stop)	Approx. Acres Surveyed/Acres per Hour	Weather Conditions (Start/Stop)	Survey Results	
						Least Bell's Vireo (LBVI)	Brown-Headed Cowbird ¹
Savage Dam							
1	4/16/20	Mandy Mathews	0630/0730	0.08 ac/ 0.08 ac per hr.	50°F, wind 1-2 mph, 0% clouds 55°F, wind 1 mph, 0% clouds	<ul style="list-style-type: none"> • Single male vireo (Male No. 1) heard singing within eucalyptus on east side of dam, just west of the spillway. • Single male (presumed to be same male belonging to Pair No. 1) heard singing within southern willow scrub and adjacent coastal sage scrub approx. 320 feet east (downstream) of dam. 	0
2	4/27/20	Mandy Mathews	0730/0830	0.08 ac/ 0.08 ac per hr.	63°F, wind 1-3 mph, 100% clouds 64°F, wind 1-3 mph, 70% clouds	<ul style="list-style-type: none"> • Male No. 1 singing within eucalyptus on east side of dam, just west of the spillway. • Male from Pair No. 1 heard singing within southern willow scrub and adjacent coastal sage scrub downstream of dam. 	0
3	5/7/20	Mandy Mathews	0700/0800	0.08 ac/ 0.08 ac per hr.	65°F, wind 0-1 mph, 0% clouds 68°F, wind 0-1 mph, 0% clouds	<ul style="list-style-type: none"> • Male from Pair No. 1 heard singing within southern willow scrub and adjacent coastal sage scrub at downstream of dam. 	0
4	5/18/20	Mandy Mathews	0800/0930	0.08 ac/ 0.05 ac per hr.	63°F, wind 0-1 mph, 90% clouds 70°F, wind 0-1 mph, 10% clouds	<ul style="list-style-type: none"> • Male from Pair No. 1 singing within southern willow scrub and adjacent coastal sage scrub at downstream of dam. Second LBVI heard scolding (presumably female from Pair No. 1). 	0

**Table 1 (cont.)
SURVEY INFORMATION**

Site Visit	Survey Date	Biologist	Time (Start/Stop)	Approx. Acres Surveyed/Acres per Hour	Weather Conditions (Start/Stop)	Survey Results	
						Least Bell's Vireo (LBVI)	Brown-Headed Cowbird ¹
Savage Dam (cont.)							
5	5/28/20	Laura Moreton	0830/0930	0.08 ac/ 0.08 ac per hr.	64°F, wind 1-3 mph, 75% clouds 68°F, wind 0-1 mph, 0% clouds	<ul style="list-style-type: none"> Male from Pair No. 1 heard singing within southern willow scrub and adjacent coastal sage scrub at downstream of dam. 	0
6	6/8/20	Laura Moreton	0845/0945	0.08 ac/ 0.08 ac per hr.	64°F, wind 0-1 mph, 0% clouds 68°F, wind 0-1 mph, 0% clouds	<ul style="list-style-type: none"> Male from Pair No. 1 heard singing within southern willow scrub and adjacent coastal sage scrub at bottom of dam. 	0
7	6/18/20	Mandy Mathews	0800/0940	0.08 ac/ 0.05 ac per hr.	61°F, wind 0-1 mph, 100% clouds 68°F, wind 1-2 mph, 50% clouds	<ul style="list-style-type: none"> Male from Pair No. 1 heard singing within southern willow scrub and adjacent coastal sage scrub at downstream of dam. 	0
8	7/2/20	Mandy Mathews	0900/1030	0.08 ac/ 0.05 ac per hr.	61°F, wind 2-4 mph, 100% clouds 61°F, wind 2-4 mph, 100% clouds	<ul style="list-style-type: none"> Male from Pair No. 1 observed feeding one fledgling at southern base of spillway. Female, presumably belonging to Pair No. 1, observed feeding two fledglings at western end of dam in eucalyptus trees. 	0
Sutherland Dam							
1	4/23/20	Mandy Mathews	0700/0900	4.98 ac/ 2.49 ac per hr.	58°F, wind 0 mph, 0% clouds 62°F, wind 0 mph, 0% clouds	No LBVI detected	2
2	5/6/20	Mandy Mathews	0700/0900	4.98 ac/ 2.49 ac per hr.	68°F, wind 0 mph, 0% clouds 79°F, wind 0 mph, 0% clouds	No LBVI detected	2
3	5/19/20	Mandy Mathews	0700/0900	4.98 ac/ 2.49 ac per hr.	50°F, wind 0-1 mph, 90% clouds 53°F, wind 1-3 mph, 90% clouds	No LBVI detected	2
4	5/29/20	Mandy Mathews	0800/1000	4.98 ac/ 2.49 ac per hr.	62°F, wind 1-3 mph, 50% clouds 73°F, wind 1-3 mph, 20% clouds	No LBVI detected	1

**Table 1 (cont.)
SURVEY INFORMATION**

Site Visit	Survey Date	Biologist	Time (Start/Stop)	Approx. Acres Surveyed/Acres per Hour	Weather Conditions (Start/Stop)	Survey Results	
						Least Bell's Vireo (LBVI)	Brown-Headed Cowbird ¹
Sutherland Dam (cont.)							
5	6/9/20	Laura Moreton	0815/0935	4.98 ac/ 3.73 ac per hr.	66°F, wind 5-8 mph, 0% clouds 68°F, wind 5-10 mph, 0% clouds	No LBVI detected	0
6	6/19/20	Mandy Mathews	0830/1030	4.98 ac/ 2.49 ac per hr.	59°F, wind 0-1 mph, 20% clouds 66°F, wind 0-1 mph, 10% clouds	No LBVI detected	0
7	6/30/20	Mandy Mathews	0815/1000	4.98 ac/ 3.31 ac per hr.	60°F, wind 1-3 mph, 100% clouds 64°F, wind 1-3 mph, 0% clouds	No LBVI detected	2
8	7/10/20	Mandy Mathews	0900/1100	4.98 ac/ 2.49 ac per hr.	78°F, wind 0-2 mph, 0% clouds 81°F, wind 0-2 mph, 0% clouds	No LBVI detected	0

¹ Number of brown-headed cowbird (*Molothrus ater*) detected during survey

SURVEY RESULTS

Survey information and results for each dam site are presented separately below.

Chollas Dam

One male vireo was detected within the Chollas Dam study area during the first two surveys of the 2020 survey effort (Figure 4a, *2020 Least Bell's Survey Results – Chollas Dam*). One male (Male No. 1) was heard singing within riparian habitat along Chollas Creek, approximately 1,000 feet west (downstream) of the dam. No vireos were detected during the remaining six surveys.

The brown-headed cowbird (*Molothrus ater*; BHCO), a nest parasite of the LBVI, was detected during one of the eight surveys at one location within the Chollas Dam study area (Figure 4a). The single BHCO detection consisted of a singing male.

El Capitan Dam

Two male vireos were detected within the El Capitan Dam study area and one male vireo was detected adjacent to the El Capitan Dam study area during 2020 survey effort, though not all individuals were detected during each survey visit (Figure 4b, *2020 Least Bell's Survey Results – El Capitan Dam*). All three males (Male No. 1, Male No. 2, and Male No. 3) were detected west (downstream) of the dam. Two males (Male No. 1 and Male No. 2) were detected just west (downstream) of the dam's spillway. A third male (Male No. 3) was detected just west (downstream) of the study area. A detailed description of LBVI locations and observations is included below.

A single male vireo (Male No. 1) was heard singing approximately 1,000 feet west (downstream) of the dam's spillway during the first survey visit within riparian habitat located along the north fork of the San Diego River (Figure 4b). The male was heard singing in the same general area during the second, third, and fourth survey visits, but was not detected during the fifth and sixth survey visit. The male was heard singing slightly more east (upstream) of its original location during the seventh survey visit at the same time as a newly detected male vireo (Male No. 2) but was not detected during the last (eighth) survey.

A single male vireo (Male No. 2) was heard singing 550 feet northeast of the dam's spillway and approximately 350 feet east of Male No. 1 (Figure 4b). Male No. 2 was only documented during the seventh survey visit when it was heard singing at the same time as Male No. 1 and was not detected during any other survey visits. The male was heard singing from a patch of eucalyptus (*Eucalyptus* spp.) locating upslope of the San Diego River.

A single male vireo (Male No. 3) was detected immediately west (downstream) of the study area (Figure 4b). Male No. 3 was heard singing during the seventh and eighth survey visits but was not detected during any of the previous surveys.

The BHCO was detected during seven of the eight surveys in five separate locations within the El Capitan study area (Figure 4b). Observations of BHCO included individuals flying overhead, singing males, and calling females.

Hodges Dam

The least Bell's vireo was not detected within or adjacent to the Hodges Dam study area during 2020 protocol survey effort (Figures 4c, *2020 Least Bell's Survey Results – Hodges Dam*).

The BHCO was detected during two of the eight surveys at one location within the Hodges Dam study area (Figure 4c). Detections consisted of calling males.

Murray Dam

The least Bell's vireo was not detected within or adjacent to the Murray Dam study area during 2020 protocol survey effort (Figures 4d, *2020 Least Bell's Survey Results – Murray Dam*).

The BHCO was detected during one of the eight surveys in one location within the Murray Dam study area (Figure 4d). Both a male and female were observed perched on a telephone line during the fifth survey.

San Vicente Dam

One male vireo was detected within the San Vicente Dam study area during 2020 survey effort (Figure 4e, *2020 Least Bell's Survey Results – San Vicente Dam*). The single male (Male No. 1) was observed during the seventh survey singing within a small patch of riparian woodland south of the dam (Figure 4e). This male was not detected during any other surveys.

The BHCO was not detected within the San Vicente Dam study area during the eight surveys.

Savage Dam

One single male vireo and one vireo pair were detected within the Savage Dam study area during 2020 survey effort, though not all individuals were detected during each survey visit (Figure 4f, *2020 Least Bell's Survey Results – Savage Dam*). One male vireo (Male No. 1) was detected on the east side of the dam to the west of the spillway. The vireo pair (Pair No. 1) was detected southeast (downstream) of the dam; at least three fledglings were observed in association with Pair No. 1. No banded individuals were observed during the survey; however, not all individuals were directly observed. A detailed description of LBVI locations and observations is included below.

A single male vireo (Male No. 1) was detected on east side of the dam to the west of the spillway within a stand of eucalyptus. Male No. 1 was heard singing during the first and second survey visits, concurrently with the male from Pair No. 1, but was not detected during remaining surveys.

A vireo pair (Pair No. 1) was detected approximately 320 feet southeast (downstream) of the dam within a patch of laurel sumac (*Malosma laurina*). A male, presumably belonging to Pair No. 1, was heard singing within the area during the first three survey visits. During the fourth survey visit, a second vireo, presumably the female belonging to the pair, was heard scolding while the male was singing. Both the male and female were visually observed later during the survey confirming the presence of a pair. Only the male was heard singing during the fifth, sixth, and seventh surveys. During the eighth survey visit, the male was observed foraging with and feeding at least one fledgling southeast of the dam while

intermittently singing. The female, presumably belonging to Pair No. 1, was observed foraging with and feeding at least two fledglings upslope of the male at the western terminus of the dam.

The BHCO was not detected within the Savage Dam study area during the eight surveys.

Sutherland Dam


The least Bell's vireo was not detected within or adjacent to the Sutherland Dam study area during 2020 protocol survey effort (Figures 4g, *2020 Least Bell's Survey Results – Sutherland Dam*).

The BHCO was detected during five of the eight surveys at one location within the Sutherland Dam study area (Figure 4g). Observations of BHCO included individuals flying overhead, singing males, and calling females.

CERTIFICATION

We certify that the information in this survey report and attached exhibits fully and accurately represents our work. Please contact Shelby Howard or Erica Harris at (619) 462-1515 you have any questions.

Sincerely,


Mandy Mathews
Biologist


Katie Bellon
Biologist


Laura Moreton
Biologist

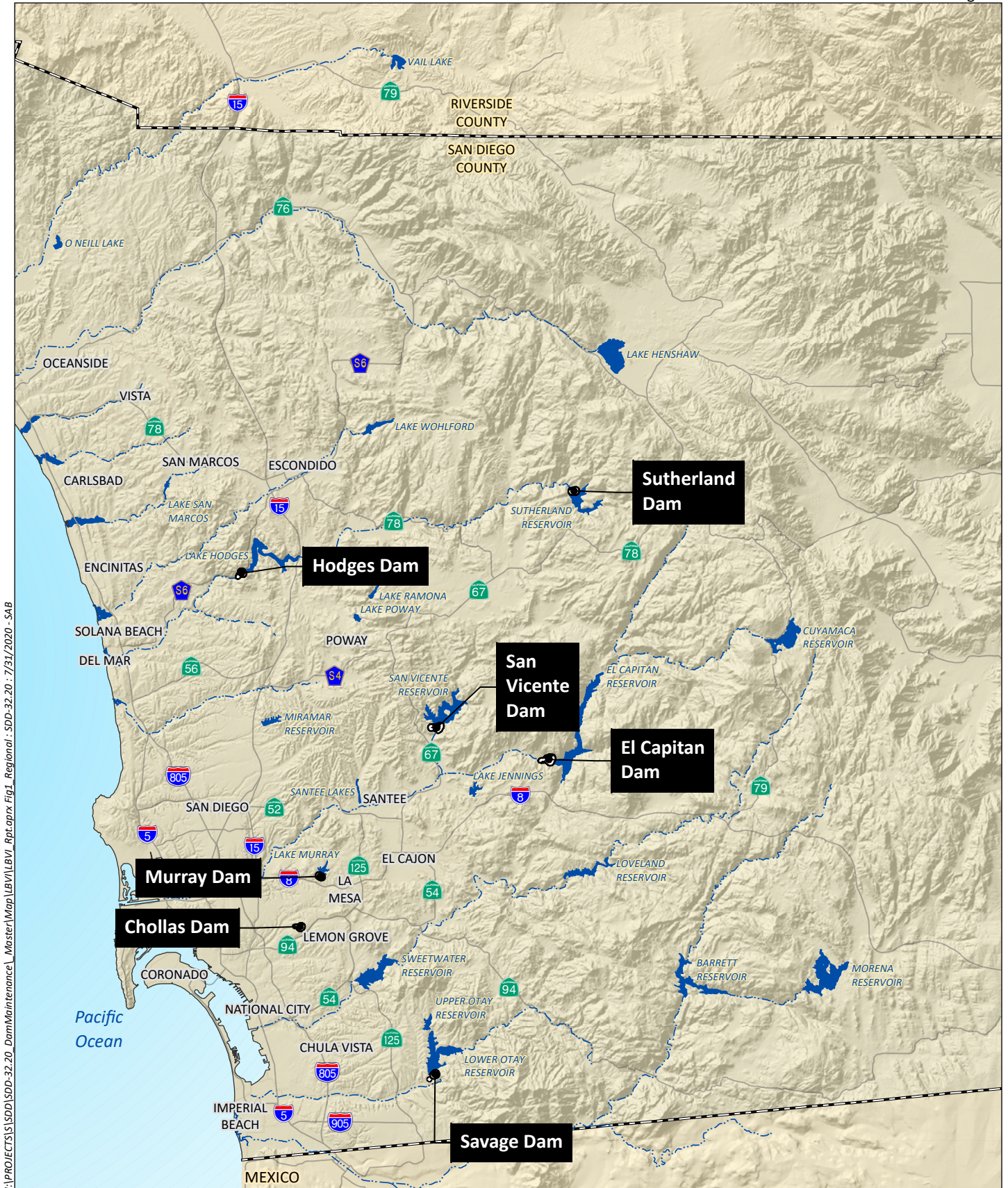

Dane van Tamelen
Biologist


Erica Harris
Senior Scientist

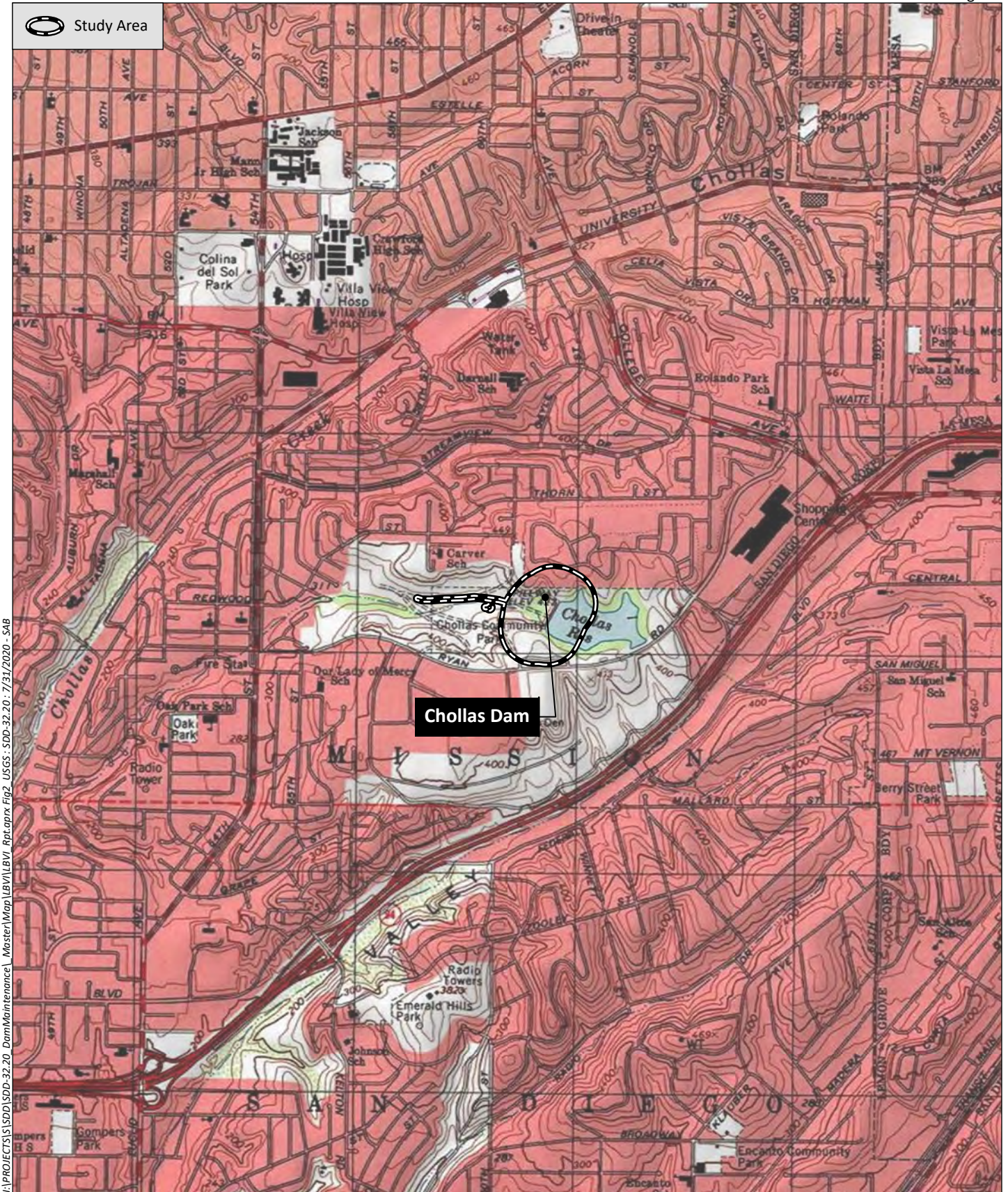
Attachments:

- Figure 1: Regional Location
- Figure 2a: USGS Topography – Chollas Dam
- Figure 2b: USGS Topography – El Capitan Dam
- Figure 2c: USGS Topography – Hodges Dam
- Figure 2d: USGS Topography – Murray Dam
- Figure 2e: USGS Topography – San Vicente Dam
- Figure 2f: USGS Topography – Savage Dam
- Figure 2g: USGS Topography – Sutherland Dam
- Figure 3a: Aerial Photograph – Chollas Dam
- Figure 3b: Aerial Photograph – El Capitan Dam
- Figure 3c: Aerial Photograph – Hodges Dam

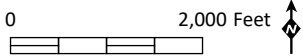
- Figure 3d: Aerial Photograph – Murray Dam
- Figure 3e: Aerial Photograph – San Vicente Dam
- Figure 3f: Aerial Photograph – Savage Dam
- Figure 3g: Aerial Photograph – Sutherland Dam
- Figure 4a: 2020 Least Bell's Vireo Survey Results – Chollas Dam
- Figure 4b: 2020 Least Bell's Vireo Survey Results – El Capitan Dam
- Figure 4c: 2020 Least Bell's Vireo Survey Results – Hodges Dam
- Figure 4d: 2020 Least Bell's Vireo Survey Results – Murray Dam
- Figure 4e: 2020 Least Bell's Vireo Survey Results – San Vicente Dam
- Figure 4f: 2020 Least Bell's Vireo Survey Results – Savage Dam
- Figure 4g: 2020 Least Bell's Vireo Survey Results – Sutherland Dam



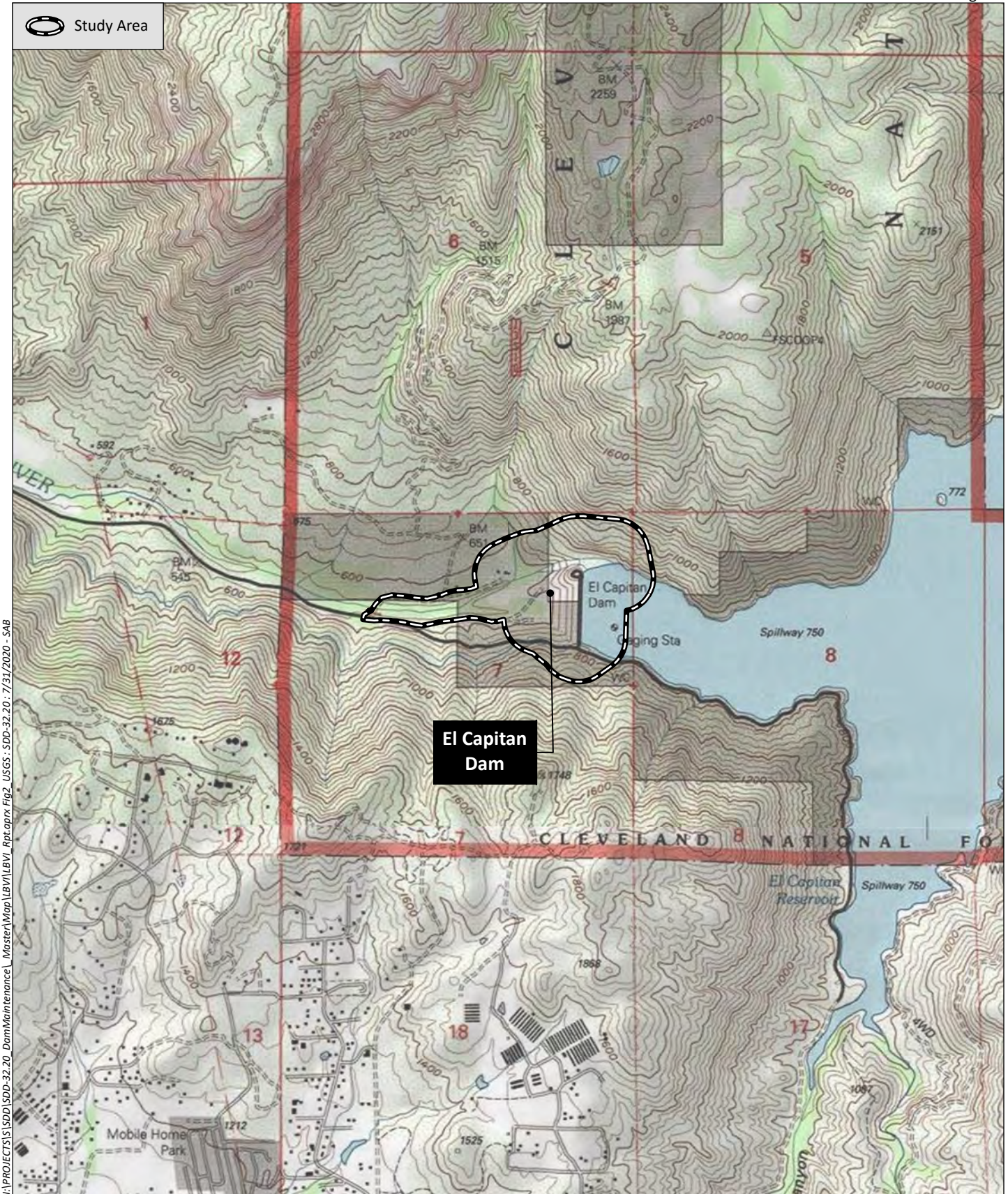
Source: Base Map Layers (SanGIS, 2016)



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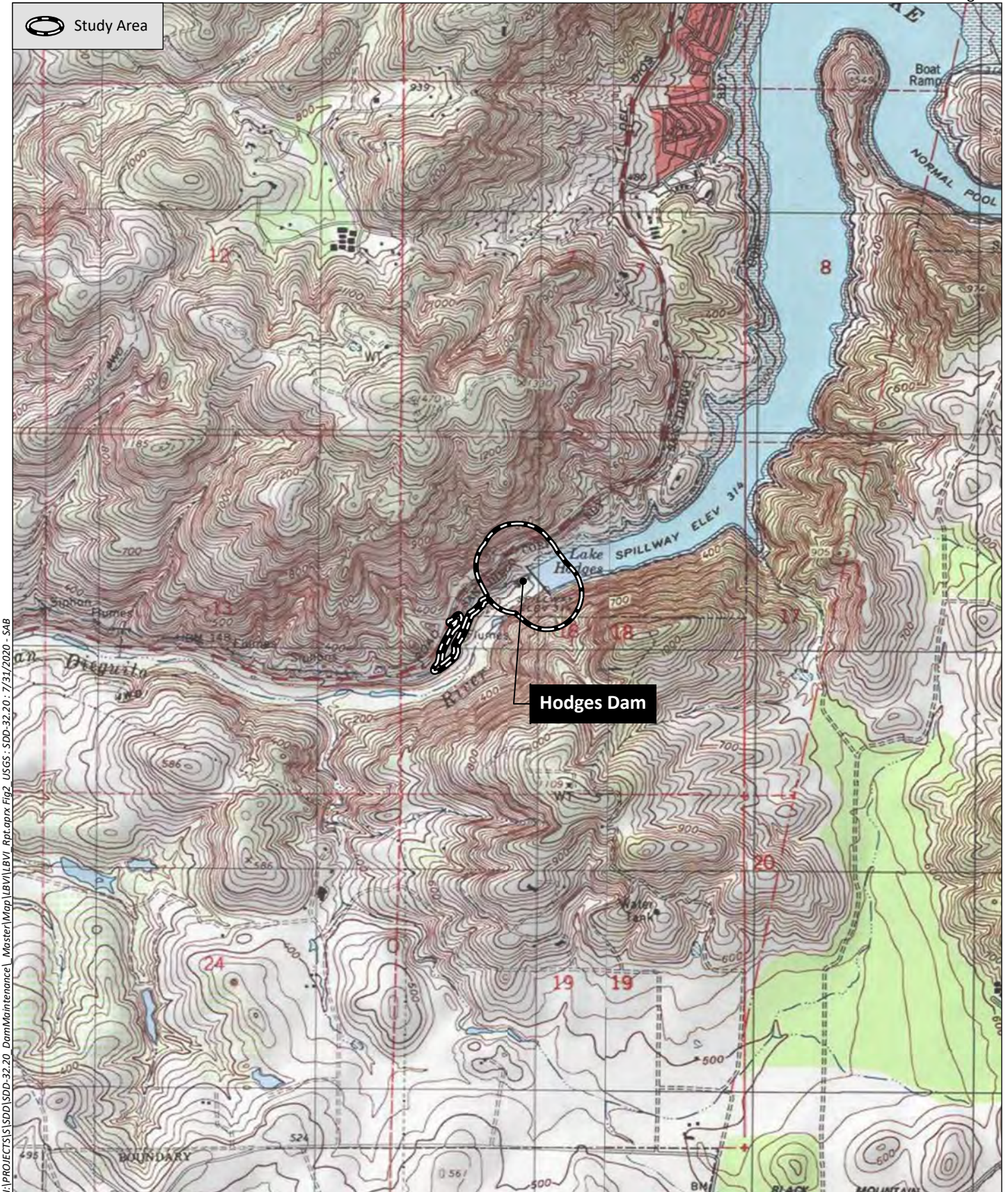


Source: NATIONAL CITY 7.5' Quad (USGS)



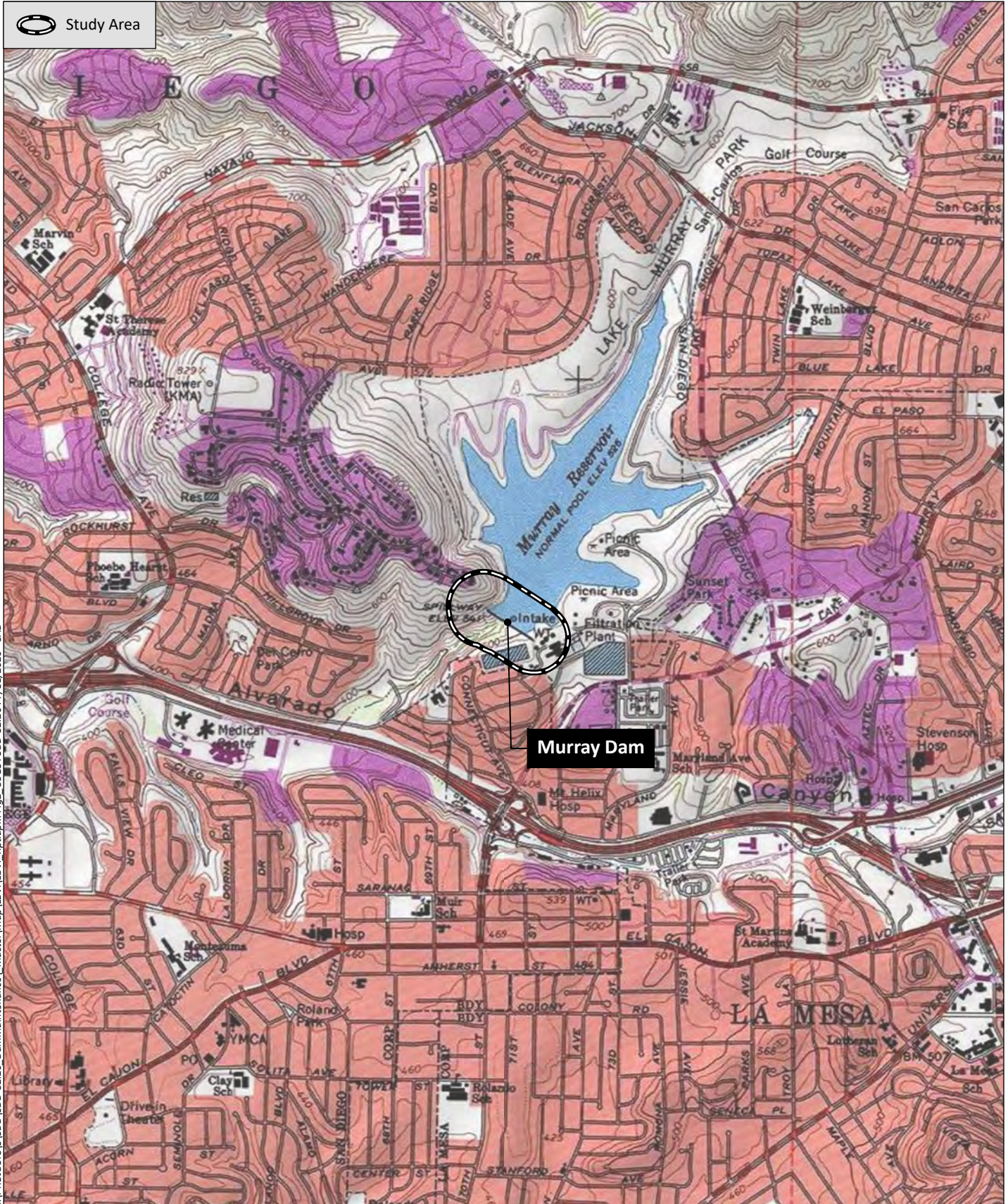
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Source: EL CAJON MTN. 7.5' Quad (USGS)



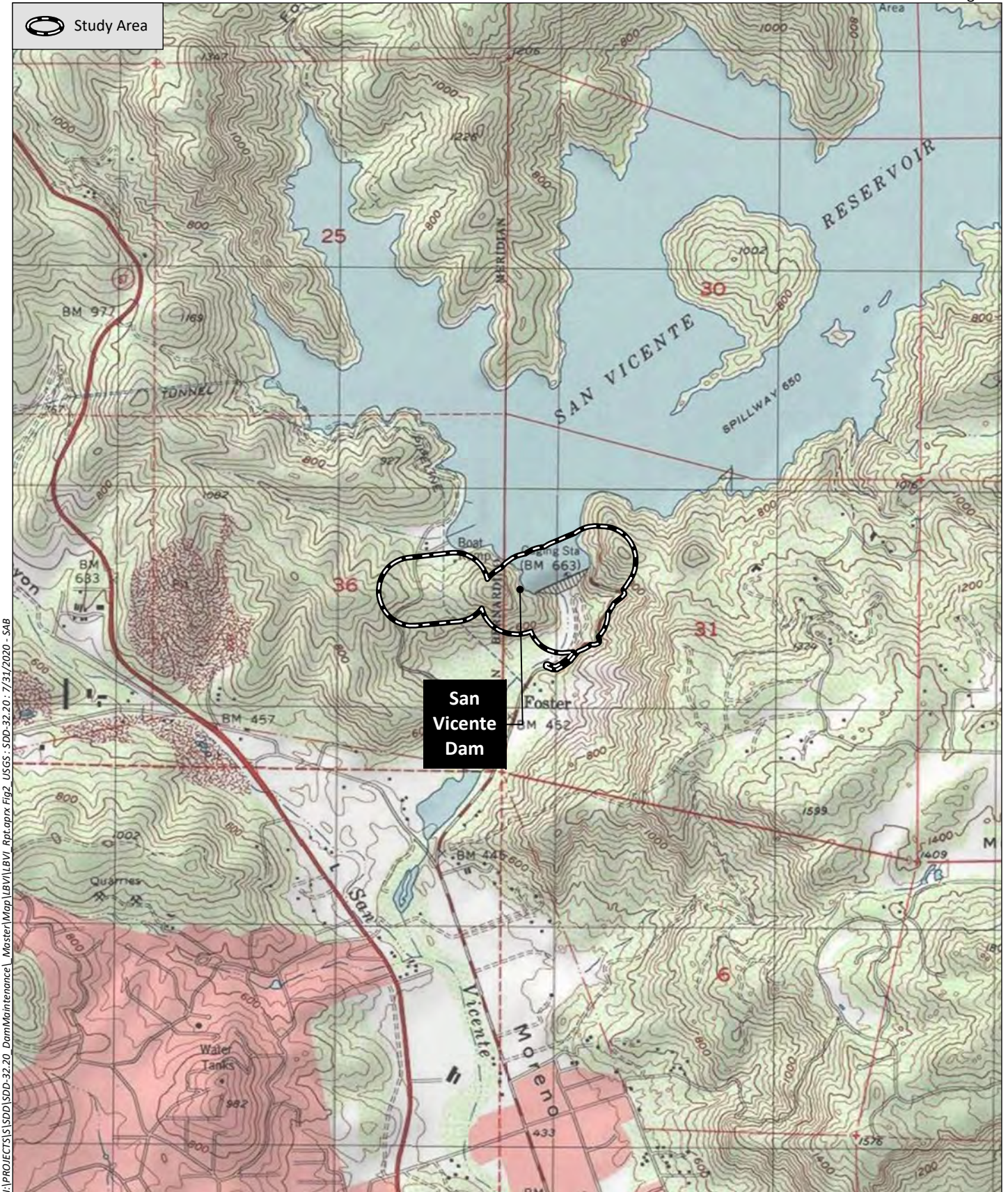
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Source: RANCHO SANTA FE 7.5' Quad (USGS)



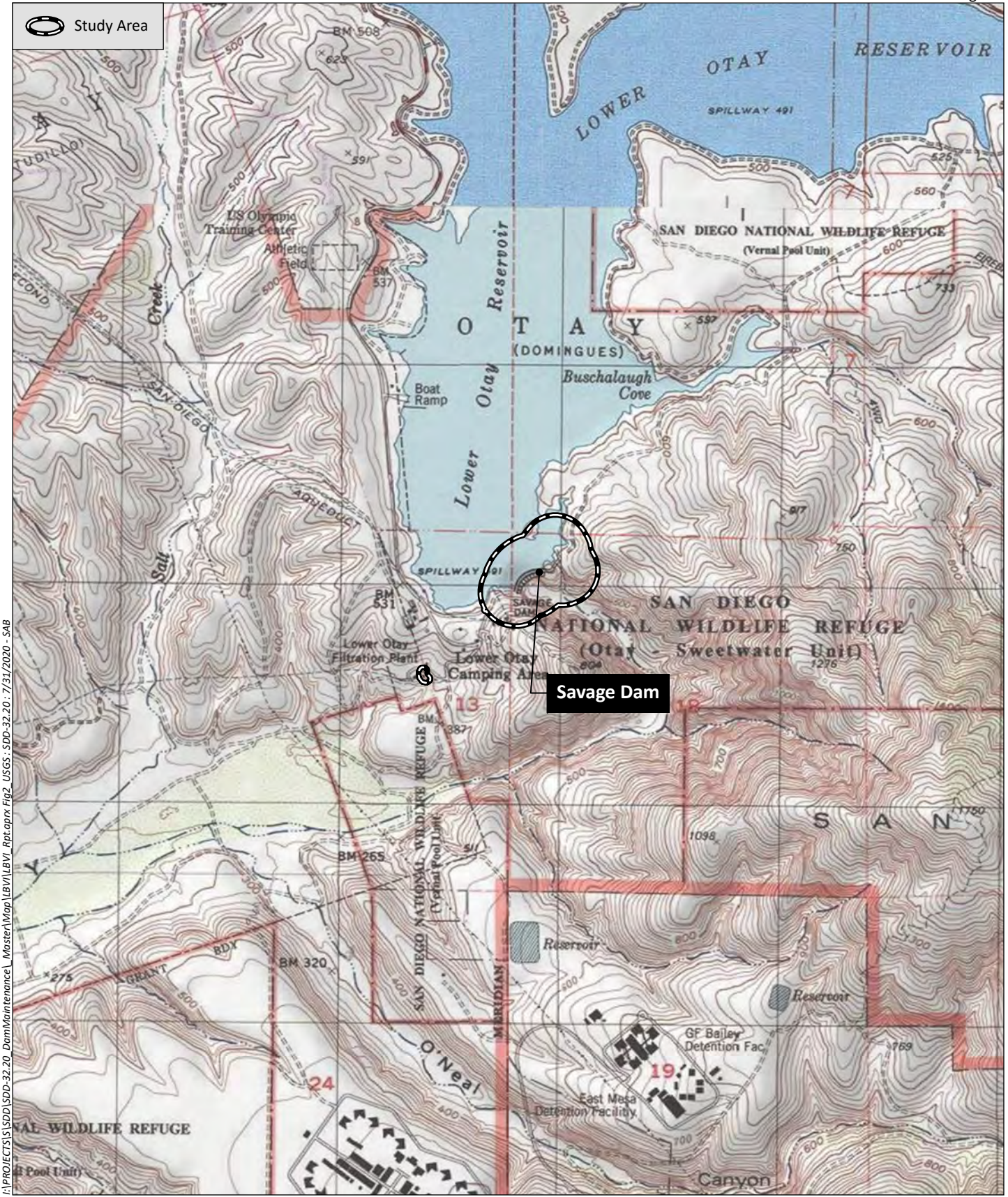
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Source: LA MESA 7.5' Quad (USGS)



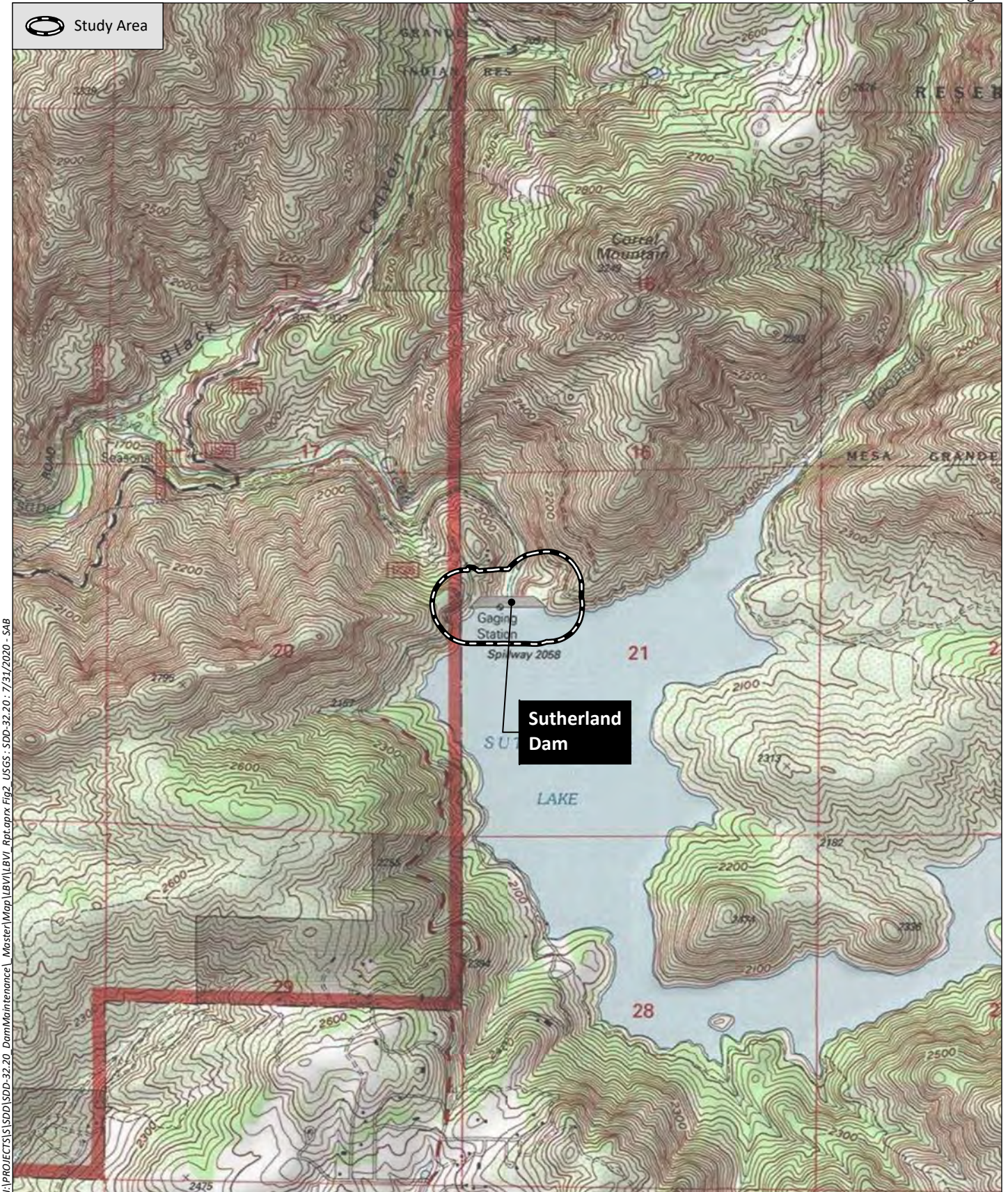
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Source: SAN VICENTE RESERVOIR 7.5' Quad (USGS)



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Source: OTAY MESA 7.5' Quad (USGS)



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Source: RAMONA 7.5' Quad (USGS)



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Source: Aerial (SanGIS, 2017)

Project Vicinity Aerial Photograph - Chollas Dam

Figure 3a



**Project Vicinity Aerial Photograph -
El Capitan Dam**

Figure 3b



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0 600 Feet

Source: Aerial (SanGIS, 2017)

Project Vicinity Aerial Photograph - Hodges Dam



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Project Vicinity Aerial Photograph - Murray Dam

Figure 3d



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Source: Aerial (SanGIS, 2017)

Project Vicinity Aerial Photograph - San Vicente Dam

Figure 3e

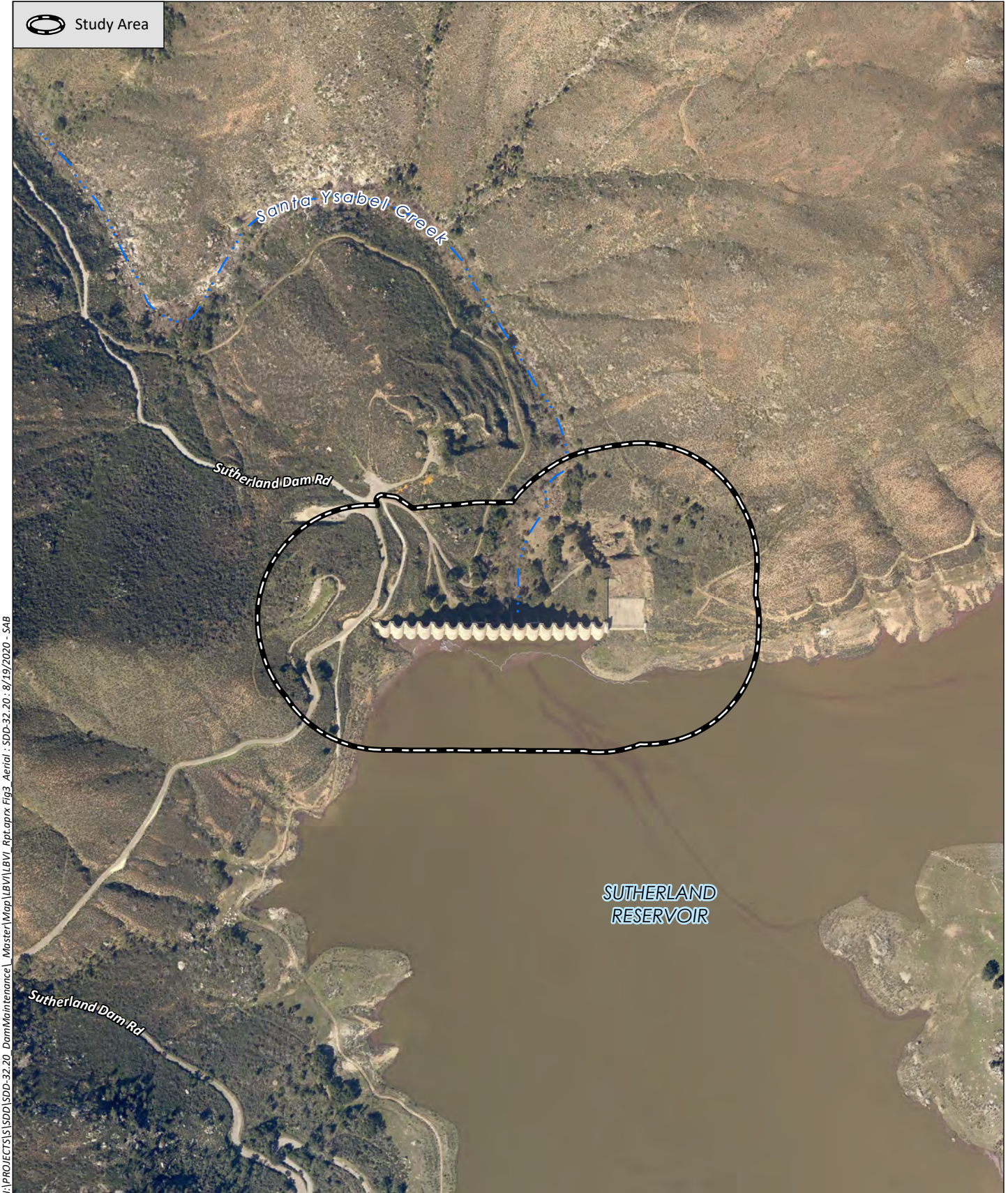


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Source: Aerial (SanGIS, 2017)

Project Vicinity Aerial Photograph - Savage Dam

Figure 3f



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0 600 Feet

Source: Aerial (SanGIS, 2017)

Project Vicinity Aerial Photograph - Sutherland Dam

Study Area

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

Male No. 1

Brown-headed Cowbird (*Molothrus ater*)

Location

Least Bell's Vireo Habitat

Riparian Woodland

Southern Willow Scrub

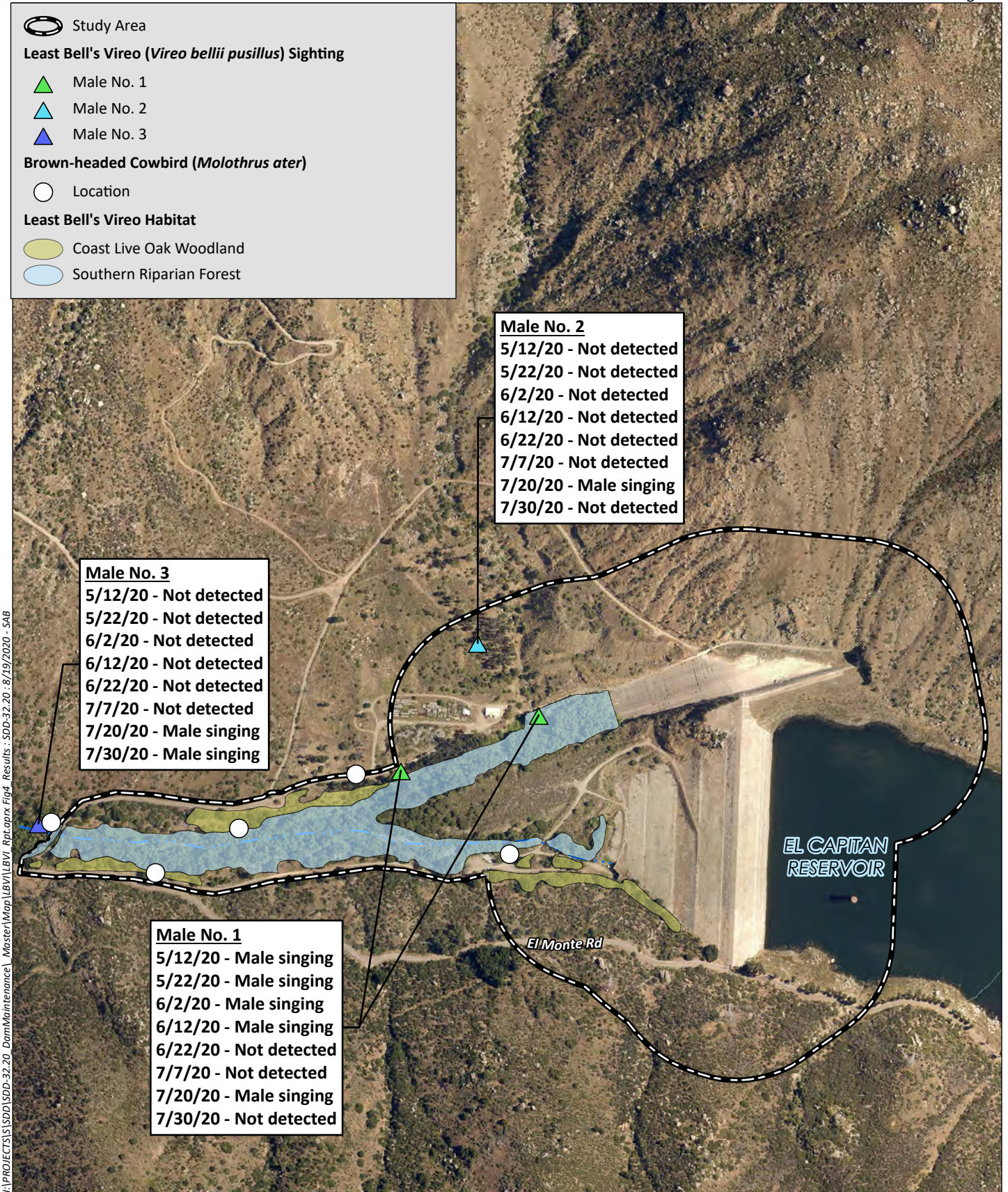


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Source: Aerial (SanGIS, 2017)

2020 Least Bell's Vireo Survey Results – Chollas Dam



2020 Least Bell's Vireo Survey Results – El Capitan Dam

Figure 4b

 Study Area
Brown-headed Cowbird (*Molothrus ater*)
 Location
Least Bell's Vireo Habitat*
 Southern Riparian Forest

**The least Bell's vireo was not detected within the Hodges Dam Study Area during the 2020 protocol-level survey effort.*



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Source: Aerial (SanGIS, 2017)

2020 Least Bell's Vireo Survey Results – Hodges Dam

-  Study Area
- Brown-headed Cowbird (*Molothrus ater*)**
-  Location
- Least Bell's Vireo Habitat***
-  Non-native Riparian

*The least Bell's vireo was not detected within the Murray Dam Study Area during the 2020 protocol-level survey effort.







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Source: Aerial (SanGIS, 2017)

2020 Least Bell's Vireo Survey Results – Murray Dam

 Study Area
Least Bell's Vireo (*Vireo bellii pusillus*) Sighting
 Male No. 1
Least Bell's Vireo Habitat
 Riparian Woodland
 Southern Willow Scrub



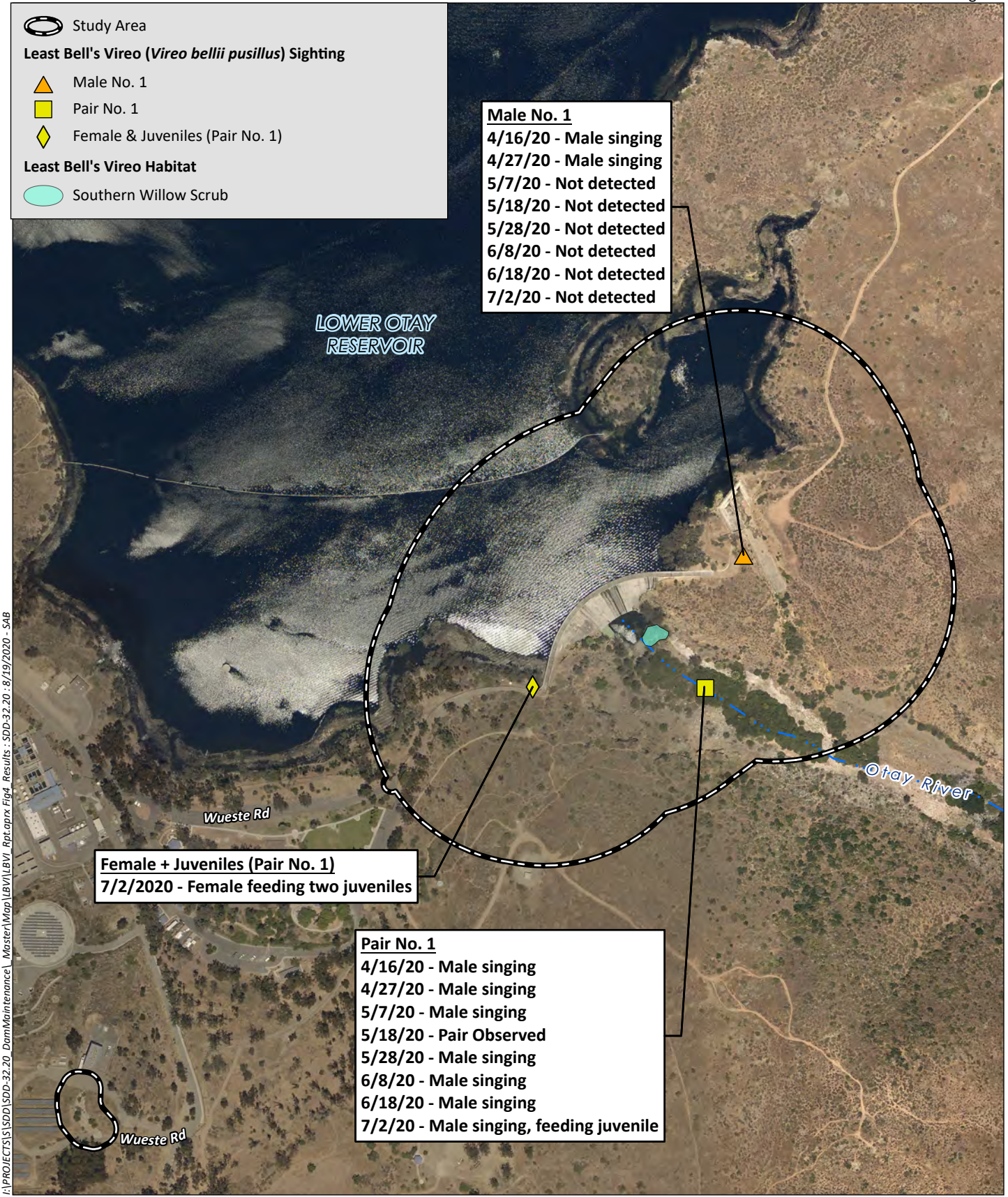
Male No. 1
 4/28/2020 - Not detected
 5/12/2020 - Not detected
 5/22/2020 - Not detected
 6/2/2020 - Not detected
 6/12/2020 - Not detected
 6/23/2020 - Not detected
 7/6/20 - Male singing
 7/16/20 - Not detected

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Source: Aerial (SanGIS, 2017)

2020 Least Bell's Vireo Survey Results – San Vicente Dam



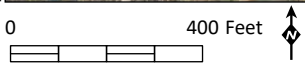
2020 Least Bell's Vireo Survey Results – Savage Dam

Figure 4f

 Study Area
Brown-headed Cowbird (*Molothrus ater*)
 Location
Least Bell's Vireo Habitat*
 Coast Live Oak Woodland
 Southern Riparian Forest
**The least Bell's vireo was not detected within the Sutherland Dam Study Area during the 2020 protocol-level survey effort.*



I:\PROJECTS\1\SDD\SDD-32.20 DamMaintenance\Master\Map\LIB\LBVI Rpt.aprx Fig4 Results : SDD-32.20 : 8/19/2020 - SAB



Source: Aerial (SanGIS, 2017)

2020 Least Bell's Vireo Survey Results – Sutherland Dam

APPENDIX E

2020 Southwestern Willow Flycatcher (*Empidonax traillii extimus*) Survey Report for the City of San Diego Dam Maintenance Program Project at El Capitan Reservoir

August 14, 2020

SDD-32.20

Ms. Stacey Love
U.S. Fish and Wildlife Service
2177 Salk Avenue, Suite 250
Carlsbad, CA 92008

Subject: 2020 Southwestern Willow Flycatcher (*Empidonax traillii extimus*) Survey Report for the City of San Diego Dam Maintenance Program Project at El Capitan Reservoir, San Diego County, California.

Dear Ms. Love:

This letter presents the results of a U.S. Fish and Wildlife Service (USFWS) protocol presence/absence survey for the federally listed endangered southwestern willow flycatcher (*Empidonax traillii extimus*) (SWFL) conducted by HELIX Environmental Planning, Inc. (HELIX) for the City of San Diego (City) Dam Maintenance Program Project (project). This report describes the methods used to perform the survey and the results. It is being submitted to the USFWS in accordance with protocol survey guidelines and Threatened and Endangered Species Permit conditions (TE-778195-14 and TE-837308-7).

PROJECT LOCATION

The proposed project includes routine maintenance of 13 City dams and associated infrastructure throughout San Diego County (County), California (Figure 1, *Regional Location*). Surveys for SWFL were conducted at one of the dam sites: El Capitan Dam. El Capitan Dam is located in the eastern end of the El Monte Valley, northeast of the community of Lakeside (Figure 1). It lies within Sections 6, 7, and 8 of Township 15 South, Range 2 East, on the USGS 7.5-minute El Cajon Mountain quadrangle map (Figure 2, *USGS Topography – El Capitan Dam*). El Capitan Dam is located at the outlet of El Capitan Reservoir along El Monte Road to the north Interstate (I-) 8, south of Featherstone Canyon Road, east of Lake Jennings Road, and west of Peutz Valley Road (Figure 3, *Aerial Photograph – El Capitan Dam*). The study area occurs in the City's El Capitan Reservoir Open Space Area and Cleveland National Forest. The El Capitan study area does not contain USFWS-designated critical habitat for the SWFL.

METHODS

The survey methodology consisted of five site visits conducted by HELIX biologist John Konecny (TE-837308-7) in accordance with the current USFWS approved survey protocol¹. The SWFL survey area

¹ Sogge, Mark K., Ahlers, Darrell, and Sferra, Susan J. 2010. A Natural History Summary and Survey Protocol for the Southwestern Willow Flycatcher: U.S. Geological Survey Techniques and Methods 2A-10.

included all suitable habitat located within the El Capitan study area. Approximately 12.72 acres of potential SWFL habitat was surveyed consisting of southern riparian forest located along the San Diego River (Figure 4, *2020 Southwestern Willow Flycatcher Survey Results*). The overall study area is characterized by a mosaic of woodland communities including southern riparian forest along the San Diego River with patches of coast live oak woodland, and eucalyptus woodland along the perimeter. Dominant species include Goodding's black willow (*Salix gooddingii*), red willow (*S. laevigata*), and arroyo willow (*S. lasiolepis*), with scattered western sycamore (*Platanus racemosa*) and Fremont cottonwood (*Populus fremontii*) within the southern riparian forest; coast live oak (*Quercus agrifolia*) within the coast live oak woodland; and sugar gum (*Eucalyptus cladocalyx*) within the eucalyptus woodland. A well-developed understory is present throughout the southern riparian forest characterized by patches of mule fat (*Baccharis salicifolia*), desert wild grape (*Vitis girdiana*), dead cattail (*Typha* sp.); and herbaceous species such as mariposa rush (*Juncus dubius*), and leaf litter. A few small patches of giant reed (*Arundo donax*) are also scattered throughout. The trees in the area are tall and form a moderately dense to very dense riparian canopy.

Survey protocol requires that five survey visits be conducted at least five days apart, between the hours of sunrise and 10:30 a.m., within the three specified survey periods. One survey was conducted during Survey Period 1 (May 15 to 31), two surveys were conducted during Survey Period 2 (June 1 to 24), and two surveys were conducted during Survey Period 3 (June 25 to July 17).

The surveys were conducted by walking within and along the perimeter of suitable SWFL habitat present within the study area. Surveys were conducted with binoculars to aid in bird detection. Recorded SWFL vocalizations were played every 20 to 30 meters followed by a one-minute silent period to listen for a response. The survey route was arranged to ensure complete survey coverage of habitat with potential for occupancy by SWFL.

Table 1, *Survey Information*, details the survey dates, times, weather conditions, and survey results.

Table 1
SURVEY INFORMATION

Survey Period ¹	Site Visit	Survey Date	Biologist	Start/Stop Time	Approx. Acres Surveyed/ Acres Per Hour	Start/Stop Weather Conditions	Survey Results
1	1	5/16/2020	John Konecny ²	0630-0930	12.72 ac/ 4.24 ac/hr	62°F, wind 7-10 mph, 40% overcast 76°F, wind 3-5 mph, 40% overcast	Single male willow flycatcher (Male No. 1) heard singing within the northern fork of San Diego River immediately west (downstream) of the dam spillway.
2	2	6/3/2020	John Konecny ²	0515-0815	12.72 ac/ 4.24 ac/hr	51°F, wind 1-3 mph, 10% overcast 76°F, wind 1-3 mph, 10% overcast	No flycatchers detected
2	3	6/19/2020	John Konecny ²	0535-0840	12.72 ac/ 4.24 ac/hr	61°F, wind 1-3 mph, 100% overcast 63°F, wind 1-3 mph, 100% overcast	No flycatchers detected
3	4	6/26/2020	John Konecny ²	0515-0815	12.72 ac/ 4.24 ac/hr	60°F, wind 1-3 mph, 0% cloud cover 76°F, wind 1-3 mph, 0% cloud cover	No flycatchers detected
3	5	7/13/2020	John Konecny ²	0525-0830	12.72 ac/ 4.24 ac/hr	66°F, wind 0-1 mph, 0% cloud cover 77°F, wind 1-3 mph, 0% cloud cover	No flycatchers detected

¹ Survey Period 1 (May 15 to 31), Survey Period 2 (June 1 to 24), Survey Period 3 (June 25 to July 17).

² USFWS Permit TE-837308-7

SURVEY RESULTS

No breeding SWFL individuals were documented as part of these 2020 focused surveys. One willow flycatcher (*Empidonax traillii*; WIFL) was detected during the first survey period in May. A single, male WIFL (Male No. 1) was heard singing within the northern fork of the San Diego River just west (downstream) of the dam spillway on May 16, 2020 (Figure 4). As noted below, the male could not be identified to subspecies. The male was not observed during subsequent four surveys and no other WIFLs were detected on any of the surveys. The single observation of a male willow flycatcher is presumed to be a migrating individual.

The first survey period represents a time when other migratory subspecies of WIFL are moving through southern California, particularly northern breeding subspecies *Empidonax traillii brewsteri* and *E.t. adastus*, though migrants could still be travelling through the region during the second survey period. By the third survey period (beginning June 22nd), SWFL should be the only subspecies remaining within the southern California region, as the non-migrant period is generally considered from about June 15 to July 20². The detection of the single WIFL within the El Capitan Dam study area occurred on May 16 during the first survey window and no other WIFL were detected during subsequent surveys. Therefore, it can be concluded that this individual most likely represents a migratory individual. No breeding SWFL were documented within the El Capitan Dam study area.

No documented breeding occurrences of SWFL occur along the San Diego River west of El Capitan Dam^{3,4}. The closest recorded breeding occurrence of SWFL is located approximately 4.8 miles to the northeast of El Capitan Dam where the San Diego River enters El Capitan Reservoir. Two SWFL pairs were documented by USGS in the habitat upstream of El Capitan Reservoir in 2001.

A Willow Flycatcher Survey and Detection Form has been completed and is included as Attachment A, *Willow Flycatcher Survey and Detection Form*.

² Unitt, P., 1987, *Empidonax traillii extimus*: an endangered subspecies: Western Birds, v. 18, no. 3, p. 137-162.

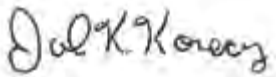
³ California Department of Fish and Wildlife. 2020. RareFind Database Program, Version 5.

⁴ U.S. Fish and Wildlife Service. 2020. Occurrence Information for Multiple Species within Jurisdiction of the Carlsbad Fish and Wildlife Office (CFWO). Retrieved from: <http://www.fws.gov/carlsbad/gis/cfwogis.html>

CERTIFICATION

I certify that the information in this survey report and attached exhibits fully and accurately represents our work. Please contact Shelby Howard or Erica Harris at (619) 462-1515 should you have any questions.

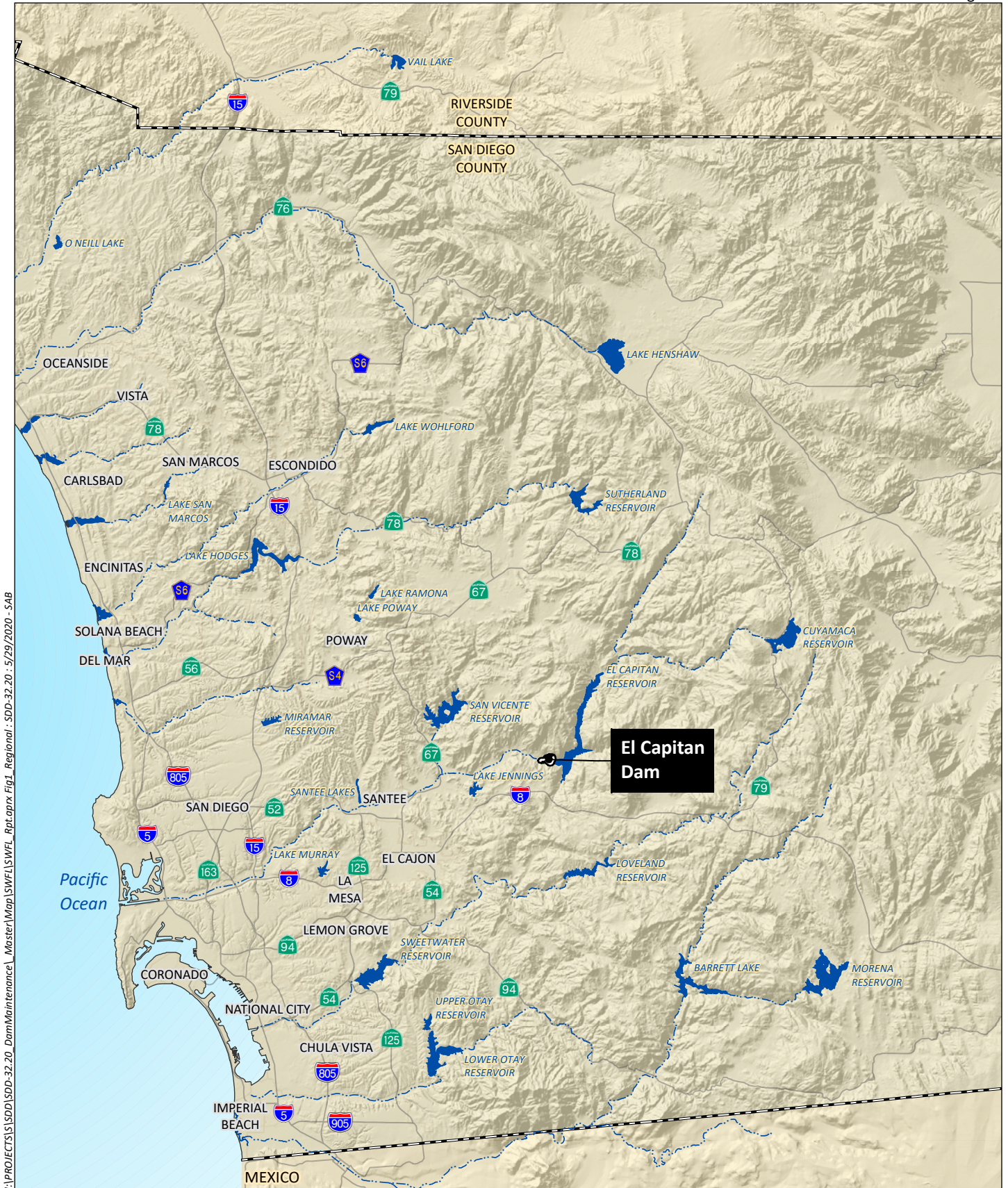
Sincerely,



John Konecny
Biologist

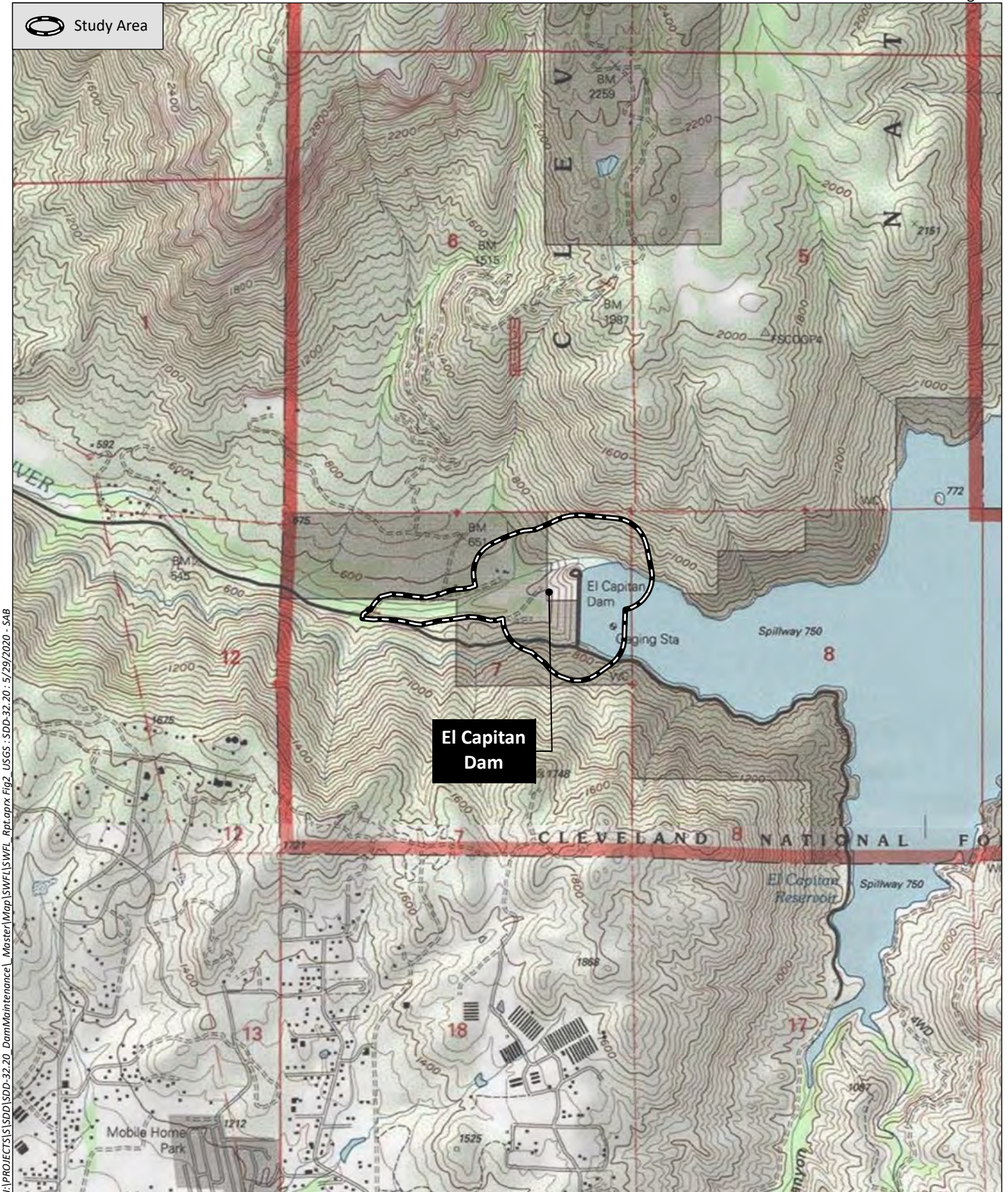
Attachments:

- Figure 1: Regional Location
- Figure 2: USGS Topography – El Capitan Dam
- Figure 3: Aerial Photograph – El Capitan Dam
- Figure 4: 2020 Southwestern Willow Flycatcher Survey Results – El Capitan Dam
- Attachment A: Willow Flycatcher Survey and Detection Form



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Source: Base Map Layers (SanGIS, 2016)

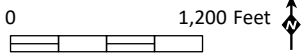


I:\PROJECTS\SDD\SDD-32.20_DamMaintenance\Master\Map\SWFL\SWFL_Rpt.aprx Fig2_USGS :SDD-32.20 : 5/29/2020 - SAB


Source: EL CAJON MTN. 7.5' Quad (USGS)




I:\PROJECTS\SD\SD-32.20 DamMaintenance\Map\SWFL\SWFL Rpt.aprx Fig3_Aerial : SDD-32.20 : 5/29/2020 - SAB




Source: Aerial (SanGIS, 2017)

 Study Area

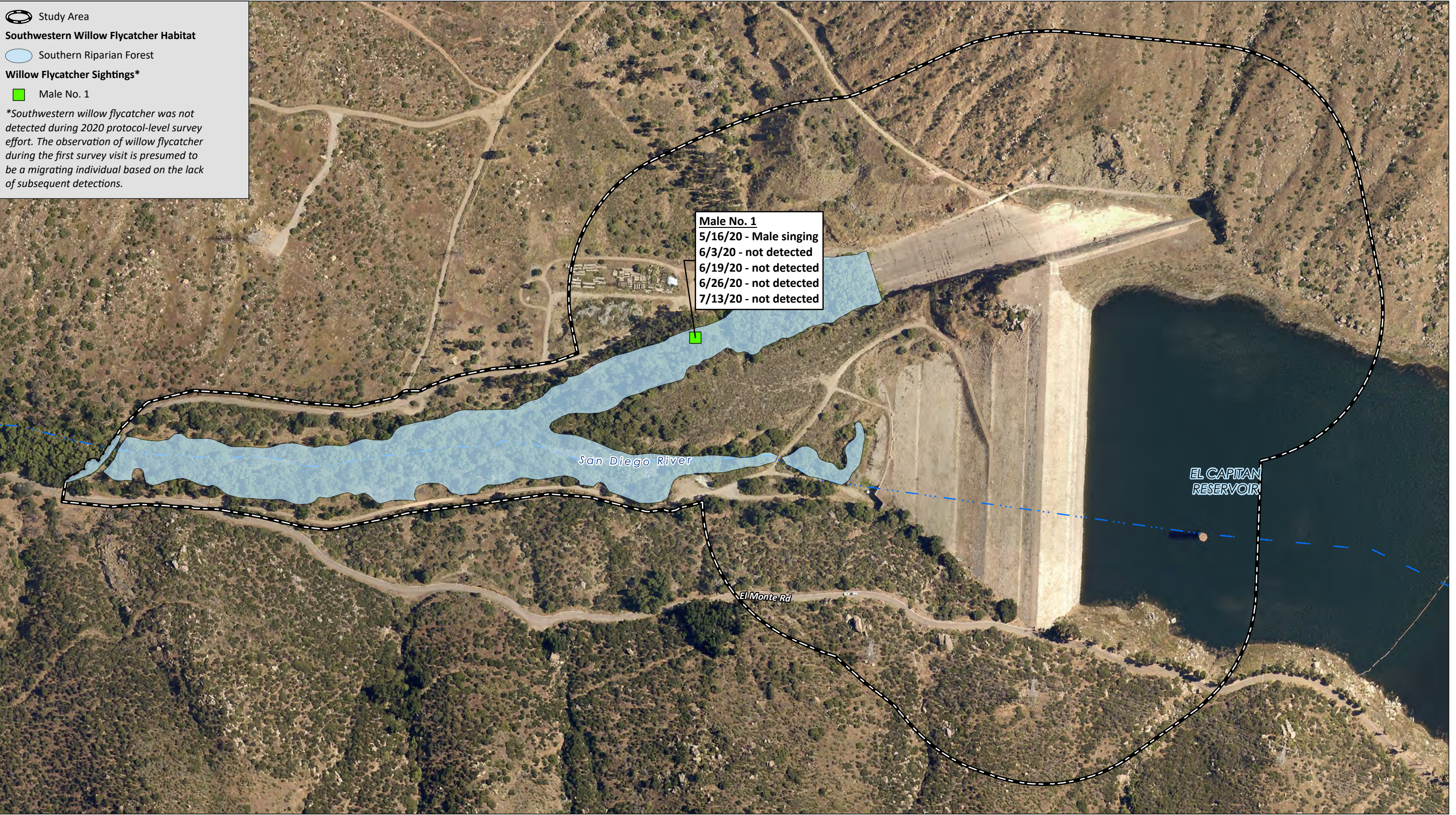
Southwestern Willow Flycatcher Habitat

 Southern Riparian Forest

Willow Flycatcher Sightings*

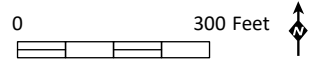
 Male No. 1

**Southwestern willow flycatcher was not detected during 2020 protocol-level survey effort. The observation of willow flycatcher during the first survey visit is presumed to be a migrating individual based on the lack of subsequent detections.*



Male No. 1
 5/16/20 - Male singing
 6/3/20 - not detected
 6/19/20 - not detected
 6/26/20 - not detected
 7/13/20 - not detected

I:\PROJECTS\SD\32-20_DamMaintenance\Master\Map\SWFL\SWFL_Rpt.aprx Fig4_Results : SDD-32-20-7/28/2020 - SAB



Source: Aerial (SanGIS, 2017)

Willow Flycatcher (WIFL) Survey and Detection Form (revised April, 2010)

Site Name: El Capitan Dam State: CA County: San Diego
 USGS Quad Name: El Cajon Mountain Elevation: 170 (meters)
 Creek, River, or Lake Name: San Diego River

Is copy of USGS map marked with survey area and WIFL sightings attached (as required)? Yes X No

Survey Coordinates: Start: E 517644 N 3638437 UTM Datum: WGS84 (See instructions)
 Stop: E 516840 N 3638437 UTM Zone: 11N

If survey coordinates changed between visits, enter coordinates for each survey in comments section on back of this page.

****Fill in additional site information on back of this page****

Survey # Observer(s) (Full Name)	Date (m/d/y) Survey Time	Number of Adult WIFLs	Estimated Number of Pairs	Estimated Number of Territories	Nest(s) Found? Y or N If Yes, number of nests	Comments (e.g., bird behavior; evidence of pairs or breeding; potential threats [livestock, cowbirds, <i>Diorhabda</i> spp.]). If <i>Diorhabda</i> found, contact USFWS and State WIFL coordinator.	GPS Coordinates for WIFL Detections (this is an optional column for documenting individuals, pairs, or groups of birds found on each survey). Include additional sheets if necessary.			
							# Birds	Sex	UTM E	UTM N
Survey # 1 Observer(s): John Konecny	Date: 5/16/2020	1	0	0	N	Male singing within north fork of San Diego River immediately west (downstream) of the dam spillway. Not detected during subsequent surveys. Presumed to be a migrating individual.	# Birds	Sex	UTM E	UTM N
	Start: 6:30						0	n/a	n/a	n/a
	Stop: 9:30									
	Total hrs: 3.00									
Survey # 2 Observer(s): John Konecny	Date: 6/3/2020	0	n/a	n/a	n/a	n/a	# Birds	Sex	UTM E	UTM N
	Start: 5:15						0	n/a	n/a	n/a
	Stop: 8:15									
	Total hrs: 3.00									
Survey # 3 Observer(s): John Konecny	Date: 6/19/2020	0	n/a	n/a	n/a	n/a	# Birds	Sex	UTM E	UTM N
	Start: 5:35						0	n/a	n/a	n/a
	Stop: 8:40									
	Total hrs: 3.08									
Survey # 4 Observer(s): John Konecny	Date: 6/26/2020	0	n/a	n/a	n/a	n/a	# Birds	Sex	UTM E	UTM N
	Start: 5:15						0	n/a	n/a	n/a
	Stop: 8:15									
	Total hrs: 3.00									
Survey # 5 Observer(s): John Konecny	Date: 7/13/2020	0	n/a	n/a	n/a	n/a	# Birds	Sex	UTM E	UTM N
	Start: 5:25						0	n/a	n/a	n/a
	Stop: 8:30									
	Total hrs: 3.92									
Overall Site Summary Totals do not equal the sum of each column. Include only resident adults. Do not include migrants, nestlings, and fledglings. Be careful not to double count individuals.		Total Adult Residents	Total Pairs	Total Territories	Total Nests	Were any WIFLs color-banded? Yes <u> </u> No <u>X</u> If yes, report color combination(s) in the comments section on back of form and report to USFWS.				
Total survey hrs:	16.00	0	0	0	0					

Reporting Individual: John Konecny Date Report Completed: 8/14/2020
 US Fish & Wildlife Service Permit #: TE-837308-7 State Wildlife Agency Permit #: 001463

Submit form to USFWS and State Wildlife Agency by September 1st. Retain a copy for your records.

Fill in the following information completely. Submit form by September 1st. Retain a copy for your records.

Reporting Individual John Konecny Phone # 760-390-8959
 Affiliation HELIX Environmental Planning, Inc. E-mail jkonecny1234@gmail.com
 Site Name El Capitan Dam Date report Completed 8/14/2020
 Was this site surveyed in a previous year? Yes X No ___ Unknown ___
 Did you verify that this site name is consistent with that used in previous yrs? Yes X No ___ Not Applicable ___
 If name is different, what name(s) was used in the past? El Capitan Spillway
 If site was surveyed last year, did you survey the same general area this year? Yes X No ___ If no, summarize below.
 Did you survey the same general area during each visit to this site this year? Yes X No ___ If no, summarize below.
 Management Authority for Survey Area: Federal X Municipal/County X State ___ Tribal ___ Private ___
 Name of Management Entity or Owner (e.g., Tonto National Forest) City of San Diego; U.S. Forest Service - Cleveland National Forest

Length of area surveyed: 0.8 (km)

Vegetation Characteristics: Check (only one) category that best describes the predominant tree/shrub foliar layer at this site:

- _____ Native broadleaf plants (entirely or almost entirely, > 90% native)
X Mixed native and exotic plants (mostly native, 50 - 90% native)
 _____ Mixed native and exotic plants (mostly exotic, 50 - 90% exotic)
 _____ Exotic/introduced plants (entirely or almost entirely, > 90% exotic)

Identify the 2-3 predominant tree/shrub species in order of dominance. Use scientific name.

Salix lasiolepis, Salix gooddingii, Populus fremontii

Average height of canopy (Do not include a range): 5.4 (meters)

- Attach the following: 1) copy of USGS quad/topographical map (REQUIRED) of survey area, outlining survey site and location of WIFL detections;
 2) sketch or aerial photo showing site location, patch shape, survey route, location of any detected WIFLs or their nests;
 3) photos of the interior of the patch, exterior of the patch, and overall site. Describe any unique habitat features in Comments.

Comments (such as start and end coordinates of survey area if changed among surveys, supplemental visits to sites, unique habitat features). Attach additional sheets if necessary.

Portion of San Diego River downstream (west) of El Capitan Dam/Reservoir. Same general area was surveyed by Mr. Konecny in 2018 as part of a separate project related to removal of vegetation from the Dam's spillway.

Territory Summary Table. Provide the following information for each verified territory at your site.

Territory Number	All Dates Detected	UTM E	UTM N	Pair Confirmed? Y or N	Nest Found? Y or N	Description of How You Confirmed Territory and Breeding Status (e.g., vocalization type, pair interactions, nesting attempts, behavior)
No SWFL detected						

Attach additional sheets if necessary

APPENDIX F

Results of 2018 Arroyo Toad Presence/Absence Surveys for El Capitan Dam Spillway Vegetation Removal Project



An Employee-Owned Company

August 13, 2018

Ms. Stacey Love
Recovery Permit Coordinator
Carlsbad Fish and Wildlife Office
2177 Salk Avenue, Suite 250
Carlsbad, CA 92008

Reference: Results of 2018 Arroyo Toad Presence/Absence Surveys for El Capitan Dam Spillway Vegetation Removal Project (RECON Number 8863)

Dear Ms. Love:

This letter is to notify the U.S. Fish and Wildlife Service (USFWS) of the results of the 2018 focused presence/absence surveys for the federally endangered arroyo toad (*Anaxyrus californicus*) conducted for the City of San Diego's El Capitan Dam Spillway Vegetation Removal Project (project). Survey results will be used to assess potential project impacts and identify appropriate avoidance, minimization, and/or mitigation measures. The survey methods, survey area conditions, and results are discussed in detail below. No arroyo toads were detected during the 2018 surveys.

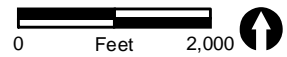
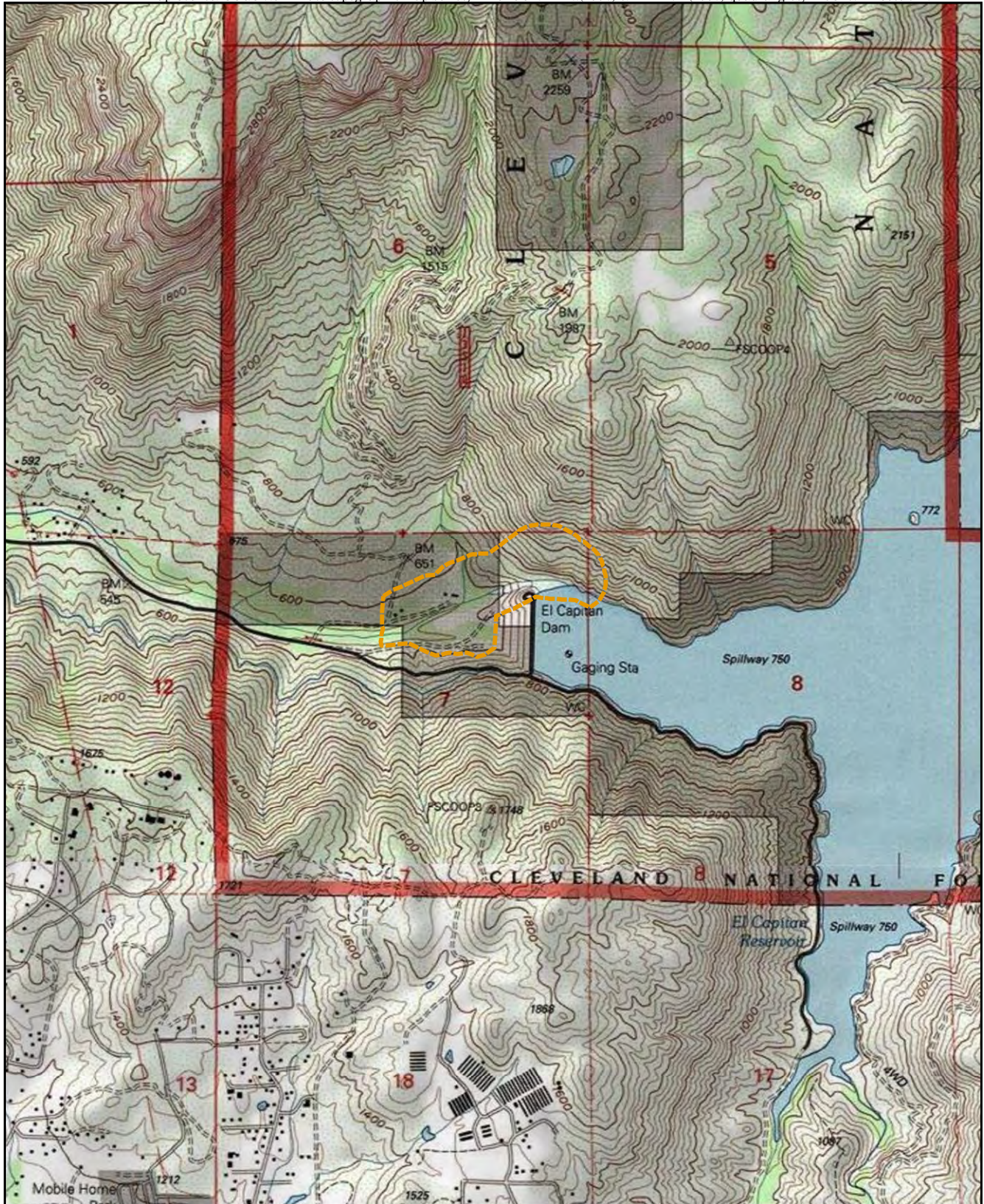
SURVEY AREA LOCATION

The project is currently in the design phase and is located immediately downstream of El Capitan Dam at the east end of El Monte Valley in central San Diego County, northwest of the community of Alpine and northeast of the community of Flinn Springs in unincorporated San Diego County, California. Although the project area is not yet finalized, it will be encompassed entirely by the "project survey area" shown on Figures 1, 2, and 3. The project survey area is mostly found in the northeast quarter of Section 7, with a small portion in the southeast quarter of Section 6 and the northwest quarter of Section 8, Township 15 South, Range 02 East, of the U.S. Geological Survey 7.5-minute topographic map, El Cajon Mountain quadrangle (see Figure 1; U.S. Geological Survey 1997). The project survey area comprises portions of Assessor's Parcel Numbers 4020700500, 4020700400, 4020700300, 4020800400, and 4020200700, and is partially located within Final Critical Habitat for arroyo toad (USFWS 2011; see Figure 2).

SURVEY METHODS

Prior to initiating the focused surveys, RECON Environmental, Inc. (RECON) biologists Brenna Ogg and Kayo Valenti conducted a general biological survey of the project survey area in November 2017. Using vegetation mapping completed as part of the general biological survey, potentially suitable habitat for arroyo toad was identified.



RECON biologists Brenna Ogg, Brian Parker, Alex Fromer, Kayo Valenti, Andrew Smisek, Beth Procsal, and Sonya Vargas conducted focused surveys for arroyo toad between March 21 and June 20, 2018. Survey dates, personnel, times, and weather conditions are provided in Table 1. City of San Diego Public Utilities Department Biologist Mark Berninger accompanied the surveying biologists during the first nighttime survey.



 Project Survey Area

FIGURE 1
El Capitan Dam Spillway
Vegetation Removal Project Survey
Area Location on USGS Map



-  Project Survey Area
-  Arroyo Toad Final Critical Habitat

0 Feet 350 

FIGURE 2
Project Location on Aerial Photograph







-  Project Survey Area
-  San Diego River Channel
-  Spillway Channel
-  Natural Drainage



FIGURE 3
Arroyo Toad 2018 Survey Area

Focused arroyo toad surveys were conducted in accordance with the current USFWS survey protocol (USFWS 1999a). They were focused within the riparian and adjacent upland habitat along the San Diego River channel downstream of El Capitan Dam, the spillway channel, and a natural drainage that occurs north of the spillway channel (see Figure 3). This focused survey area generally coincides with the mapped Final Critical Habitat for arroyo toad, omitting the steep, rocky upland slopes, as well as the concrete spillway and reservoir edge in the northeastern portion of the project survey area. Daytime surveys were conducted by walking slowly through the focused survey area and inspecting any ponded water for arroyo toad eggs, larvae, and juveniles. Night surveys were conducted by walking slowly through the focused survey area, stopping periodically and remaining silent for 15-minute intervals to listen for arroyo toad calls. Flashlights were also used to better identify anurans within the project survey area and to detect adult arroyo toads through eye shine.

Table 1
2018 Survey Dates, Personnel, Times, and Conditions

Date (2018)	Survey	Personnel	Beginning Time and Conditions	Ending Time and Conditions
3/21	1 (day)	Brenna Ogg	09:50; 64°F; winds 1–6 mph; 70% high, thin cloud cover	11:55; 76°F; winds 1–6 mph; 70% high, thin cloud cover
	1 (night)	Brian Parker Kayo Valenti	20:25; 63°F; winds calm; 100% cloud cover	23:45; 62°F; winds calm; partly cloudy
4/18	2 (day)	Brian Parker	07:10; 52°F; winds 5–7 mph; clear sky	09:25; 73°F; winds 0–1 mph; clear sky
	2 (night)	Brian Parker Alex Fromer	20:45; 56°F; winds 0–1 mph; clear sky	23:00; 53°F; winds calm; 5% cloud cover
5/3	3 (day)	Brenna Ogg	08:50; 61°F; winds 0–2 mph; clear sky	10:45; 72°F; winds 1–4 mph; clear sky
	3 (night)	Alex Fromer Andrew Smisek	20:40; 64°F; winds 0–1 mph; clear sky	22:40; 58°F; winds 0–1 mph; clear sky
5/14	4 (night)	Brenna Ogg Beth Procsal	20:35; 66°F; winds 0–2 mph; 10% cloud cover	23:50; 62°F; winds calm; 100% cloud cover
5/15	4 (day)	Alex Fromer	07:45; 59°F; winds 1–3 mph; 100% cloud cover	09:30; 65°F; winds 0–1 mph; 100% cloud cover
6/7	5 (day)	Brenna Ogg Sonya Vargas	18:20.; 78°F; winds 1–4 mph; clear sky	19:45; 72°F; winds 2–6 mph; clear sky
	5 (night)		20:55; 68°F; winds 1–2 mph; clear sky	23:15; 61°F; winds calm; clear sky
6/20	6 (day)	Brian Parker Kayo Valenti	18:45; 74°F; winds 1–3 mph; clear sky	20:25; 68°F; winds 1–3 mph; clear sky
	6 (night)		21:28; 63°F; winds 2–4 mph; clear sky	24:00; 63°F; winds 0–1 mph; 100% cloud cover

°F = degrees Fahrenheit; mph = miles per hour.

ARROYO TOAD HABITAT REQUIREMENTS

According to USFWS (2011), primary constituent elements for sustaining the essential life-history functions of arroyo toad are:

1. Rivers or streams with hydrologic regimes that supply water to provide space, food, and cover needed to sustain eggs, tadpoles, metamorphosing juveniles, and adult breeding toads. Breeding pools must persist a minimum of 2 months for the completion of larval development. However, due to the dynamic nature of southern California riparian systems and flood regimes, the location of suitable breeding pools may vary from year to year. Specifically, the conditions necessary to allow for successful reproduction of arroyo toads are:
 - Breeding pools that are less than 6 in (15 cm) deep;

- Areas of flowing water with current velocities less than 1.3 ft per second (40 cm per second); and
 - Surface water that lasts for a minimum of 2 months during the breeding season (a sufficient wet period in the spring months to allow arroyo toad larvae to hatch, mature, and metamorphose).
2. Riparian and adjacent upland habitats, particularly low-gradient (typically less than 6 percent) stream segments and alluvial streamside terraces with sandy or fine gravel substrates that support the formation of shallow pools and sparsely vegetated sand and gravel bars for breeding and rearing of tadpoles and juveniles; and adjacent valley bottomlands that include areas of loose soil where toads can burrow underground, to provide foraging and living areas for juvenile and adult arroyo toads.
 3. A natural flooding regime, or one sufficiently corresponding to natural, that: (a) is characterized by intermittent or near-perennial flow that contributes to the persistence of shallow pools into at least mid-summer; (b) maintains areas of open, sparsely vegetated, sandy stream channels and terraces by periodically scouring riparian vegetation; and (c) also modifies stream channels and terraces and redistributes sand and sediment, such that breeding pools and terrace habitats with scattered vegetation are maintained.
 4. Stream channels and adjacent upland habitats that allow for movement to breeding pools, foraging areas, overwintering sites, upstream and downstream dispersal, and connectivity to areas that contain suitable habitat.

Arroyo toads typically breed in pools with sparse vegetation, with the majority of the pool greater than one foot deep with a substrate of sand, gravel, or pebbles. Sub-adults and adults can range into surrounding uplands as much as 0.5 to 1.2 miles away from the stream (USFWS 1999b). Arroyo toads are nocturnal and breed from March to June, depending on local climate. The main threats to arroyo toad are degradation and loss of riparian habitat and predation by American bullfrog (*Lithobates catesbeiana*).

HISTORICAL ARROYO TOAD OBSERVATIONS

Arroyo toad has been documented historically along the San Diego River just downstream of El Capitan Reservoir, as well as over seven miles downstream of El Capitan Dam (San Diego Natural History Museum [SDNHM] 2018). However, no recent occurrences have been reported within two miles of the project survey area (California Department of Fish and Wildlife [CDFW] 2018, USFWS 2017, SDNHM 2018). Arroyo toad are presumed extant along the upper reach of the San Diego River, upstream of El Capitan Reservoir, with the closest reported occurrence at over five miles upstream of the project survey area (CDFW 2018).

SURVEY AREA DESCRIPTION AND HABITAT ASSESSMENT

The project survey area is generally centered on El Capitan Dam spillway and an associated manufactured channel that extends westward from the spillway for approximately 1,200 linear feet. The project survey area also includes a section of the main San Diego River channel that occurs downstream and west of El Capitan Dam, the lower section of a natural ephemeral drainage that flows into the spillway channel from the north, and the surrounding uplands. Although the spillway and the associated channel were manufactured and lined with concrete and/or rip rap, the lower portion of the spillway and the associated channel have collected sediment over time and now support mature riparian vegetation. The portion of the San Diego River channel just downstream of the dam also supports mature riparian vegetation. The spillway channel and San Diego River channel merge into one riparian corridor approximately 1,000 feet west of the base of the dam. The surrounding uplands comprise a mix of natural gradual slopes, human-created terraces, and natural steep slopes. Dirt roads, staging and storage areas, dam-related facilities, and old graded pads are scattered throughout the upland areas, and numerous natural upland drainages occur on the steep slopes in the northeastern portion of the survey area. Elevations range from 560 feet above mean sea level in the San Diego River bottom in the western

portion of the survey area to 1,200 feet above mean sea level on the hillside in the northeastern portion of the project survey area.

The focused survey area includes the following vegetation communities: southern cottonwood-willow riparian forest, southern riparian woodland, southern coast live oak riparian forest, Diegan coastal sage scrub, non-native grassland, eucalyptus woodland, and scrub oak chaparral. Small patches of coastal and valley freshwater marsh and Arundo-dominated riparian also occur within the riparian forest communities listed above.

Disturbed land, mostly comprising dirt access roads, also occurs within the upland portions of the survey area. The riparian communities generally are dominated by a mix of mature willows (*Salix gooddingii*, *S. laevigata*, *S. lasiolepis*), coast live oak (*Quercus agrifolia*), Fremont cottonwood (*Populus fremontii*), and western sycamore (*Platanus racemosa*), with an open to dense understory (Photographs 1 and 2). Scattered patches of dead cattail (*Typha* sp.) and tule (*Schoenoplectus* sp.) downstream of the spillway suggest prior long periods of inundation in the channel; however, recent and current conditions appear to support only short periods of ponding (Photograph 3). Similar patches of dead cattail and tule were observed along the San Diego River channel, with only a few stands of live cattail and/or tule persisting (Photograph 4).

In general, the focused survey area and larger project survey area do not support suitable breeding habitat for arroyo toad. The spillway and San Diego River channels provide suitable loose, sandy substrate. However, each supports dense riparian vegetation with a nearly-closed canopy. Additionally, both lack the flow frequency and velocity required to result in sufficient sedimentation and scour and create open, sparsely vegetated, sandy stream channels and terraces. Each channel contains a thick leaf litter layer, and the low-volume, human-controlled periodic water releases appear only to result in small areas of ponded water (see Photographs 1, 2, and 3). Ponded water was observed downstream of the spillway following substantial rain events early in the survey season, and ponded water was consistently observed in one area along the San Diego River channel as a result of periodic low-volume water releases (see Photographs 3 and 5). However, no flowing water was observed during the 2018 survey visits.

Although the northern drainage provides a mix of large rock and sand suitable for burrowing and supports less dense vegetation, it also appears to lack sufficient flow or the appropriate gradient to create suitable breeding conditions. A channel has been carved out along this drainage where the substrate is visible and little to no leaf litter has accumulated. However, this channel is narrow at less than five feet wide, and all areas immediately adjacent to this channel are covered in dense grasses (Photograph 6). No flowing or ponded water was observed in this drainage during the 2018 surveys. The gradient is likely too steep and the drainage too short overall to create substantial open ponded areas, terraces, or channel braiding.

The upland areas within the focused survey area and larger project survey area provide loose soils, suitable for burrowing. Due to the low-level of development and ongoing activity, these upland areas would likely allow for movement of this species to foraging areas, overwintering sites, upstream and downstream dispersal, and areas that contain suitable breeding habitat.

SURVEY RESULTS

No arroyo toads were detected during the 2018 focused surveys. Four anuran species, American bullfrog, Baja California treefrog (*Pseudacris hypochondriaca*), southern California toad (*Anaxyrus boreas halophilus*), and western spadefoot (*Spea hammondi*; CDFW Species of Special Concern), were observed during the surveys. American bullfrog and Baja California treefrog were the most commonly detected species at ponded areas within the spillway and river channels. The longest period of inundation was observed along the San Diego River channel, just downslope of a pipe outlet (see Photograph 5). Southern California toads were commonly observed early in the survey season along the dirt roads that run parallel to the spillway and San Diego River channels. Western spadefoot was repeatedly observed in the open areas surrounding the storage shed on the north side of the spillway channel. As a biological technical report will be prepared for this project following completion of 2018 biological surveys, data for the western spadefoot occurrences will be submitted to the California Natural Diversity Database concurrent with completion of the biological technical report.



PHOTOGRAPH 1
Riparian Vegetation along Spillway Channel, Facing South



PHOTOGRAPH 2
Riparian Vegetation along San Diego River Channel Near Base of
El Capitan Dam, Facing Northwest



PHOTOGRAPH 3
Cattail/Tule Mats with Temporary Ponding at Base of Spillway,
Facing Northeast



PHOTOGRAPH 4
Patch of Dead and Live Cattails along San Diego River Channel,
Facing West



PHOTOGRAPH 5
Ponded Water with American Bullfrog along
San Diego River Channel, Just Downstream
of Pipe Outlet, Facing Northwest



PHOTOGRAPH 6
Natural Ephemeral Drainage in Northern Portion of
Arroyo Toad Survey Area, Facing North

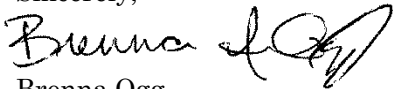
Ms. Stacey Love
Page 12
August 13, 2018

CONCLUSION

No arroyo toads were detected during the 2018 arroyo toad survey, and the survey area lacks suitable breeding habitat. Although the survey area provides suitable habitat for foraging, overwintering, and/or dispersal, there is a low potential for arroyo toads to occur due to the long distance to the nearest extant population along the upper reach of the San Diego River and lack of known extant populations downstream of the project survey area.

If you have any questions concerning the contents of this letter, please contact me at bogg@reconenvironmental.com or (619) 308-9333 extension 118.

Sincerely,



Brenna Ogg
Senior Biologist
CDFW Scientific Collecting Permit SC-9997

BAO:jg

cc: Mark Berninger, City of San Diego
Justin Garcia, California Department of Fish and Wildlife
Tim Hovey, California Department of Fish and Wildlife

REFERENCES CITED

California Department of Fish and Wildlife (CDFW)

2018 Natural Diversity Data Base. Nongame-Heritage Program, California Department of Fish and Wildlife, Sacramento. Accessed July.

San Diego Natural History Museum

2018 Amphibian and Reptile Atlas of Peninsular California. Accessed on July 10 at <http://herpatlas.sdnhm.org/>.

U.S. Fish and Wildlife Service (USFWS)

1999a Survey Protocol for the Arroyo Toad. May 19.

1999b Recovery Plan for the Arroyo Southwestern Toad. July 24.

2011 Endangered and Threatened Wildlife and Plants; Revised Critical Habitat for the Arroyo Toad; Final Rule. Federal Register 76 (27): 7246-7467, February 9.

2017 All Species Occurrences Database.

Accessed at <https://www.fws.gov/carlsbad/GIS/CFWOGIS.html>.

U.S. Geological Survey (USGS)

1997 El Cajon Mtn., California Quadrangle 7.5-Minute Topographic Map.

APPENDIX G

45-Day Report for Breeding Arroyo Toad Surveys for the City of San Diego Dam Maintenance Program Project



July 22, 2020

U.S. Fish and Wildlife Service
Attn: Ms. Stacey Love
Carlsbad Fish and Wildlife Office
2177 Salk Ave., Ste. 250
Carlsbad, CA 92008

Subject: 45-Day Report for Breeding Arroyo Toad Surveys for the City of San Diego Dam Maintenance Program Project, San Diego County, California

Ms. Love:

This report summarizes the results of the U.S. Fish and Wildlife Service (USFWS) protocol presence/absence surveys for the federally-listed as endangered arroyo toad (*Anaxyrus californicus*; ARTO) that Rocks Biological Consulting (RBC) conducted for the proposed City of San Diego Dam Maintenance Program Project (project) in San Diego County, California. This letter describes the survey methods and results and is being submitted to the USFWS in accordance with protocol survey guidelines.

PROJECT DESCRIPTION AND LOCATION

The proposed project includes routine maintenance of 13 City of San Diego (City) dams and associated infrastructure, including the approximately 13-mile Dulzura Conduit, located throughout San Diego County (County), California (Figure 1). Habitat assessments for ARTO were conducted by HELIX Environmental Planning for each dam site and the Dulzura Conduit. Potential ARTO habitat was determined to be present at three of the dam sites (Barrett Dam, El Capitan Dam, and Sutherland Dam) and surveys for ARTO were conducted by RBC for those study areas. The dam study areas are comprised of all proposed maintenance areas including a 500-foot buffer from the dam itself. The dams occur on lands that are owned and managed by the City. The location of each of these sites are detailed below.

Barrett Dam is located in the southeastern portion of the County, in the unincorporated community of Dulzura (Figure 1). It lies within Section 22 of Township 17 South, Range 3 East, on the U.S. Geological Survey (USGS) 7.5-minute Barrett Lake quadrangle map (Figure 2a). Barrett Dam is located at the outlet of Barrett Reservoir along Barrett Lake Road to the north of Campo Road (State Route [SR] 94), south of Skye Valley Road, east of Lyons Valley Road, and west of Horizon View Drive (Figure 3a). The study area occurs in the City's Barrett Reservoir Open Space Area and Cleveland National Forest. Cottonwood Creek flows downstream of Barrett Dam, and is a tributary to the Tijuana River. The Barrett Dam study area is located within USFWS-designated critical habitat for ARTO (Figure 4a).

El Capitan Dam is located in the eastern portion of the County, in the unincorporated community of Lakeside (Figure 1). It lies within Sections 7 and 8 of Township 15 South, Range 2 East, on the USGS 7.5-minute El Cajon Mountain quadrangle map (Figure 2b). El Capitan Dam

is located at the outlet of El Capitan Reservoir along El Monte Road to the north of Interstate 8 (I-8), south of Featherstone Canyon Road, east of Lake Jennings Road, and west of Peutz Valley Road (Figure 3b). The study area occurs in the City's El Capitan Reservoir Open Space Area and Cleveland National Forest. The San Diego River continues downstream of El Capitan Dam. The majority of the El Capitan study area is located within USFWS-designated critical habitat for ARTO (Figure 4b).

Sutherland Dam is located in the northern portion of the County in the unincorporated community of Ramona (Figure 1). It lies within Sections 20 and 21 of Township 12 South, Range 2 East, on the USGS 7.5-minute Ramona quadrangle map (Figure 2c). The dam is located at the outlet of Sutherland Reservoir along Sutherland Dam Road to the north of SR-78, south and east of Black Canyon Road, and west of Rancho Ballena Road (Figure 3c). The study area occurs in the City's Sutherland Reservoir Open Space Area and Cleveland National Forest. Santa Ysabel Creek continues downstream of Sutherland Dam, and is a tributary to the San Dieguito River. The Sutherland Dam study area is not located within USFWS-designated critical habitat for ARTO; however, critical habitat for the species is present approximately 2.7 miles upstream and 3.5 miles downstream of the study area along Santa Ysabel Creek.

METHODS

A focused habitat assessment for ARTO was conducted within each study area during the first daytime survey. Habitat within the study area was either determined to be suitable, as described in the USFWS species report (USFWS 2014), or unsuitable and was excluded from the survey area. Suitable habitat was then classified as either marginal, low, moderate, or high-quality breeding habitat for the species based on the habitat's physical features.

High quality breeding habitat supports the species' primary constituent elements (USFWS 2011), including:

- Low gradient, slower moving rivers or streams with shallow breeding pools that hold water for at least two months to allow for larval development;
- Riparian and adjacent upland habitats with sandy or fine gravel substrates and shallow pools for breeding or loose soil for burrowing toads; and
- Natural flooding regimes with intermittent or near-perennial flows that maintain open, sparsely vegetated, sandy stream channels and terraces.

The classification of moderate-, low-, and marginal-quality habitat was assigned based on the number of physical features present that constitute a high-quality habitat classification.

- Moderate: Any given survey area with *two* of the three above physical features present;
- Low: Any given survey area with *one* of the three above physical features present;
- Marginal: Any given survey area with *none* of the above physical features present and unsuitable for ARTO.

The surveys at each dam consisted of six site visits conducted by RBC biologists Brian Lohstroh, Chris Thomson, Ian Hirschler, and Jim Rocks between March 31 and June 24, 2020

in accordance with the current USFWS survey protocol (USFWS 1999). The surveys included both a daytime and nighttime component conducted within the same 24-hour period. Daytime surveys were conducted during the daylight hours prior to sunset, and nighttime surveys began at least one hour after sunset. The surveys were scheduled to take place outside of the near-full and full-moon phases. The primary objective of daytime surveys was to detect and document the presence of any ARTO in the immature life stages (egg strings, larvae, metamorphic individuals, or toadlets). Nighttime surveys were conducted to detect any breeding or foraging individuals.

Daytime surveys were conducted by walking slowly along the stream margin and adjacent riparian habitat visually searching for eggs, larvae, and juveniles. Potential breeding pools and ARTO locations detected during the survey were either marked on an aerial photograph or recorded with a hand-held global positioning system (GPS) unit. Nighttime surveys were conducted by walking slowly and methodically along stream banks and associated suitable upland habitat areas while making repeated stops to listen for calling toads. Surveys were conducted as silently as possible to avoid any observer influence over toad behavior and facilitate abundance estimates of any toads detected in the survey area. Surveyors used headlamps during the nighttime surveys to actively search for toads and facilitate detection via eyeshine.

At Barrett Dam, steep canyon slopes, dense vegetation, sheer rock faces and other unstable substrates precluded direct pedestrian access to the southern portion of the survey area. Surveyors conducted aural surveys for toad from a footpath adjacent to the San Diego Conduit that runs along the western slope above the survey area. Surveyors also listened for toads at various overlooks along Barrett Lake Road south of the dam.

At Sutherland Dam, surveyors walked approximately 0.4 miles of an unpaved road located along Santa Ysabel Creek downstream of the dam to listen for calling ARTO that have potential to occur in the area.

Table 1 details the survey dates, times, and conditions.

Table 1. Summary of Results for Protocol Breeding Arroyo Toad Surveys for the City of San Diego Dam Maintenance Program Project

Site Visit	Date	Biologists	Survey Type	Survey Time (Start/Stop)	Weather Conditions (Start/Stop)	Results
Barrett Dam						
1	3/31/20	Brian Lohstroh Ian Hirschler	Daytime	1700/1815	71°F, wind 0-2 mph, 100% clouds 64°F, wind 0-2 mph, 100% clouds	No ARTO detected
			Nighttime	2000/2200	60°F, wind 0-1 mph, 100% clouds 55°F, wind 0-2 mph, 80% clouds	No ARTO detected

2	4/22/20	Brian Lohstroh Ian Hirschler	Daytime	1700/1845	73°F, wind 0-3 mph, 5% clouds 74°F, wind 2-7 mph, 0% clouds	No ARTO detected
			Nighttime	1700/1845	73°F, wind 0-3 mph, 5% clouds 74°F, wind 2-7 mph, 0% clouds	No ARTO detected
3	4/29/20	Brian Lohstroh Ian Hirschler	Daytime	1715/1820	78°F, wind 5-10 mph, 40% clouds 72°F, wind 4-8 mph, 20% clouds	No ARTO detected
			Nighttime	2025/2230	67°F, wind 4-10 mph, 10% clouds 61°F, wind 1-4 mph, 0% clouds	No ARTO detected
4	5/11/20	Brian Lohstroh Ian Hirschler	Daytime	1730/1830	70°F, wind 0-2 mph, 0% clouds 68°F, wind 0-3 mph, 0% clouds	No ARTO detected
			Nighttime	2035/2230	61°F, wind 0-2 mph, 0% clouds 57°F, wind 0-2 mph, 0% clouds	No ARTO detected
5	5/18/20	Brian Lohstroh Chris Thomson	Daytime	1730/1830	70°F, wind 2-5 mph, 60% clouds 66°F, wind 3-5 mph, 80% clouds	No ARTO detected
			Nighttime	2035/2230	61°F, wind 1-3 mph, 100% clouds 61°F, wind 0-1 mph, 95% clouds	No ARTO detected
6	6/22/20	Brian Lohstroh Chris Thomson	Daytime	1900/2000	75°F, wind 3-7 mph, 0% clouds 72°F, wind 2-6 mph, 0% clouds	No ARTO detected
			Nighttime	2120/2300	65°F, wind 2-4 mph, 0% clouds 63°F, wind 0-4 mph, 0% clouds	No ARTO detected

El Capitan Dam

1	4/1/20	Brian Lohstroh Chris Thomson	Daytime	1630/1815	72°F, wind 2-5 mph, 0% clouds 63°F, wind 0-3 mph, 0% clouds	No ARTO detected
			Nighttime	2010/2200	59°F, wind 0-3 mph, 20% clouds 55°F, wind 0-2 mph, 100% clouds	No ARTO detected
2	4/15/20	Brian Lohstroh Chris Thomson	Daytime	1630/1800	79°F, wind 1-5 mph, 0% clouds 77°F, wind 1-3 mph, 0% clouds	No ARTO detected
			Nighttime	2020/2215	61°F, wind 0-2 mph, 0% clouds 57°F, wind 2-5 mph, 0% clouds	No ARTO detected
3	4/24/20	Brian Lohstroh Chris Thomson	Daytime	1700/1830	88°F, wind 2-7 mph, 0% clouds 80°F, wind 2-3 mph, 0% clouds	No ARTO detected
			Nighttime	2025/2210	66°F, wind 2-3 mph, 0% clouds 71°F, wind 2-6 mph, 0% clouds	No ARTO detected
4	5/12/20	Brian Lohstroh Jim Rocks	Daytime	1730/1920	70°F, wind 2-5 mph, 60% clouds 65°F, wind 2-5 mph, 95% clouds	No ARTO detected
			Nighttime	2030/2200	63°F, wind 1-4 mph, 80% clouds 61°F, wind 2-4 mph, 80% clouds	No ARTO detected
5	5/21/20	Brian Lohstroh Ian Hirschler	Daytime	1800/1845	79°F, wind 0-2 mph, 0% clouds 77°F, wind 0-2 mph, 0% clouds	No ARTO detected
			Nighttime	2045/2230	62°F, wind 0-2 mph, 0% clouds 57°F, wind 0-1 mph, 0% clouds	No ARTO detected
6	6/23/20	Brian Lohstroh Ian Hirschler	Daytime	1830/1930	77°F, wind 0-3 mph, 10% clouds 76°F, wind 1-5 mph, 10% clouds	No ARTO detected
			Nighttime	2130/2315	64°F, wind 0-4 mph, 0% clouds 61°F, wind 0-2 mph, 0% clouds	No ARTO detected

Sutherland Dam						
1	4/14/20	Brian Lohstroh Ian Hirschler ¹	Daytime	1630/1830	67°F, wind 0-2 mph, 50% clouds 69°F, wind 0-3 mph, 50% clouds	No ARTO detected
			Nighttime	2020/2200	65°F, wind 2-5 mph, 10% clouds 55°F, wind 1-3 mph, 0% clouds	No ARTO detected
2	4/23/20	Brian Lohstroh Ian Hirschler	Daytime	1730/1845	83°F, wind 2-7 mph, 0% clouds 78°F, wind 2-5 mph, 0% clouds	No ARTO detected
			Nighttime	2025/2215	69°F, wind 2-5 mph, 0% clouds 64°F, wind 1-3 mph, 0% clouds	No ARTO detected
3	4/30/20	Brian Lohstroh Chris Thomson	Daytime	1700/1815	77°F, wind 0-3 mph, 0% clouds 76°F, wind 0-2 mph, 0% clouds	No ARTO detected
			Nighttime	2030/2230	67°F, wind 0-1 mph, 0% clouds 61°F, wind 0-1 mph, 0% clouds	One adult arroyo toad observed east of dam.
4	5/15/20	Brian Lohstroh Ian Hirschler	Daytime	1730/1900	70°F, wind 1-4 mph, 0% clouds 67°F, wind 0-2 mph, 0% clouds	No ARTO detected
			Nighttime	2040/2230	62°F, wind 0-1 mph, 0% clouds 59°F, wind 0-1 mph, 0% clouds	No ARTO detected
5	5/26/20	Brian Lohstroh Ian Hirschler	Daytime	1800/1900	77°F, wind 0-1 mph, 0% clouds 75°F, wind 0-1 mph, 0% clouds	No ARTO detected
			Nighttime	2045/2245	72°F, wind 0-1 mph, 0% clouds 65°F, wind 0-1 mph, 0% clouds	No ARTO detected
6	6/24/20	Brian Lohstroh Ian Hirschler	Daytime	1845/1930	77°F, wind 0-3 mph, 10% clouds 76°F, wind 1-5 mph, 10% clouds	No ARTO detected
			Nighttime	2130/2315	64°F, wind 0-4 mph, 0% clouds 61°F, wind 0-2 mph, 0% clouds	No ARTO detected

¹Conducted nighttime survey only.

RESULTS

Suitable ARTO habitat within the study areas generally consists of habitat located along, or directly adjacent to Cottonwood Creek (Barrett Dam), San Diego River (El Capitan Dam), and Santa Ysabel Creek (Sutherland Dam) located downstream of the dams (Figures 4a-4c). Vegetation communities within the ARTO survey areas consisted of Diegan coastal sage scrub, coastal sage-chaparral scrub, granitic southern mixed chaparral, chamise chaparral, scrub oak chaparral, non-native vegetation, coast live oak woodland, eucalyptus woodland, southern riparian forest, unvegetated habitat/bedrock, lakeshore fringe, and open water/freshwater lake (Figures 5a-5c). ARTO survey results for each dam site are presented separately below.

Barrett Dam

No evidence of ARTO, including eggs, tadpoles, toadlets, or adult toads was detected within the Barrett Dam study area during the survey effort (Figure 5a). Adult toads were not heard calling within, or immediately adjacent to, the study area. Numerous adult California treefrog (*Pseudacris cadaverina*) and Baja California treefrog (*Pseudacris hypochondriaca*) were documented at small seeps located along the sides of Barrett Dam. Several California toads (*Anaxyrus boreas halophilus*) were documented in upland habitat within the survey area as well as along Barrett Lake Road.

Low quality breeding habitat for ARTO is located downstream of Barrett Dam along Cottonwood Creek (Figure 4a). Though the study area is located within USFWS-designated critical habitat for the species, the section of Cottonwood Creek immediately downstream of the dam is characterized by rocky substrates lacking suitable sandy substrates for burrowing toads. No flowing water or potential ARTO breeding pools were detected within the study area. The upper reach of Cottonwood Creek is situated within a ravine bordered by very steep slopes. Upland vegetation consists of granitic southern mixed chaparral and lacks suitable sandy terraces that would provide suitable burrowing and foraging habitat for ARTO.

The hydrological regime of Cottonwood Creek has also been substantially altered by the creation of artificial impoundments along its reach, including Morena Dam (constructed in 1912) which is located upstream of Barrett Reservoir, and Barrett Dam (constructed in 1923) located within the study area. Controlled water releases from the dam can result in heavy scouring, destruction of sandy beaches and breeding pools, and washing away of ARTO larvae and individuals, and has previously been shown to have an adverse effect on the ARTO population of Cottonwood Creek (USFWS 2014). The portion of Cottonwood Creek immediately downstream of Barrett Dam is subject to heavy scouring from controlled dam releases resulting in the lack of natural flows, loss of sediment, and the absence of sandy substrates necessary for ARTO habitation.

Though no ARTO were detected within the study area, the species is known to occupy the reach of Cottonwood Creek downstream of the dam (USFWS 2014). Several tadpoles, metamorphs, and adult toads were detected during nocturnal surveys conducted by USGS in 2002 and 2003 (USGS 2005). Based on recently reported observation of the species, the closest documented occurrence of ARTO is located approximately 1.2 miles downstream of the dam. The species was detected along Cottonwood Creek in 2009 in association with the surveys conducted for the Sunrise Powerlink (USFWS 2020). Furthermore, RBC biologists incidentally detected ARTO calling approximately two miles downstream of the Barrett Dam survey area during the April 22, 2020 survey visit. Though ARTO occurs downstream of the study area, the species is presumed to be absent from the study area based on the negative survey results, low quality of breeding habitat on-site, and absence of recent detection within one mile of the dam.

El Capitan Dam

No evidence of ARTO, including eggs, tadpoles, toadlets, or adult toads was detected within the El Capitan Dam study area during the survey effort (Figure 5b). Adult toads were not heard calling within, or immediately adjacent to, the survey area. Numerous adult California treefrog and Baja California treefrog were documented at ponds within the survey area. Several California toads were documented in upland habitat and along roadways within the survey area during the majority of the survey visits. Five to ten western spadefoot toads (*Spea hammondi*), a California Department of Fish and Wildlife Species of Special Concern, were heard calling within the pond below the spillway on April 15, 2020, and one upland individual was observed on April 24, 2020.

A single American bullfrog (*Lithobates catesbeianus*), a non-native predator of the ARTO, was heard calling from the spillway pond on May 12, 2020. Low quality breeding habitat for ARTO is located downstream of El Capitan Dam along the San Diego River (Figure 4b). Though the study area is located within USFWS-designated critical habitat for ARTO, the section of the San Diego River immediately downstream is characterized by vegetative debris and closed canopy southern riparian forest. Loose, sandy soils suitable for ARTO burrowing are present within the spillway channel and some low terraces occur within the survey area, but no flowing water or potential breeding pools were detected within the study area. Upland vegetation consists of Diegan coastal sage scrub, non-native grassland, eucalyptus woodland, and coast live oak woodland.

Surface water was present in the form of two ponds within the survey area: a large pond at the base of the spillway which remained inundated until the last survey visit in late June; and a smaller pond at the base of a large outfall pipe in the San Diego River channel. Both ponds were densely vegetated, with the spillway pond supporting a tall, dense willow (*Salix* spp.) canopy and the smaller pond supporting both willows and cattails (*Typha* sp.). Neither of these areas provided suitable conditions for ARTO breeding.

The hydrological regime of the San Diego River watershed has also been substantially altered by the creation of El Capitan Dam (constructed in 1934). The construction of the dam and formation of El Capitan Reservoir resulted in the inundation of ARTO habitat along this portion of the San Diego River (USFWS 2009) and discontinued a natural scour and sediment transport regime required to maintain suitable ARTO habitat. ARTO are known to occur in the upper reaches of the San Diego River, upstream of where the river enters El Capitan Reservoir, and there are numerous recent recorded observations of the species in this area (USFWS 2020). However, there are no recent records of this species occurring downstream of El Capitan Dam. A 1933 ARTO voucher from the San Diego Natural History Museum was reportedly collected downstream of the dam (County of San Diego 2020). ARTO are presumed to be absent from the study area based on the negative survey results, low quality of potential breeding habitat, and lack of recent detections downstream of the dam.

Sutherland Dam

RBC detected a single adult ARTO within the Sutherland Dam survey area during the survey effort (Figure 5). The ARTO was observed on April 30, 2020 within a small, spring-fed basin on the rock-lined portion of the dam spillway on the east side of the dam. No other adult toads were observed or heard calling within or adjacent to the study area, and no ARTO eggs, tadpoles, or toadlets were detected. Numerous adult California treefrog and Baja California treefrog were documented at ponded areas within the survey area and along Santa Ysabel Creek downstream of the dam. Several California toads were documented in upland habitat within the survey area. American bullfrogs were heard calling along banks of the Reservoir during several of the survey visits.

Low quality breeding habitat for ARTO is located downstream of Sutherland Dam along the Santa Ysabel Creek (Figure 4c). The section of Santa Ysabel Creek immediately downstream of the dam is characterized by rocky substrates and dense riparian and oak woodland habitat and

lacking suitable sandy substrates for burrowing toads. No flowing water or potential breeding pools were detected within the study area. Upland vegetation consists of chamise chaparral and Diegan coastal sage scrub and lacks suitable sandy terraces that would provide suitable burrowing and foraging habitat for the species. A large portion of the upland habitat north of the dam is composed of large rocks and boulder-sized spoils deposited from the construction of the spillway, carved into the hillside east of the dam.

Excluding the Reservoir, ponded surface water was present for at least a portion of survey period at various locations within the survey area. A large pond present at the base of the dam that supports a dense canopy of willows remained inundated until late May. Several small, rock-lined ponds present on the spillway, formed within low areas on the modified rock hillside, also remained inundated for a large portion of the surveys and supported a large population of both species of treefrog. A moist seep in the creek channel at the north end of the survey area also supported several treefrogs. None of these areas provided suitable conditions for ARTO breeding.

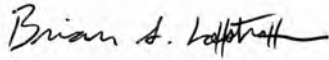
The hydrological regime of Santa Ysabel Creek has been substantially altered by the creation of Sutherland Dam (constructed in 1954). The construction of the dam and formation of Sutherland Reservoir resulted in the inundation of historical ARTO habitat along this portion of the Santa Ysabel Creek. However, the species is still known to occur both upstream and downstream of Sutherland Reservoir within areas that are also USFWS-designated critical habitat for ARTO. The species was documented in several locations upstream of Sutherland Reservoir along Santa Ysabel Creek in 2009 with the closest reported observation approximately 1.7 miles east of the dam (USFWS 2020). The species has also been observed over 3.5 miles downstream of the dam at the confluence of Santa Ysabel Creek and Temescal Creek to the west of Pamo Road (USFWS 2020).

Though a single adult ARTO was observed within the Sutherland Dam study area during the 2020 survey effort, the study area does not support sustainable ARTO breeding habitat; therefore, the study area is not anticipated to support a viable population of arroyo toads. The single adult ARTO was only observed during one of the survey visits within a shallow, rock-lined pond. The pond likely functions only as a temporary refuge and does not support any of the primary constituent elements associated with suitable ARTO breeding habitat. Therefore, the individual was most likely a disperser from a neighboring population of ARTO that moved into the area via the upland habitat adjacent to the dam spillway.

CLOSING

Please don't hesitate to contact Ian Hirschler at (619) 701-6798 should you have any questions or concerns regarding this report.

I certify that the information in this survey report and attached exhibit fully and accurately represent our work.



Brian Lohstroh
Biologist



Chris Thomson
Biologist



Ian Hirschler
Biologist

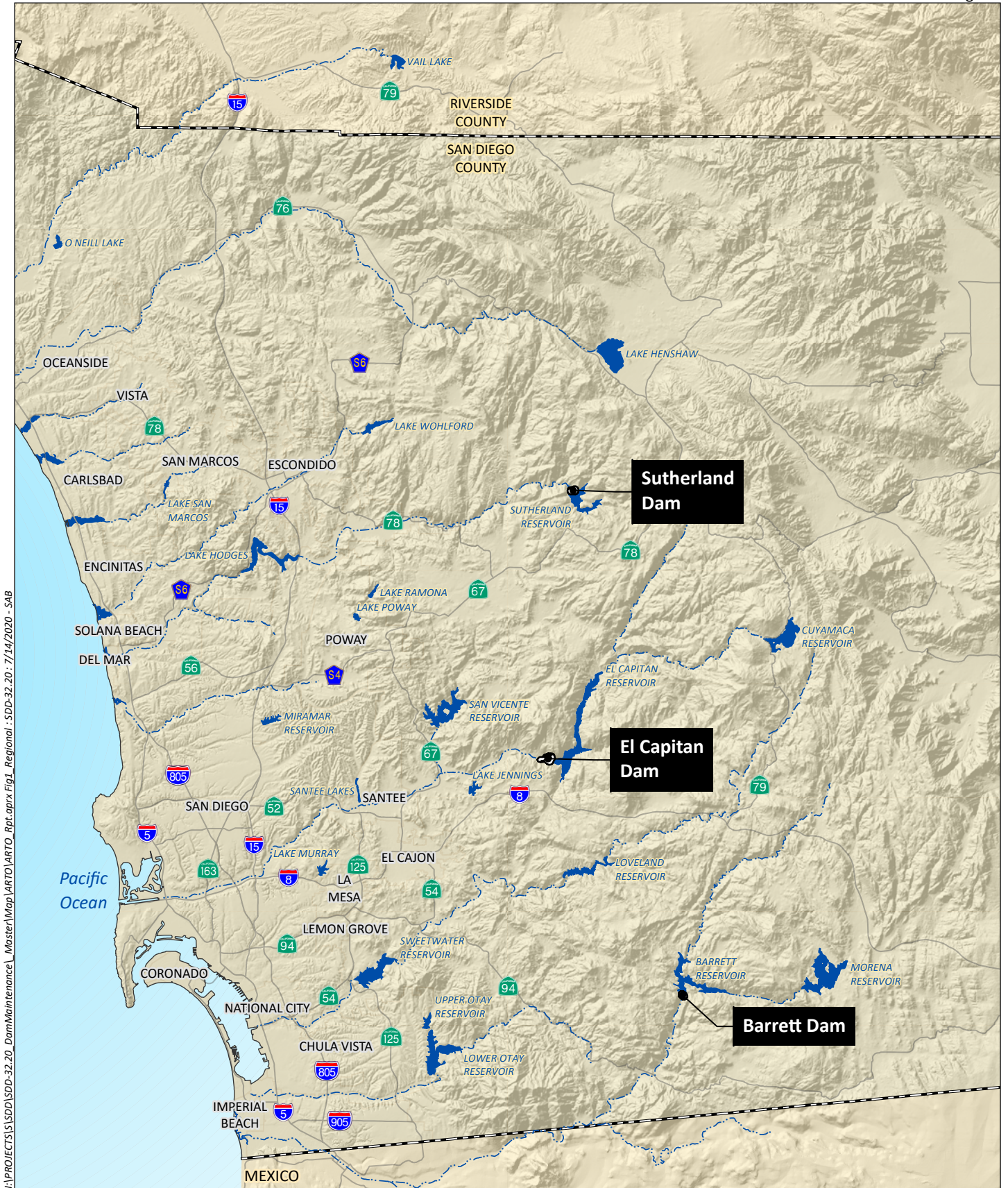


Jim Rocks
Biologist

Enclosures: Figure 1 – Project Location
Figure 2a – USGS Topography – Barrett Dam
Figure 2b – USGS Topography – El Capitan Dam
Figure 2c – USGS Topography – Sutherland Dam
Figure 3a – Aerial Photograph – Barrett Dam
Figure 3b – Aerial Photograph – El Capitan Dam
Figure 3c – Aerial Photograph – Sutherland Dam
Figure 4a – Arroyo Toad Critical Habitat and Habitat Assessment – Barrett Dam
Figure 4b – Arroyo Toad Critical Habitat and Habitat Assessment – El Capitan Dam
Figure 4c – Arroyo Toad Critical Habitat and Habitat Assessment – Sutherland Dam
Figure 5a – 2020 Arroyo Toad Survey Results – Barrett Dam
Figure 5b – 2020 Arroyo Toad Survey Results – El Capitan Dam
Figure 5c – 2020 Arroyo Toad Survey Results – Sutherland Dam
Attachment A – Site Photograph

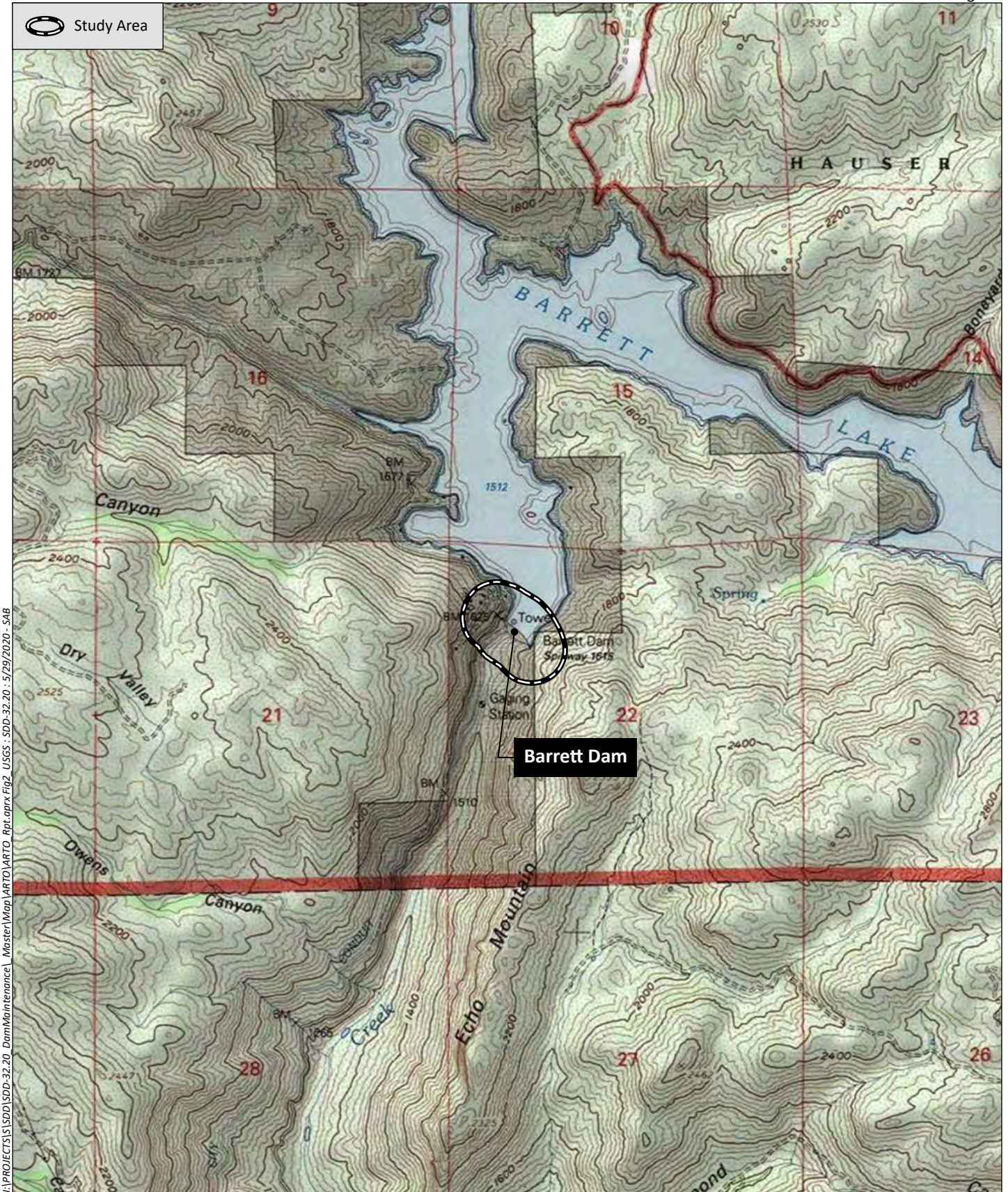
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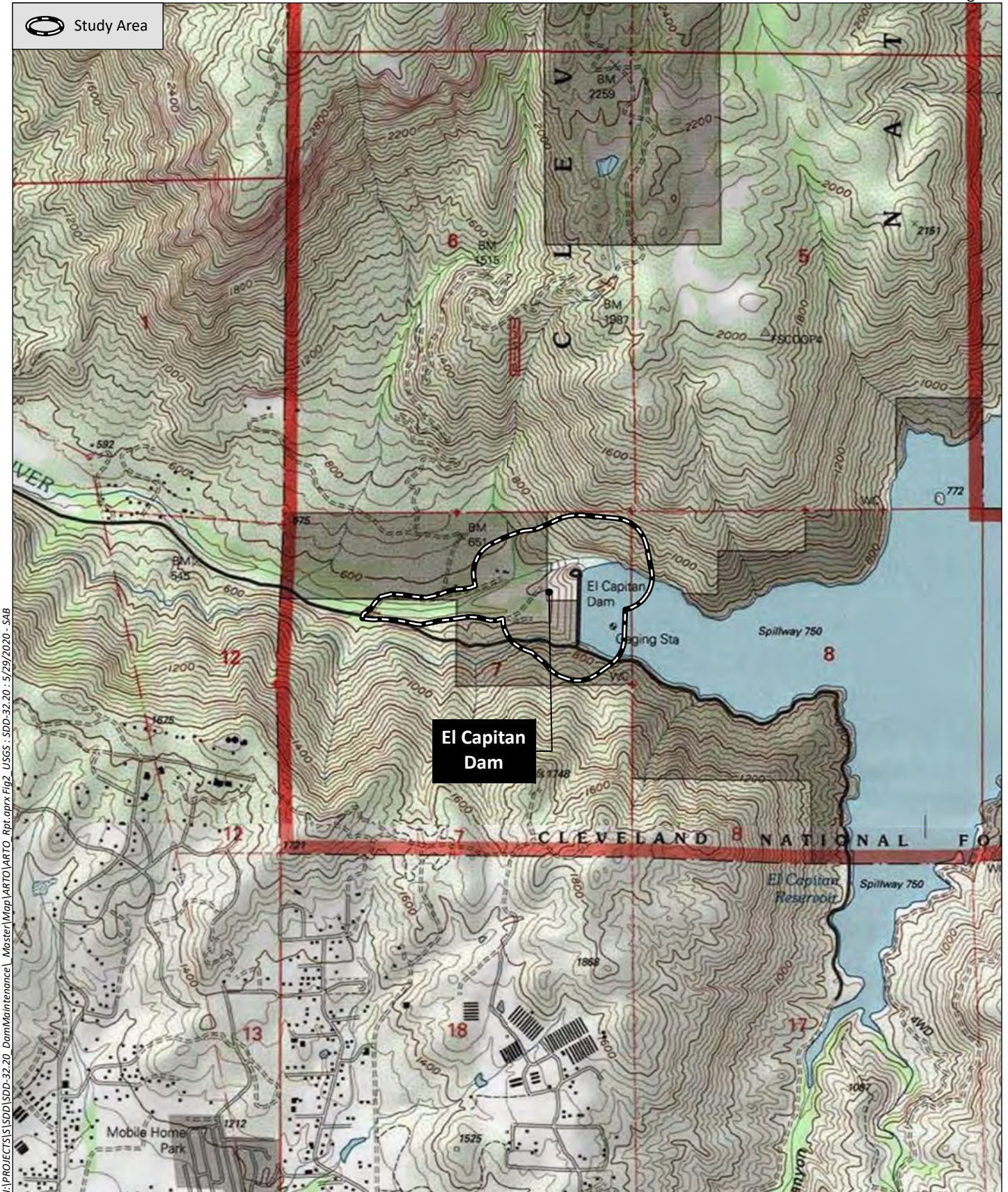
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Source: Base Map Layers (SanGIS, 2016)



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Source: BARRETT LAKE 7.5' Quad (USGS)



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Source: EL CAJON MTN. 7.5' Quad (USGS)



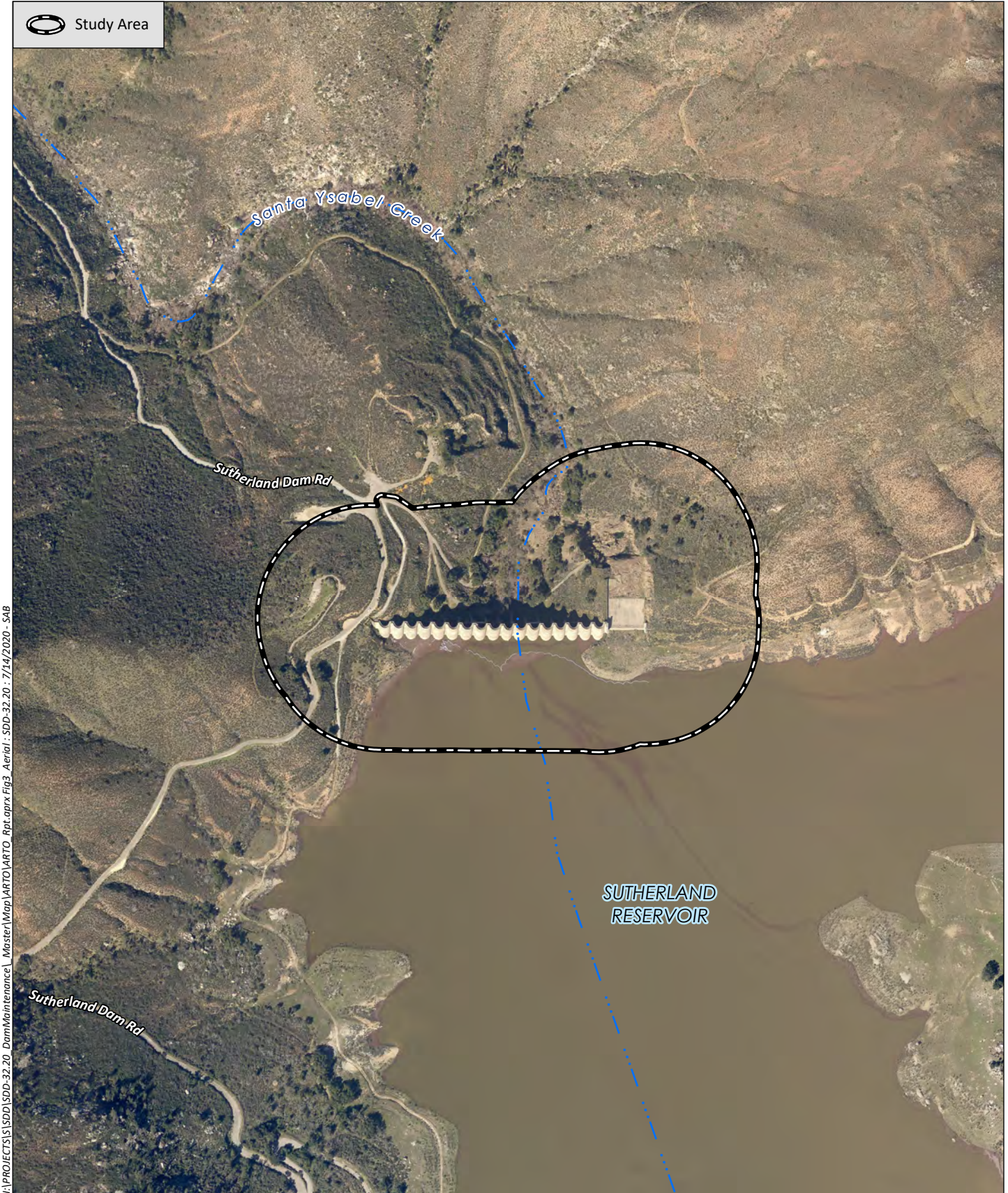
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Source: Aerial (SanGIS, 2017)



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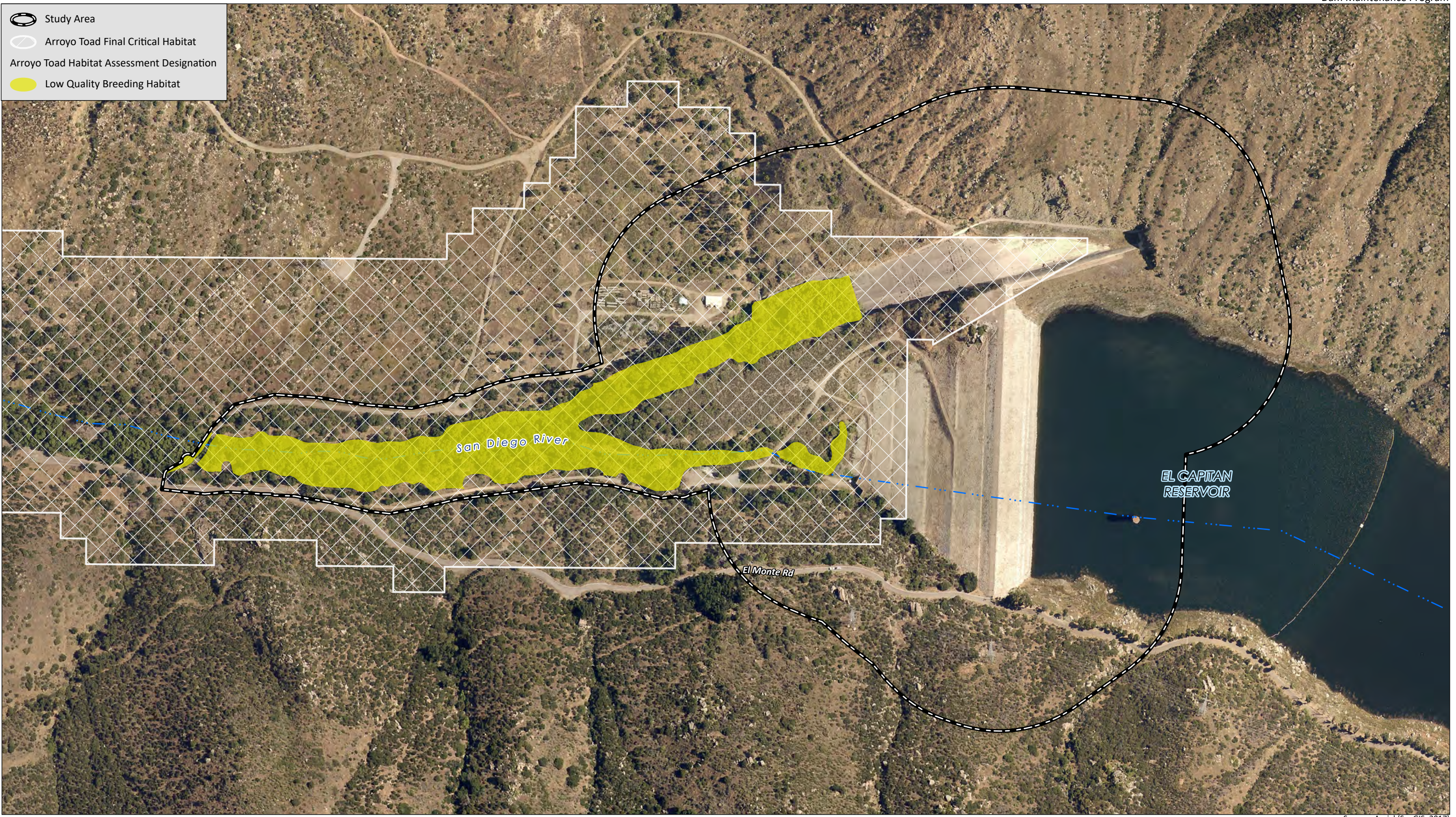
-  Study Area
-  Arroyo Toad Final Critical Habitat
- Arroyo Toad Habitat Assessment Designation
-  Low Quality Breeding Habitat



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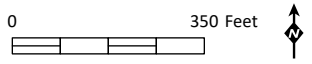
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-  Study Area
-  Arroyo Toad Final Critical Habitat
- Arroyo Toad Habitat Assessment Designation
-  Low Quality Breeding Habitat

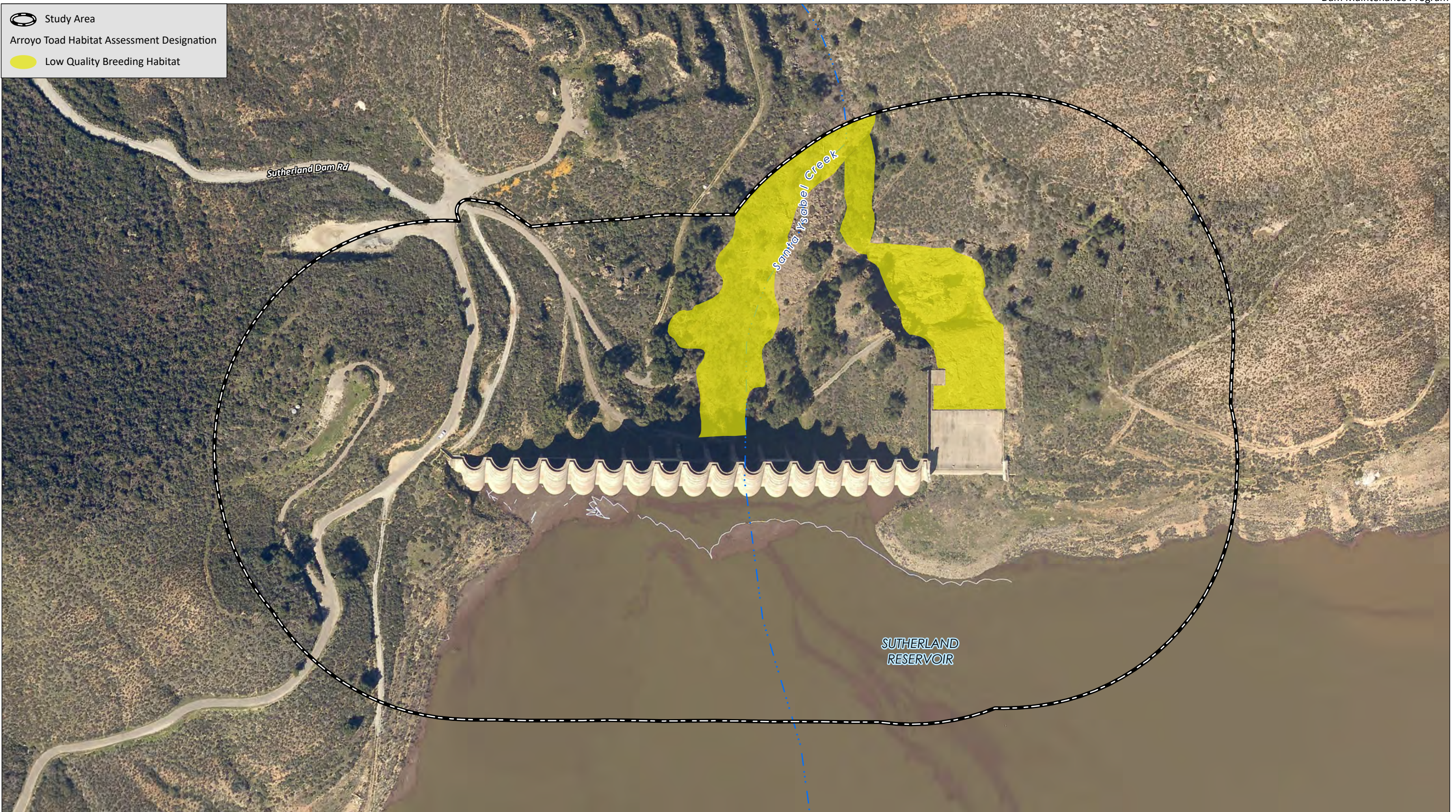


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Source: Aerial (SanGIS, 2017)



 Study Area
 Arroyo Toad Habitat Assessment Designation
 Low Quality Breeding Habitat

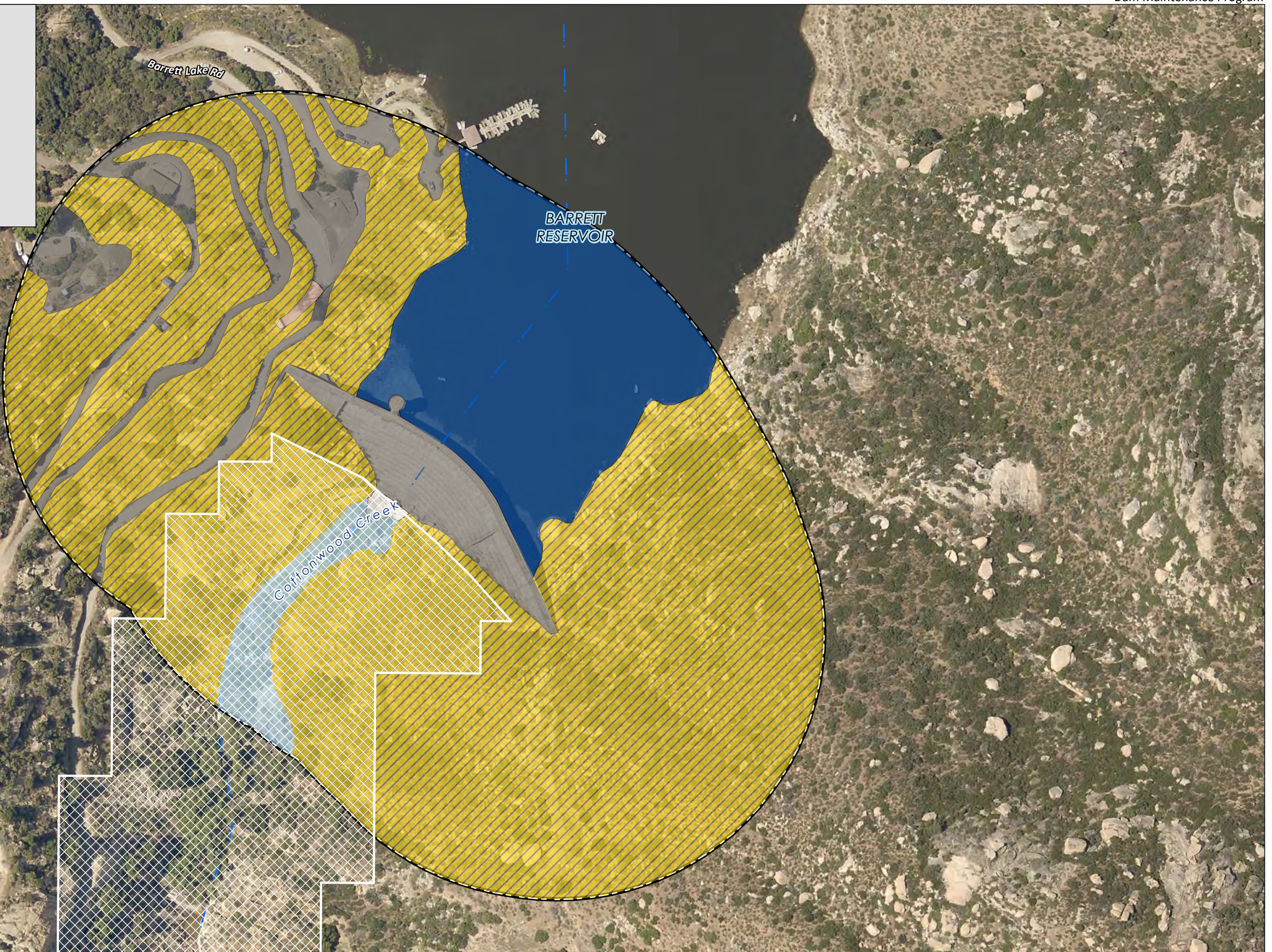


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Source: Aerial (SanGIS, 2017)

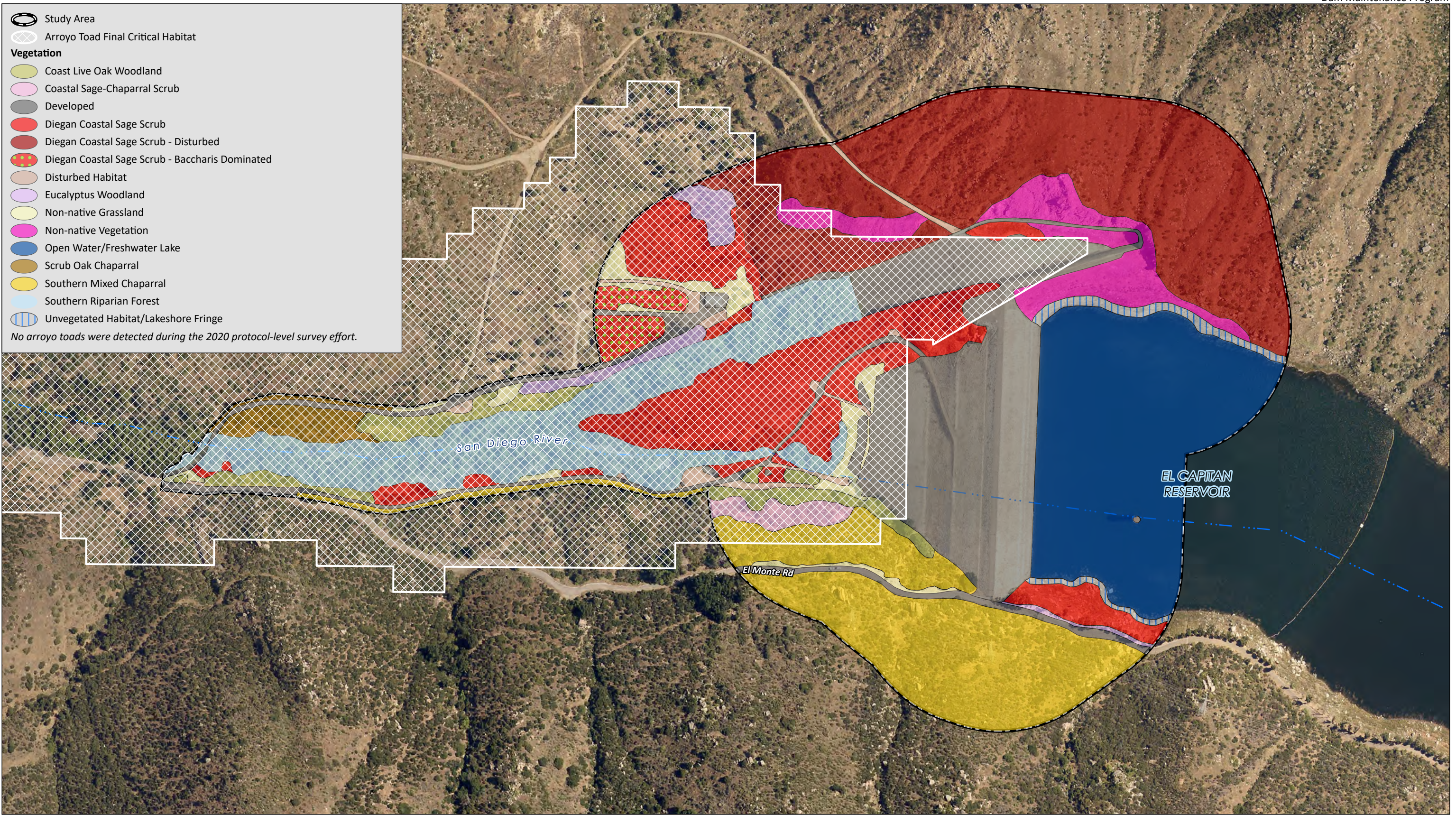
Study Area
 Arroyo Toad Final Critical Habitat
Vegetation
 Developed
 Disturbed Habitat
 Granitic Southern Mixed Chaparral
 Natural Flood Channel
 Open Water/Freshwater Lake
 Southern Riparian Forest
 No arroyo toads were detected during the 2020 protocol-level survey effort.



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Source: Aerial (SanGIS, 2017)



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Source: Aerial (SanGIS, 2017)



Study Area

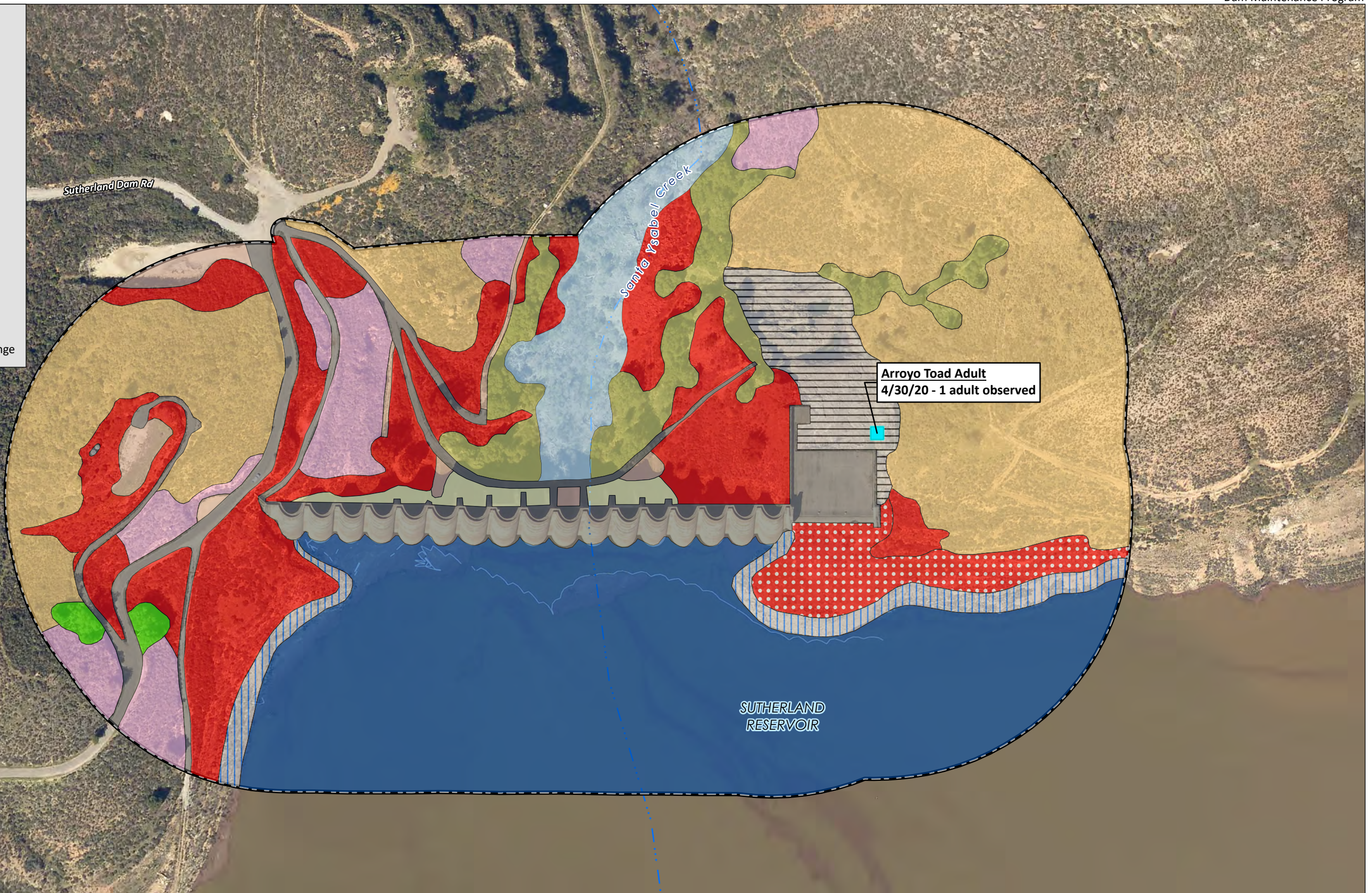
- Study Area
- Arroyo Toad Final Critical Habitat

Arroyo Toad Detections

- Arroyo Toad Adult

Vegetation

- Chamise Chaparral
- Coast Live Oak Woodland
- Coastal Sage-Chaparral Scrub
- Developed
- Diegan Coastal Sage Scrub
- Diegan Coastal Sage Scrub - Sparse
- Disturbed Habitat
- Engelmann Oak Woodland
- Non-native Grassland
- Open Water/Freshwater Lake
- Southern Riparian Forest
- Unvegetated Habitat/Bedrock
- Unvegetated Habitat/Lakeshore Fringe



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Source: Aerial (SanGIS, 2017)



Attachment A

Site Photographs



Photo 1. Barrett Dam – View from Barrett Lake Road of Barrett Dam and Cottonwood Creek within the survey area, facing north. April 29, 2020.



Photo 2. Barrett Dam – View of Cottonwood Creek within survey area from the top of Barrett Dam. March 31, 2020.



Photo 3. **Barrett Dam** – Small rocky patch of habitat downstream of Barrett Dam within the survey area. May 11, 2020.



Photo 4. **Barrett Dam** – View of Cottonwood Creek within survey area downstream of Barrett Dam. May 18, 2020.



Photo 5. Barrett Dam – Seep near the bottom of the dam. Both species of treefrog often observed here. June 22, 2020.



Photo 6. Barrett Dam – View facing north from Cottonwood Creek within Barrett Dam survey area. June 22, 2020.



Photo 7. El Capitan Dam – View of the base of El Capitan Dam and the survey area downstream, facing east. June 23, 2020.



Photo 8. El Capitan Dam – Surface water ponding below El Capitan Dam spillway. April 1, 2020.



Photo 9. El Capitan Dam – Photo of western spadefoot (*Spea hammondi*), a CDFW Species of Special Concern, observed in upland habitat within the survey area. April 24, 2020.



Photo 10. El Capitan Dam – Surface water present in the San Diego River channel within the survey area but not suitable conditions for ARTO breeding. April 24, 2020.



Photo 11. El Capitan Dam – View of small ponded area dominated by cattails. April 24, 2020.



Photo 12. El Capitan Dam – View of vegetated streambed downstream of El Capitan Dam. June 23, 2020.



Photo 13. Sutherland Dam – View of the upland habitat and riprap in the canyon within the survey area downstream of Sutherland Dam. April 14, 2020.



Photo 14. Sutherland Dam – Large ponds on the Sutherland Dam spillway, facing north. April 30, 2020.



Photo 15. Sutherland Dam – Daytime view of the rocky area on top of the Sutherland Dam spillway where arroyo toad was observed. April 30, 2020.



Photo 16. Sutherland Dam – Adult arroyo toad in a small, spring-fed basin on the rock-lined portion of the dam spillway on the eastern side of the dam. April 30, 2020.



Photo 17. Sutherland Dam – Overview of the basin in which the adult arroyo toad was observed. April 30, 2020.



Photo 18. Sutherland Dam – View of the pond at the base of the dam. April 23, 2020.

APPENDIX H

Results of the 2018 Quino Checkerspot Butterfly Presence/Absence Survey for El Capitan Dam Spillway Vegetation Removal Project



An Employee-Owned Company

June 27, 2018

Ms. Stacey Love
Recovery Permit Coordinator
Carlsbad Fish and Wildlife Office
2177 Salk Avenue, Suite 250
Carlsbad, CA 92008

Reference: Results of the 2018 Quino Checkerspot Butterfly Presence/Absence Survey for El Capitan Dam Spillway Vegetation Removal Project (RECON Number 8863)

Dear Ms. Love:

This letter is to notify the U.S. Fish and Wildlife Service (USFWS) of the results of the 2018 presence/absence survey for the federally endangered Quino checkerspot butterfly (*Euphydryas editha quino*; Quino) conducted for the City of San Diego's El Capitan Dam Spillway Vegetation Removal Project (project). The survey area location, biology of the focus species, as well as the site assessment and survey methods and results are discussed in detail below. No Quino were detected within the survey area during 2018 presence/absence surveys.

Survey Area Location

The project is still in the design phase but is located immediately downstream of El Capitan Dam at the east end of El Monte Valley in central San Diego County, northwest of the community of Alpine and northeast of the community of Flinn Springs in unincorporated San Diego County, California. It is encompassed entirely by the "survey area" shown on Figures 1, 2, and 3. The survey area is mostly found in the northeast quarter of Section 7, with a small portion in the southeast quarter of Section 6 and the northwest quarter of Section 8, Township 15 South, Range 02 East, of the U.S. Geological Survey 7.5-minute topographic map, El Cajon Mtn. quadrangle (see Figure 2; U.S. Geological Survey 1997). The survey area comprises portions of Assessor's Parcel Numbers 4020700500, 4020700400, 4020700300, 4020800400, and 4020200700.

USFWS recommends that site assessments be conducted for all projects within Quino's potential range, as defined by the Recommended Quino Survey Area (USFWS 2014), to determine if a site contains areas where Quino surveys should be conducted. Areas excluded from surveys include orchards; developed areas; small infill parcels dominated by non-native vegetation; active agricultural fields; and areas of closed-canopy woody vegetation, such as dense forest, riparian vegetation, and shrublands (USFWS 2014).

Quino Checkerspot Butterfly Biology

Quino, a member the brush-footed butterfly family (Nymphalidae), was federally listed as endangered in January 1997 (USFWS 1997). It is one of 12 subspecies of the *Euphydryas editha* checkerspot and was formerly known as *E. e. wrightii*.

Historically, Quino ranged from Los Angeles and western San Bernardino counties south through Orange, western Riverside, and San Diego counties into northern Baja California, Mexico. As of 2010, Quino were known to occur in portions of southwestern Riverside County, southern San Diego County, and northern Baja California (Faulkner and Klein 2010). Both the larval and adult stages have specific habitat requirements, and habitat loss and degradation are considered the cause of the dramatic decline in the species. These habitats have been impacted due to development, invasive non-native vegetation,




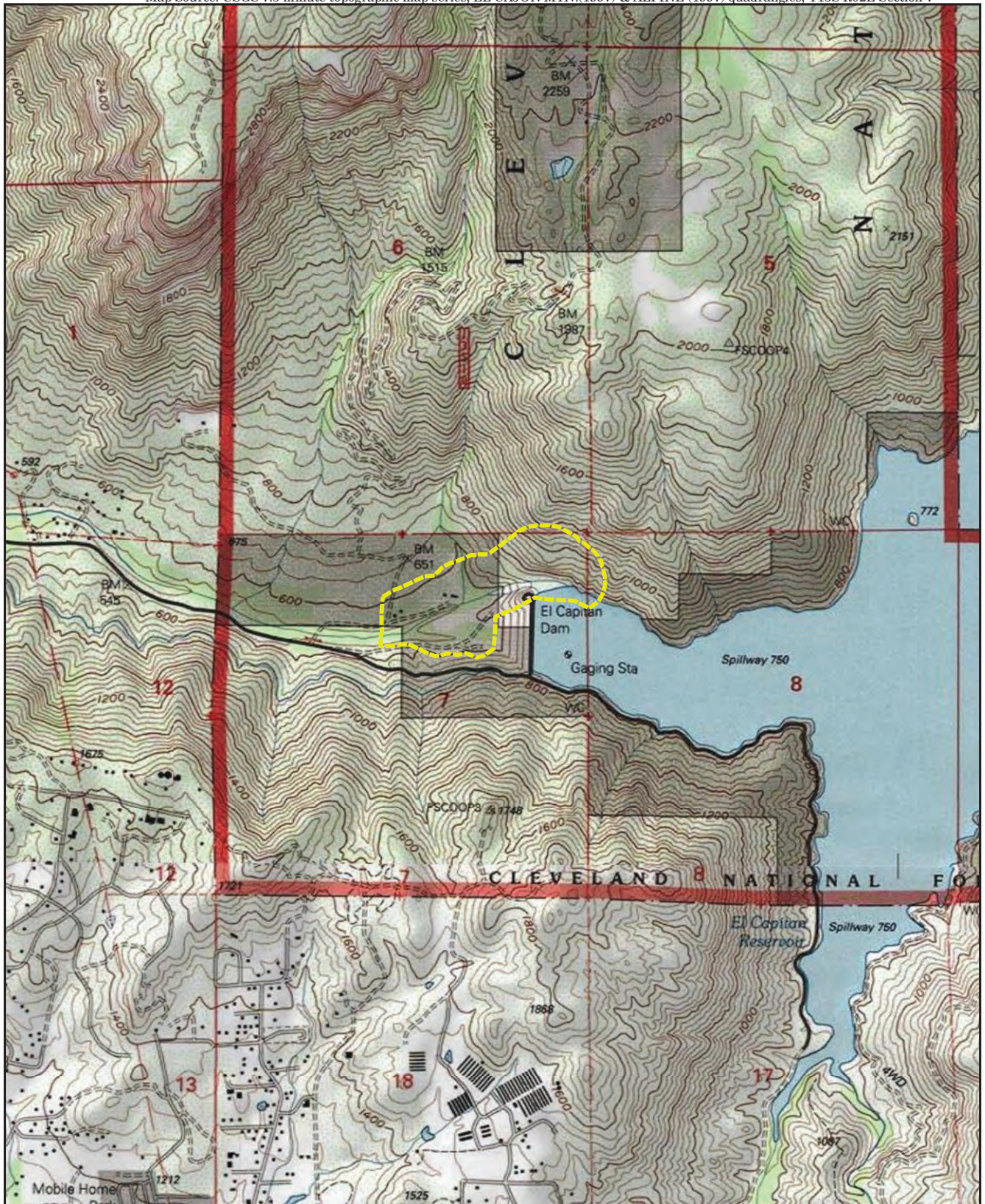
 Project Location

FIGURE 1
Regional Location



 Survey Area

FIGURE 2

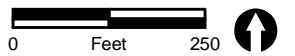
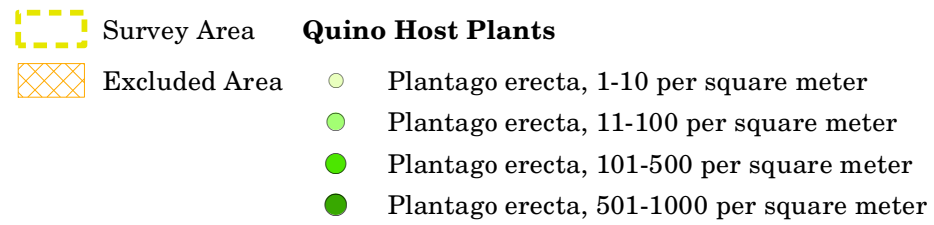


FIGURE 3
Habitat Assessment and Survey Area

overgrazing, poorly planned fire management practices, extreme adverse weather, over-collection by butterfly collectors, and off-road vehicles (USFWS 1997).

Quino's distribution is defined primarily by that of its primary larval host plant, dot-seed plantain (*Plantago erecta*). Female Quino are also known to deposit eggs on woolly plantain (*Plantago patagonica*), white snapdragon (*Antirrhinum coulterianum*), thread-leaved bird's-beak (*Cordylanthus rigidus*), purple owl's clover (*Castilleja exserta*), and Chinese houses (*Collinsia* sp.) (USFWS 2014; Faulkner and Klein 2010). Adults use a variety of low-growing annuals that bloom during the Quino flight period as nectar sources; these include goldfields (*Lasthenia* spp.), cryptantha (*Cryptantha* sp.), popcornflower (*Plagiobothrys* sp.), gilia (*Gilia* spp.), ground-pink (*Linanthus dianthiflorus*), chia (*Salvia columbariae*), wild onion (*Allium* spp.), lomatium (*Lomatium* spp.), goldenstar (*Bloomeria* and *Muilla* spp.), blue dicks (*Dichelostemma capitatum*), and yarrow (*Achillea millefolium*) (USFWS 2002; Faulkner and Klein 2010). They also may use native perennials, including California buckwheat (*Eriogonum fasciculatum*), sugar bush (*Rhus ovata*), and skunk bush (*Rhus aromatica*) (Faulkner and Klein 2010). Quino occur in a variety of sparsely vegetated habitats, including open coastal sage scrub and chaparral, vernal pool complexes, oak woodland, and desert pinyon–juniper woodland. Densely vegetated areas and extensive open grasslands are not known to support Quino (Mattoni et al. 1997). Quino exhibits a preference for low-growing vegetation interspersed with barren spots, as its thermodynamic needs require it to avoid shaded areas and flight below the canopy level (Osborne and Redak 2000; USFWS 2002).

Typically, there is one adult generation of Quino per year, with a four- to six-week flight period beginning between mid-February and early March and continuing through May (Faulkner and Klein 2010), although the timing of the flight period can vary considerably from year to year depending on rainfall and temperature patterns. Adult life span averages 10 to 14 days, and emergence is staggered (USFWS 2002). The full life cycle of a Quino includes egg, larva, pupa, and adult – with larval stages divided into five to seven instars. Adult Quino spend their time searching for mates, feeding on nectar, defending territories, basking in the sun, and in the case of females, searching for sites to deposit eggs (USFWS 2002).

Methods

Site Assessment Methods

RECON biologists Brenna Ogg and JR Sundberg conducted a site assessment within the 75.4-acre project survey area on February 15, 2018, to identify suitable Quino Survey Areas, as defined in the USFWS survey guidelines and the recovery plan (USFWS 2014 and 2003, respectively). Ms. Ogg and Mr. Sundberg are authorized to conduct presence/absence Quino surveys under USFWS 10(a)(1)(A) permits TE-134338 and TE-797665, respectively. Suitable Quino Survey Areas, excluded areas, and populations of larval host plants were mapped in the field, using either a sub-meter accurate global positioning system unit or by hand on a one-inch-equals-200-feet color aerial photograph of the site flown in March 2016.

Presence/Absence Survey Methods

Presence/absence adult flight season surveys for Quino were conducted in accordance with the Quino Checkerspot Butterfly Survey Guidelines (USFWS 2014) by RECON biologist Brenna Ogg, JR Sundberg, and Andrew Smisek; Mr. Smisek is authorized to conduct presence/absence Quino surveys under USFWS 10(a)(1)(A) permit TE-797665. These guidelines specify that Quino surveys should be conducted weekly beginning the third week of February and ending the second Saturday in May. The first presence/absence survey was conducted on the first day (Sunday) of the fourth week of February 2018 due to unsuitable weather conditions during the third week of February. The second survey was conducted toward the end of the same week, and surveys continued weekly thereafter. As no Quino were observed, surveys continued weekly until the end of the season, which is defined as the second Saturday in May. A summary of surveyors; survey dates, times, and weather conditions; and acres surveyed per hour is presented in Table 1.

Table 1
2018 Quino Survey Dates, Personnel, Times, Conditions, and Acres Surveyed per Hour

Date	Survey Number	Personnel	Beginning Time and Conditions	Ending Time and Conditions	Acres/ Hour
02/15/18	Site Assessment	JRS, BAO	9:10 A.M.	1:50 P.M.	n/a
02/25/18	1	BAO	11:45 A.M.; 66° F; winds 2-6 mph; 0% cloud cover	3:00 P.M.; 71° F; winds 0-3 mph; 0% cloud cover	8.0
		JRS	11:20 A.M.; 67° F; winds 0-4 mph; 0% cloud cover	3:00 P.M.; 71° F; winds 0-3 mph; 0% cloud cover	
03/01/18	2	JRS	12:20 P.M.; 67° F; winds 2-7 mph; 0% cloud cover	4:00 P.M.; 66° F; winds 3-10 mph; 0% cloud cover	8.1
		AKS	12:50 P.M.; 67° F; winds 1-3 mph; 0% cloud cover	4:00 P.M.; 66° F; winds 3-10 mph; 0% cloud cover	
03/06/18	3	BAO	10:10 A.M.; 65° F; winds 2-5 mph; 0% cloud cover	1:55 P.M.; 85° F; winds 2-6 mph; 10% cloud cover	7.1
		AKS	10:00 A.M.; 60° F; winds 1-2 mph; 0% cloud cover	2:00 P.M.; 82° F; winds 2-6 mph; 2% cloud cover	
03/13/18	4	BAO	11:30 A.M.; 70° F; winds 0 mph; 100% cloud cover	2:35 P.M.; 85° F; winds 0-5 mph; 100% cloud cover	8.3
		JRS	11:00 A.M.; 70° F; winds 0-1 mph; 100% cloud cover	2:35 P.M.; 82° F; winds 0-5 mph; 98% cloud cover	
03/20/18	5	BAO	11:55 A.M.; 73° F; winds 1-5 mph; 10% cloud cover	3:25 P.M.; 86° F; winds 4-8 mph; 80% cloud cover	7.6
		JRS	11:40 A.M.; 69° F; winds 2-5 mph; 10% cloud cover	3:25 P.M.; 86° F; winds 4-8 mph; 80% cloud cover	
03/26/18	6	BAO	12:50 P.M.; 66° F; winds 1-5 mph; 30% cloud cover	4:00 P.M.; 72° F; winds 2-10 mph; 60% cloud cover	8.3
		AKS	12:50 A.M.; 68° F; winds 2-4 mph; 40% cloud cover	4:20 P.M.; 71° F; winds 7 mph; 50% cloud cover	
04/03/18	7	BAO	12:15 P.M.; 73° F; winds 2-5 mph; 90% cloud cover	3:45 P.M.; 82° F; winds 3-6 mph; 50% cloud cover	7.5
		JRS	11:55 A.M.; 74° F; winds 3-5 mph; 15% cloud cover	3:45 P.M.; 82° F; winds 3-6 mph; 50% cloud cover	
04/10/18	8	JRS, AKS	9:20 A.M.; 81° F; winds 0-2 mph; 10% cloud cover	2:00 P.M.; 102° F; winds 2-6 mph; 5% cloud cover	5.9
04/17/18	9	BAO	12:10 P.M.; 73° F; winds 2-9 mph; 0% cloud cover	3:30 P.M.; 79° F; winds 1-6 mph; 0% cloud cover	7.9
		AKS	11:50 A.M.; 76° F; winds 4-6 mph; 0% cloud cover	3:30 P.M.; 79° F; winds 1-6 mph; 0% cloud cover	
04/24/18	10	JRS, AKS	9:30 A.M.; 67° F; winds 0-2 mph; 45% cloud cover	2:00 P.M.; 83° F; winds 1-5 mph; 25% cloud cover	6.1
05/03/18	11	BAO	11:00 A.M.; 78° F; winds 1-4 mph; 0% cloud cover	2:25 P.M.; 82° F; winds 2-5 mph; 0% cloud cover	8.1
		JRS	11:00 A.M.; 76° F; winds 3-6 mph; 0% cloud cover	2:25 P.M.; 86° F; winds 2-5 mph; 0% cloud cover	
05/11/18	12	JRS, AKS	12:30 P.M.; 75° F; winds 5-10 mph; 90% cloud cover	3:30 P.M.; 70° F; winds 8-12 mph; 100% cloud cover	6.9

°F = degrees Fahrenheit at ground level; mph = miles per hour
BAO = Brenna Ogg; JRS = JR Sundberg; AKS = Andrew Smisek

All potentially suitable Quino habitat was surveyed while walking at a slow pace, and all butterfly species and blooming plant species were noted during each visit. Field notes are provided in Attachment 1.

Results

Site Assessment Results

The project survey area is generally centered on El Capitan Dam spillway and the associated manufactured channel (now supporting riparian vegetation) that extends westward from the spillway for approximately 1,200 linear feet, where it merges with the main San Diego River channel. The project survey area is within Recommended Quino Survey Area as designated by the USFWS survey guidelines (USFWS 2014). Within the survey area, elevations range from 560 feet above mean sea level in the San Diego River-bottom in the western portion of the survey area to 1,200 feet above mean sea level on the large hillside in the northeastern portion of the survey area. This hillside is generally south-facing and contains open vegetation with a number of small upland drainages. The central portion of the site, north and south of the spillway, contains a series of previously graded terraces with open vegetation and concentrations of large rocks. The western portion of the site, north of the San Diego River riparian corridor, is generally flat and contains a series of manufactured berms, dirt roads, and the remnants of an old homestead among open vegetation. A plateau occurs between the northern and southern riparian corridors at the base of the dam, east of where the riparian corridors merge. The southern portion of the site contains a small amount of open vegetation south of the riparian corridor and along dirt roads.

Vegetation communities/land cover types (following Holland 1986 as updated by Oberbauer et al. [2008] and City of San Diego [2012]) mapped as potentially suitable Quino habitat during the site assessment include Diegan coastal sage scrub (including disturbed), non-native grassland, disturbed land, and small open stands of eucalyptus woodland and southern coast live oak riparian forest. The total area of suitable Quino habitat within the 75.4-acre area assessed is approximately 55.1 acres. This 55.1-acre Quino survey area, as well as portions of the site excluded from the survey area, is shown on Figure 3. Areas excluded from the survey area include developed areas; areas of closed canopy woody vegetation, such as dense riparian forest and chaparral; and areas with cut, steep slopes that prevented direct pedestrian access. Vegetation communities included in the survey area are described in detail below.

Diegan coastal sage scrub occurs in many portions of the survey area and with a variety of shrub densities and species composition. For example, the portion that occurs west of the base of the dam between the riparian corridors is dense (approximately 60 percent shrub cover) and dominated by California buckwheat with deerweed (*Acmispon glaber*), while portions of the Diegan coastal sage scrub on the steep south-facing slope in the northern portion of the survey area contain a sparse shrub cover of approximately 10 percent dominated by laurel sumac (*Malosma laurina*). Other portions of that slope contain groupings of native shrubs such as chamise (*Adenostoma fasciculatum*), matchweed (*Gutierrezia* sp.), California sagebrush (*Artemisia californica*), white sage (*Salvia apiana*), wishbone bush (*Mirabilis laevis* var. *crassifolia*), and peak rush-rose (*Crocianthemum scoparium*). On this slope, the open space between shrubs contains a variety of short perennial and annual natives such as chia, smallseed sandmat (*Euphorbia polycarpa*), odora (*Porophyllum gracile*), shining peppergrass (*Lepidium nitidum*), and Bigelow's spike-moss (*Selaginella bigelovii*), as well as a substantial cover of non-natives annuals such as short-pod mustard (*Hirschfeldia incana*), oats (*Avena* sp.), and bromes (*Bromus* spp.).

Disturbed Diegan coastal sage scrub occurs in many portions of the survey area and contains a notably higher proportion of non-natives, including non-native grasses (*Bromus* sp.) and mustards (*Brassica* sp.), with some portions dominated by crimson fountain grass (*Pennisetum setaceum*). A patch in the west-central portion of the survey area contains an overgrown staging area with a stockpile of large concrete pipes and the native broom baccharis (*Baccharis sarothroides*) shrub dominating the space surrounding the pipes.

Non-native grassland occurs in the western portion of the survey area. This vegetation community is dominated by ripgut grass (*Bromus diandrus*), red brome (*Bromus madritensis* ssp. *rubens*), and short-pod mustard, and contains a shrub cover of approximately 5 percent.

Eucalyptus woodland occurs in the north-central portion of the survey area, with sugar gum (*Eucalyptus cladocalyx*) as the dominant tree. Although the sugar gum trees are mature and tall, at approximately 50-70 feet in height on average, they are mostly scattered in such a way that their canopies do not overlap. The understory consists mostly of eucalyptus tree leaf litter.

Southern coast live oak riparian forest occurs both in the north-central portion of the survey area adjacent to the eucalyptus woodland described above and in a south-central portion. Southern coast live oak riparian forest is dominated by coast live oak (*Quercus agrifolia*). As with the eucalyptus woodland, the canopies of the mature oak trees do not overlap. This allows for an understory of moderate native shrub cover, including California buckwheat and laurel sumac, as well as non-native grasses such as bromes.

Disturbed land occurs mostly as dirt roads that run throughout the survey area, and it occurs along the edge of El Capitan Reservoir, just southeast of the concrete spillway in the southeastern portion of the survey area. The dirt roads are primarily composed of bare ground and have a sparse cover of small annuals, such as dot-seed plantain, popcornflower, and red-stem filaree (*Erodium cicutarium*). The patch of disturbed land that occurs adjacent to the reservoir at the beginning of the spillway is dominated by fountain grass and tree tobacco (*Nicotiana glauca*).

Presence/Absence Survey Results

One larval host plant species, dot-seed plantain, was observed in patches ranging in size from approximately 10 to over 1,000 individuals throughout the survey area (see Figure 3). These patches were scattered throughout much of the large hillside in the northeastern portion of the survey area, where dot-seed plantain generally occurred in openings in scrub habitats. Within the remainder of the survey area, dot-seed plantain was found concentrated along dirt access roads and areas that had previously been graded. Dot-seed plantain was absent from much of the western portion of the survey area, where non-native grasses are abundant. It was also absent from the central portion of the survey area, which contains dense buckwheat scrub. The survey area supports a substantial number of potential nectar species, including known nectar sources such as fiddleneck (*Amsinckia* sp.), cryptantha (*Cryptantha* sp.), blue dicks, California buckwheat, gilia, and popcornflower. However, many of these species occurred in small numbers and potential nectar sources were generally sparsely spread throughout the survey area. A list of flowering plants observed during the protocol surveys is presented in Table 2.

Scientific Name	Common Name
<i>Acmispon americanus</i>	Spanish-clover
<i>Acmispon argophyllus</i>	silver-leaf lotus
<i>Acmispon glaber</i>	deerweed
<i>Acmispon heermannii</i>	Heermann's lotus
<i>Acmispon micranthus</i>	grab lotus
<i>Acmispon strigosus</i>	bishop's lotus
<i>Amsinckia menziesii</i>	rancher's fiddleneck
<i>Antirrhinum nuttallianum</i>	Nuttall's snapdragon
<i>Astragalus deanei</i>	Dean's milkvetch
<i>Bebbia juncea</i>	rush sweetbush
<i>Bloomeria crocea</i>	common goldenstar
<i>Brassica tournefortii</i>	Sahara mustard
<i>Calandrinia menziesii</i>	red maids

Table 2 Flowering Plants within the Survey Area	
Scientific Name	Common Name
<i>Calochortus</i> sp.	mariposa lily
<i>Calystegia macrostegia</i>	morning-glory
<i>Camissoniopsis</i> sp.	sun cup
<i>Chaenactis artemisiifolia</i>	white pincushion
<i>Chaenactis glabriuscula</i>	yellow pincushion
<i>Cirsium occidentale</i>	California thistle
<i>Clarkia delicata</i>	delicate clarkia
<i>Claytonia</i> sp.	miner's lettuce
<i>Clematis pauciflora</i>	southern California clematis
<i>Crocanthemum scoparium</i>	peak rush-rose
<i>Croton californicus</i>	California croton
<i>Croton setiger</i>	dove weed
<i>Cryptantha</i> sp.	cryptantha
<i>Datura wrightii</i>	western Jimson weed
<i>Dichelostemma capitatum</i>	blue dicks
<i>Erodium cicutarium</i>	red-stem filaree
<i>Eriogonum elongatum</i>	long-stem wild buckwheat
<i>Eriogonum fasciculatum</i>	California buckwheat
<i>Eschscholzia californica</i>	California poppy
<i>Eulobus californicus</i>	false-mustard
<i>Euphorbia polycarpa</i>	smallseed sandmat
<i>Funastrum cynanchoides</i> var. <i>hartwegii</i>	climbing milkweed
<i>Gilia</i> sp.	gilia
<i>Gutierrezia</i> sp.	matchweed
<i>Helianthus gracilentus</i>	slender sunflower
<i>Heliotropium curassavicum</i>	alkali heliotrope
<i>Helminthotheca echioides</i>	bristly ox-tongue
<i>Hesperoyucca whipplei</i>	chaparral candle
<i>Heterotheca grandiflora</i>	telegraph weed
<i>Hirschfeldia incana</i>	short-pod mustard
<i>Hypochaeris glabra</i>	smooth cat's-ear
<i>Keckiella cordifolia</i>	climbing bush penstemon
<i>Lepidium nitidum</i>	shining peppergrass
<i>Lupinus concinnus</i>	bajada lupine
<i>Lupinus hirsutissimus</i>	stinging lupine
<i>Lupinus truncatus</i>	collar lupine
<i>Malacothamnus fasciculatus</i>	chaparral mallow
<i>Marah macrocarpa</i>	wild cucumber
<i>Melilotus</i> sp.	sweet clover
<i>Mimulus aurantiacus</i>	bush monkey-flower
<i>Mirabilis laevis</i> var. <i>crassifolia</i>	wishbone bush
<i>Navarretia</i> sp.	holly-leaf skunkweed
<i>Nicotiana glauca</i>	tree tobacco
<i>Oxalis</i> sp.	oxalis
<i>Pectocarya</i> sp.	pectocarya
<i>Penstemon spectabilis</i>	violet beard-tongue
<i>Phacelia cicutaria</i>	caterpillar phacelia
<i>Phacelia distans</i>	wild-heliotrope
<i>Phacelia parryi</i>	Parry's phacelia

Table 2 Flowering Plants within the Survey Area	
Scientific Name	Common Name
<i>Pholistoma auritum</i>	fiesta flower
<i>Pholistoma membranaceum</i>	white fiesta flower
<i>Pholistoma racemosum</i>	San Diego fiesta flower
<i>Plantago erecta</i>	dot-seed plantain
<i>Plagiobothrys</i> sp.	popcornflower
<i>Pluchea sericea</i>	arrow-weed
<i>Porophyllum gracile</i>	odora
<i>Pseudognaphalium biolettii</i>	bicolor cudweed
<i>Quercus agrifolia</i>	coast live oak
<i>Rafinesquia californica</i>	California chicory
<i>Rhamnus ilicifolia</i>	hollyleaf redberry
<i>Ricinus communis</i>	castor bean
<i>Salsola tragus</i>	Russian thistle
<i>Salvia columbariae</i>	chia
<i>Sambucus nigra</i> ssp. <i>caerulea</i>	blue elderberry
<i>Scrophularia californica</i>	California figwort
<i>Sisymbrium irio</i>	London rocket
<i>Sisyrinchium bellum</i>	western blue-eyed grass
<i>Solanum</i> sp.	nightshade
<i>Stephanomeria</i> sp.	wreath-plant
<i>Stillingia linearifolia</i>	linear-leaf stillingia
<i>Tamarix ramosissima</i>	saltcedar
<i>Thysanocarpus</i> sp.	fringepod
<i>Toxicodendron diversilobum</i>	western poison oak
<i>Uropappus lindleyi</i>	silver puffs
<i>Yucca schidigera</i>	Mojave yucca

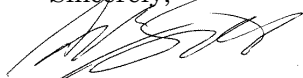
A total of 553 butterfly observations, representing a minimum of 28 butterfly species, were recorded during the 2018 presence/absence surveys; however, Quino was not detected (Table 3). Habitat within the survey area was generally suitable for Quino despite an abundance of non-native grasses throughout much of the site. The most common species observed was Pacific Sara orangetip (*Anthocharis sara sara*), which gradually increased in numbers and peaked during Week 7, then gradually decreased in numbers thereafter. Funereal duskywing (*Erynnis funeralis*) and Behr's metalmark (*Apodemia mormo virgulti*) also occurred in relatively high numbers in the survey area. Behr's metalmark gradually increased in numbers and peaked during Week 8, whereas funereal duskywing observations remained consistent through the first 8 weeks and decreased thereafter. Other common butterflies present in moderate numbers throughout the survey period included brown elfin (*Callophrys augustinus*), southern blue (*Glaucopsyche lygdamus australis*), acmon blue (*Icaricia acmon*), common buckeye (*Junonia coenia grisea*), and western tiger swallowtail (*Papilio rutulus*).

Overall, butterfly observation was lower than expected, likely due to the sparse supply of potential nectar sources as mentioned above. The abundance and availability of potential nectar sources were likely limited by well below average rainfall during the 2017-2018 rain season. Data from the National Oceanic and Atmospheric Administration show that this season's rainfall is only 33 percent of average in the San Diego region (NOAA 2018).

Ms. Stacey Love
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June 27, 2018

If you have any questions, please feel free to contact me at asmisek@reconenvironmental.com or at 619.308.9333 extension 158.

Sincerely,



Andrew Smisek
Biologist

AKS:eab

cc: Mark Berninger, City of San Diego
Justin Garcia, California Department of Fish and Wildlife

Table 3
Butterflies Observed within the Survey Area

Scientific Name	Common Name	Number of Observations by Survey Number											
		1	2	3	4	5	6	7	8	9	10	11	12
N/A	unidentified white						1	1				7	
N/A	unidentified blue		7	3	2	1		3	1			6	
<i>Adelpha bredowii californica</i>	California sister				1	1	1		1	1			
<i>Anthocharis sara sara</i>	Pacific Sara orangetip	3		9	17	27	28	36	21	7	17	2	
<i>Apodemia mormo virgulti</i>	Behr's metalmark	2	1	3		1	5	9	15	14	7	4	2
<i>Callophrys augustinus</i>	brown elfin	1		2	2	1	1	6		3	6	2	5
<i>Callophrys dumetorum affinis</i>	immaculate bramble hairstreak			1									
<i>Calephelis wrighti</i>	Wright's metalmark						1					2	1
<i>Celastrina ladon echo</i>	echo blue			1								1	
<i>Colias eurytheme</i>	orange sulphur											1	
<i>Erynnis funeralis</i>	funereal duskywing	16	10	6	12	10	10	12	13	4		5	
<i>Erynnis</i> sp.	duskywing				1	3	1	5				1	
<i>Everes amyntula</i>	western tailed-blue							1				2	
<i>Eurema nicippe</i>	sleepy orange					1							
<i>Glaucopsyche lygdamus australis</i>	southern blue			1	2	4	2	4	8				
<i>Icaricia acmon</i>	Acmon blue		1		1		1		2	4	7	5	3
<i>Junonia coenia grisea</i>	common buckeye	1		4	1	1	1	1	4	3	4	5	
<i>Leptotes marina</i>	marine blue						1	1			1	7	
<i>Nymphalis antiopa</i>	mourning cloak	1											
<i>Papilio eurymedon</i>	pale swallowtail			3		2		2	1				
<i>Papilio rutulus</i>	western tiger swallowtail	1	1	2	2	1	1	2	4	2	3	1	
<i>Papilio zelicaon</i>	anise swallowtail					1							
<i>Pieris rapae</i>	cabbage white								4				1
<i>Pontia protodice</i>	checkered white										1	4	
<i>Pyrgus communis</i>	checkered skipper	6											
<i>Strymon melinus pudica</i>	gray hairstreak	2								1	2		1
<i>Vanessa</i> sp.	unidentified lady						1					1	
<i>Vanessa cardui</i>	painted lady				1			1					
TOTAL		33	20	35	42	54	55	84	74	39	48	56	13

NOTE:

Nomenclature was derived from the San Diego Natural History Museum's Butterflies of San Diego County (2002).

Ms. Stacey Love
Page 13
June 27, 2018

Certification

I certify that the information in this survey report and attached exhibits fully and accurately represent my work.

Date: June 27, 2018



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Report Author and Surveyor
USFWS Permit TE-797665
California Department of Fish and Wildlife Scientific Collecting Permit SC-12828

Other Surveyors:



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USFWS Permit TE-134338
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ATTACHMENT 1

8863

BAO

25 Feb 2018

QCB #1 (conducted 1st day of 2nd wk
due to unsuitable weather conditions
thru wk #1)

1145

1500

(3.25 hrs)

66°F @ grad in shade

71°F "

2-6 mph

0-3 mph

0% cc

0% cc

Butterflies

fun dusky III

grey hairst. II

crown elfin I

orangehp I

In flower

Sammex

Eriofa

Mirca

*Chamaerif (common)

Saltra

Crocal

Hirinc

Niglan

Marmae

Astragalus

*Asclepias (vining)

odora

Acnola

Bebid

- site in general is dry, few nectar sources available on ~~steep~~^{slopes} in NE sunny area.
- Placere is still mostly in veg but some in many patches in bud. up to 1.5" tall

8863 El Cap QCB# 2018 Feb 25

Start: 67°F, 0-4 mph West, 0% clouds
11:20

End: 71°F 0-3 mph East, 0% clouds
15:00

Butterflies

F. Duskywing ~~|||||~~ Behr's MM II

Moon Cloak 1

Sara's OT II

Checkered Skipper ~~||||~~

WT Swallow tail 1

Buckeye! 1

Potential Nectar

Mir lae SB-C Het gra SB-R

Cal mac SB-R Cha poly B-A

Hel cur V-R Cro sat SB-C

Eri las V, few SB Marmac B-C

Sarcostemma SB-C Sam nig SB-R

Beb jun SB-C Acum gla SB-C

Gutierrezia SB-R Plagiobothrys SB-R

Hir inc SB-A

Abundance: R-Rare, C-common A-abundant

Phenology: SB. Start bloom V. vegetative B-Bloom

3/1/18 8869 QCB Sunny

w/JR - doing lower areas with Kayo

start time: 12:50 wind: 1-3 mph
temp: 67°F cloud cover: 0%

<u>Flowering Plants</u>	<u>Butterflies</u>	<u>#</u>
Platichthys	Blue 1	111
Chamaecypar	Blue 2	1
Hirinc	moth	1
Belujan	F. Duskywing	111
Astool	small moth	1
Erifas		
Miclae		
Lepidium		
milkweed vine	End time: 16:00	
linear Euphorbia shrub	temp: 66°F	
marmac	wind: 3-7	
Opul	cloud cover: 0%	
Ontal		
Nigla		
Dicene		
Cal marmac		

8863 El Cap QCB#1 2018 Feb 25

Start: 67°F, 0-4 mph West, 0% clouds
11:20

End: 71°F 0-3 mph East, 0% clouds
15:00

Butterflies

F. Duskywing		Behr's MM	11
Morn. Cloak	1		
Sara's OT	11		
Checkered Skipper			
WT Swallowtail	1		
Buckeye!	1		

Potential Nectar

Mir lae	SB-C	Het gra	SB-R
Cal mac	SB-R	Cha poly	B-A ✓
Hel cur	V-R	Cro set	SB-C
Eri las	Y, few SB	Marmac	B-C
Sarcostemma	SB-C	Sam nig	SB-R
Beb jun	SB-C	Acum gla	SB-C
Gutierrezia	SB-R	Plagiobothrys	SB-R
Hir inc	SB-A		

Floral

Abundances: R-Rare, C-common A-abundant
Phenology: SB. Start bloom V. vegetative B-Bloom

8863 El Cap QCB#2 2018 Mar 1

Start 67°F 2-7 mph West 0% clouds
12:20

End 66° 3-10 mph West 0% clouds
16:00

Butterfly

F Duskywing	
Blue?	111
Acmon Blue	1
Behr's MM	1
N. T. Swallowtail	1

Potential Nectar

Same as prev. survey
+ see additional.
Eri vri V.
Ant nut SB-R

Host plants looked better after rain.

8863

BAO

6 Mar 2018

QCB #3

upper

hill

1010

1355

(3:45)

65°F @ grad, shade

82°F

2-5 mph

2-6 mph

clear

10% cc, hi, thin

Butterflies

perplex hairst 1

orangehp III

fun dusky II

pale swallowt II

brown elfin 1

united blue III

In flower

* Mircal

Hirinc

Enfas

Dahri

Acangle

Gutierrezia

Marmac

* Chamaeysc-

Astagalus

Erodium

Crocal

rock rose

Nicotia

Sammex

Diccop just starting

Bebbia

Calmar

Strophanomon

Hot gas

~~rock rose~~

Falcon (T)

mule deer (T)

Placere still very healthy,
up to 2", many w/
buds of infl. on flats

 racer

BAO

(JRS other area)

8863

13 Mar 2018

QCB #4

upper hill

1130

1435

(3:05)

70°F grad, shade

82°F grad, shade

100% cc, thin

"

calm

0-5 mph

wind @ 1240 ave 6.5, max 9.8 mph

Butterflies

orangehp III III II

fun dusky III 1

southern blue II

↳ mating

Erynnis sp 1

brown elfin 1

In flower

Pectocarya

* Chamaeysc

popcorn fl

* Mircal

Erodium

* Hirinc

Enfas

Dahri

Lepnit

Bebbia

Astagalus

Sammex

Acangle

Marmac

* Asclepias (vine)

Diccop (early)

Solanum (cream, fruit)

Gutierrezia

Crocal

Placere

Escal

Clepan

Penstem

Lotus and

rock rose

Nicotia

Annich

Calmar

- better abundance of
nectar than prev surveys,
but still not great

- Placere starting to fl

 COHA (P)

3/6/18 8863 QCB w/ Kays and BAs

start time: 1000 wind: 0-1 mph
temp: 60°F cloud cover: 0%

Butterflies #

W. Tiger Swallowtail II

Sassa Orange ~~IIII~~ I

~~Spring Azure~~ Azure 1 (see photos)

S. Blue II

Behr's III

Funereal Duskywing IIII

Sulphur? I

Queen? I

Blueeye IIII

Pale Swallowtail I

Brown Elfin? I

Flowering plants

Euphorbia macron

Crocal Rhaili

Belvia jun Iselvia

Calmar M'gla

Acumula Antmut

Milue Erocic

Eifar Dicap

Duturi Plagiosp.

Astox Helgra

ifrine

Sitalhyra

Cotta

End time: 1400 wind: 2-6 mph
temp: 82 cloud cover: 2% thin

March 8

8863 QCB #4 El Cap 2018 Mar 13

Start	1100	100% thin stratus	0-1 mph
	70 °F	98% alto stratus	
End	1435	98% alto stratus	
	82 °F		0-5 mph SW

Butterflys

Jara OT	HHH	Fainted Lady	1
WT Swallowtail		Blue acron	1
Funi. duskywing	HHH	Buckeye	1
Br. Elfin	1	Blue sp.	
Cal. Sister	1		

Plants/Nectar

Mit las	FB-C	Helcur	SB-R	Cro cal	FB-C
Beb jun	SB-C	Hot gra	SB-R	Ams mon	SB-R
Lepidium	SB-C	Sarcostemma	SB-R	Bratou	SB-R
Acngla	SB-R	Ant nut	SB	Chamae	FB-A
Platere	SB	Scroph cal	V		
Eri fas	SB-R	Sal col	V		
Hir inc	SB-C	Eul cal	V		
Erodium	SB-C	Cryptantha	V		
Datura	SB-R	Cha art	V		
Dic cap	SB-R	Plagioboth	SB-C		
Acn		Pholism	SB-R		
Acn	SB-R	Cal mac	SB-R		
Acn arg	V	Lup trun	V		

V-Veg. SB-start bloom, FB-full bloom
R-Rare, C-common, A-abundant

Aca grv		Sch bar	V, SB-C	
Aga des		Bromad	V	Encelia act V
Quercus W.?		Echinocereus	eng D	Krameria sp D
Yucca sch		Que cornelius-mul		Sal api V
Nolina big		Tha mon	V	Atr can V
Phacelia (on Anis)				
D-Dormant, V-Veg,		SB-Start bloom,	-R	Rare -C common
		FB-Full bloom		

8863

BAO
(JRS other area)

20 Mar 2018

QCB #5

upper hill

1155

1525

(3:30)

1-5 mph

4-8 mph

10% hi thin cc

80% cc

73.4°F

grad in shade 86°F grad, shade

@ 1455 wind ave 9.7, range ~4-13 mph
on exposed slopeButterfliesin flower

orange tip III III III

Sammex

Guherr

southern blue III

popcorn fl

rock wa

Erynnis sp III

*Hirinc

Calmar

un 10 blue I

*Mircol

Nigsta

pale swallowt II

Betta

an mel

fun dusky I

Pectanga

Phapa

anise ST I

Diccap

Lupinus

un 10 sulphur I

-sleepy
orange

Mimickia

Lepid

brown elfin I

ann lob

Chaerdis

Astragalus

Eriocal

Chamaelyca

Plere still looking

Aemula

good, mix of veg/bud/

Marmar

fl - few areas veg

Crocal

only

Oralis (N)

none des

Ardepias (vining)

Salcol - early

Enfas - early

8863

veg:

patches w/ Adefar ~20% cover + Gut,
Artical, Mallow, Salapi, Yucuhic,
rockrose, ^{Legum}NB, Mircol + crypts,
boulders

patches w/ Silapulle

other spp

red bicolor

Brickell

orange

Gacon

Lup shiny

Lepid

	QCB	ELCap	2018 Mar 20
Start	1140	69°	10% high clouds
	2-5 mph	West	Wind
End	1525	86°	80% stratus/high clouds
	4-8 mph	SW	wind

Butterflies

Fun. Duskywing IIII IIII Buckeye II

Sara OT IIII IIII III WT Swallowtail I

Behr's mm I

South Blue I

CA Sister I

Nectar sources

Mir lae FB-C Calmar FB-R

Hir inc FB-A Marmac SB-R

Erifag SB-R Acungla SB-R

Cryptantha SB-R Amsukia SB-R

Beb jun SB-C Pho sac SB-R

Plagioboth FB-C Pho mem SB-R

Die cap SB-R Chmaasyce FB-A

Plaere SB-R Cro cal SB-C

Het gra SB-C Lepidian SB-C

Datura SB-R Thy cur SB-R

Bra toa SB-R Gutierrezia SB-R

Het cur SB-R Jal col V

FB - Full Bloom, SB - start bloom, V - Vegetative

C - Common, A - Abundant, R - Rare

3/26/18 8367 QCB

1100 leave office

1215 waiting for conditions

- currently 75% cloud cover @ 69°F

1250

- ~40% cloud cover @ 68°F, start

wind: 2-4 mph

Butterflies	#	Flowering plants		
Wright's metalmark	1	Belgian	Hirine	Phallidium ^{white}
Bel's metalmark	1111	Cocal	Miracle	Stillingia
Funeral Duskywing	1111	Datura	Cryptantha	Melilotus
Southern Blue	1	Petowaya	Placere	Hetera
Sarah's orange	1111	Bubro	Sam Rig	Claytonia
Acron Blue	1	Salced	Lepidian	Calceolium
White	1	Amstr	Plugichotz	Propia
Bulheye	1	Diccup	Perspe	Phallica
Tiger Swallowtail	1	Antnut	Acroga	Pharano
CA Sister	1	Large tenispen	Toxotiv	carpas
		Helcar	Calnac	Murres
		Bratou	Hypola	
		Eschcal	Ericu	
		Lughrir	Comissicopsis sp	
		Erifas	Onesno	
		Clematis	Amshen	
		Rhapil	Phosor	
		Psubic	Chamogyce	
		Astoc		

1500

weather check - temp: 74°F wind: 2-4 mph
~60% cloud cover

1620 done

temp: 71°F cloud cover: 50%

wind: 7.6 ave max 10.4 mph

3/27/18 8368 rare plants #1

w/Kayla

0730 office

0840 start temp: 56°F sunny wind: 2-4 mph
no clouds

1520 end (GPS issues)

temp: 79°F wind: 5-9 mph sunny
no clouds

8863

BAO
(D&S other area)

3 Apr 2018

QCB #7 upper hill

1215

1545

(3:30)

sunny
dew

73°F grd, shade

82°F grd, shade

90% cc, high, very thin

50% high, ^{very} thin cc

2-5 mph

[1400: 3-9, ave 5 mph]

3-6, 8 to 12 mph

[heard LBVI coming up road @ drainage
xing - see map]Butterfl.

fin dusky IIII

orange tip IIII IIII IIII IIII

brown elfin IIII

Eryanis sp. IIII

un ID blue III

Vanessa sp I

un ID white I

pale swallow II

Behr's metalmark I

southern blue I

buckeye I

In flower

*Hirne

*Aemula

Gilia

popcorn fl

Placer

Sammex

Diccap

Penstemon

ann lobes

*Mirce

Singing lupine

*Sal col

Peebcaya

Ercal

Calmar

Chamaecya

Castroville

Crosal

Helianthus

Phacelia

Lupin

some patches of Placer
starting to dry

□ 1120562, 563 Placer patch on

3863	QCB #	El Cap	2018 Apr 3
1st:	1155	74°F	Wind 3-5 g 7 West
	15% cloud cover,	cirrus	
2d:		82°F	Wind 3-6 g. 12 West
	35% cloud cover,	cirrus,	some stratus to West

Butterflies

chr's MM	###	W. tailed Blue	1
'T Swallowtail		So. Blue	
ara OT	###		
? Duskywing	###		
Painted Lady			1
Larive Blue			1
isorn El fin			1

Nectar Sources

Syplanta sp 1.	FB-C	Beb jun	Euc chr FB-R
Syplantha sp 2.	SB-R	Pha dist	Gilia sp. FB-R
ammonia sp.	SB-R	Mir lae	
Magio col	FB-C	Lup con	
Tom gla	SB-C	Cal mac	
Sal col	SB-R	Acm str	
Pens	SB-R	Dic cap	
Eri fas	SB-C	Ant nut	FB - Fall bloom
-up drun	FB-R	Sarcostema	SB - Start bloom
Lup hir	FB-R	Pho aur	FF - Fruit + flowers
hir inc	FB-A	Hot pra	R - Rare

C - Common
A - Abundant

4/10/18

W

0600 start - meet Aerial and crew at
E822/27 - weed control

0830 meet JR at Los Cochos

0920 start 81°F wind: 0-2 mph
10% cirrus mixed directions

Butterflies	#	Flowering plants
W. Tiger Swallowtail	III	Hypogl. Lycop. Anemone
Funeral Duskywing	IIII II	Eschsch. Pepp.
Sara's orange tip	IIII III	Herring Uolin
Southern Blue	IIII	Placer Mamm.
Behr's metatrans	III	Camissonopsis Antnut
Pale Swallowtail	I	Plagio phac
Cabbage white	IIII	Cypripate Sarrac
Sara's cont.	III	Ental Aemga
Bulwer	III	Euphorbia Acorn sp.
CA Sister	I	Penspe Helga
Anemone blue	II	Salcol Helcar
		Crowl Braton
		Mirac Colum
		Datura Eschal
		Luptru Chagla
		Belgin Acnestr
		Luphir Phapar

End 1400

temp: 102°F

wind: 2-6 mph

clouds: 5% cover

8863	QCB	El Cap	2018 Apr 10
Start: 920	81°F	0-2 mph mixed directions	10% cirrus cloud cover
End 1400	102°F	2-6 mph west	5% cirrus cloud cover

Butterfly

WT Smalltail	1	Buckeye	1
Fun. Dusky wing		Blue sp.	1
Behr's MM			
Sara OT			
S. Blue			

Nectar Sources

Gyptanthe	FB-C	Acn str	FB-R
Aem glc	FB-C	Hyp gla	FB-C
Penstemon	FB-R	Hel cur	SB-R
Hir inc	FB-A	Par gra	SB-R
Mir lao	FB-C	Phs aur	FB-R
Eri fas	SB-R		
Croton cal	FB-C		
Lup Arun	SB-R	FB	Full bloom
Plagio col	FB-R	SB	Starting bloom
Lup hies	SB-R	C	Common
Sal col	FB-A	R	Rare
Dic cap	FB-R	A	Abundant
Raf cal	SB-R		
Lup con	FB-R		

4/17/13

QCB#9 8863

Andy Smisek

Start: 1150

wind: west 4-6 mph

Temp: 76°F

cloud cover: 0%

Butterflies	#	Flowering plants	
<i>Pieris metanura</i>		Platense	Phacelia
Brown Elfin		Hypogla	Calmar
Aemon Blue		Perspe	Aemnic
Saris OT		Itininc	Lupin
Furcal Duskywing		Cryptantha	Sonnis
W. Tiger Swallowtail		Camisariopsis	Helcat
CA Sister	1	Pterobotrys	Bucsal
Buckeye		Euphorbia	Chagla
		Angla	Phapar
		Feritas	Eschcal
		Crocal	Armut
		Miche	Pseubio
		Acaropa	Marmae
		Detwri	Bebjur
		Eulcal	HeShris
		Oiccap	phalistorum white
		Luptra	phalistorum purple
		Esocic	Frison
		Salcal	Sistobal
		Mine rillweed	Sibiri
		Lup Mir	Sulcorium white
		Rafcal	

End: 1530

Temp: 79°F

Wind: 1-6 mph west

Cloud cover: 0%

~~scribbles~~

8863

BAO
AKS

17 Apr 2018

Quino #9 - upper hill

1210

1530

(3:20)

73°F grad, shade

79°F grad, shade

2-9 ave 5.4 mph 1-6 mph

0% ce

0% ce

1-100: wind ave 8.1, max 12.3 mph

Butterflies

gray hairstreak I

orange tip II

Behr's metalmark III

In dusky I

most patches of
Placere starting to
dryIn flower

Sammex

* Acemga

* Hirinc

En far
popcorn

trodium

Daturi

Lup hir

Mel mol

Lup

Salast

Commus.

Picech

Diccep

Calmar

* Chaenach's

Esceal

Mirca

Penstem

Heg whip

Helianthus

Gnarcel

Asclepias

with
Astragalus

Chamaecy

Crocal

red wsa.

Phapa

Phacic

odora

Nicla

(8863)

Dud pul

Avena

Elyson

Rthor

COHU

AM KE

~~SB~~ RASP

LEGO

CAQU

CORA

RTHA

MODO

ANHU

HOPI

NTSW

ATFL

ACWO

CAIK

granite spring liz

SB liz

raer

Pacific coast tick

4/24/18 8863 QCO #10

0930 start cloud cover: 45% high and thin
temp: 67°F wind: 0-2 gusts to 5 mph

Butterfly species	#	Flowering Plants
-------------------	---	------------------

Saras Orange tip		Eriogonum milkweed vine
White White		Belgian Helian
checkered grey hairs break		Hirshia Plusias
Marine Blue?		Miraflores Acmiscom
Aemon Blue		Acmiscom Lupinus
Brown Elfin		Calceolaria Nicotiana
Belted Metamorph		Coccoloba Datura
Tiger Swallowtail		Chamaelirium Lupinus
Buckeye		Dicentra Acmiscom

* Plantage mostly dry with ripe seed.

Brightly metamorph		Porocloso Hyssopus Salicaria Hesperis Erodium Lupinus Eriogonum Cladonia Helianthus Psephellus Phacelia Solanum (white)
--------------------	--	---

End 1400 cloud cover: 25% high and thin
temp: 83°F
winds 1-5 mph

		Eschscholium Paspalum Euphorbia Helianthus
--	--	---

8863 El Cap QCB

2018 Apr 24

Start: 67°F 95% high clouds - thin,
930 Wind 0-2 S.W. 'None'

End: 83°F 25% high + mid clouds

1400 Wind 1-5 S.W.

Butterflies

Swain's OT	III	WT Swallowtail	1
Gray hairstreak			1
Behr's hairstreak	III		
Brown Eli	II		
Buckeye	I		
Aemon blue	III		

Nectar Sources

Hirinc	FB-A	Sam nig	R
Diccap	R	Pho par	R
Eufes	FF-C	Eul cal	Rare
Melae	PB-C	Hel cur	FF
Aungla	FF-A	Datura	Rare
Chonnetie	R	Aeniper	FF-C
Col mac	C	Ant nut	FF
Lup lin	R	Pha ric	ff
Lup fru	R	Beb jun	ff
Sal col	FF-C	Zriastun	SB
Sal api	SB	Coral	FB
Fsc cal	Rare	Mel ind	FE
Gynortha	R		

PB = Past Bloom
 FB = Fall Bloom
 C = Common SB = Start Bloom
 R = Rare, FF = fruit + flower

3 May 2018

BAD
(JRS other area)

8863

QCB #11		upper hill	
1100			1425
73°F grad, shade			82°F grad, shade
1-4 mph			2-5 mph
clear			clear
<u>In flower</u>		<u>Butterflies</u>	
Ithine	Antnut	common	wh. kill II
Sammyx	Galpa	Erynnis	sp I
Erodium	Chamaeja	blue	III I
Datura	Penstemon	acmon	blue III
Eriofas (early)	Crocal	brown	elfin II
Acn glau	Bebriz	white	III
E Keck cor	Asclepias	tailed	blue II
Calochortus	Helianth	Behr's	metallic III
Ericon	Hes whi	buckeye	II
Phacel	Hel cur	orange	tip II
Colmar	Nic glau	Vanessa	sp I
Dicentra (late)	Chaenact.	pin	dusky III
Blo cro	Tam ram	marne	blue II
ps psom fl	Eacral	orange	sulphur I
Het gra	Lup roc	spring	azure I
Mim aur	Piccom		
Clad el	Malfas	check	Plaere mapping e
Pse cal		S base	f dan
Mel ind		9N	
Acn (prostrate)			

Most majority of Plaere
is dry, few green in fl found

No @vino

8863 El Cap QUB 2018 May 3

Start 1100 Clear, no clouds

Ground temp 76°F Wind 3-6 mph West

End 1225

Clear

82°F

Wind 2-5 west

Butterflies

Fun Dusky wing 1

NT Swallowtail 1

White IIII

Marine blue IIII

Buckeye III

Wright's metal mark II

Nectar Sources:

Hib inc Pse cal

Cha gla Pse bio

Cal mac Hel sco

Dic cap Cryptantha

Acm gla Cro cal

Beb jun

Pensomon

Mir lae

Hel grae

Lup bic

Chamae

Sal col

5/11/18

8863 QCB #12 w/ JRS

Butterfly species	#
Cabbage white	1
Aemon Blue	11
Brown elfin	111

Flowering Plants

Eritas Nigella
 Coral Eriogon
 Chayla Cuscuta
 Chart Adiantum
 Hirtia Cirsium
 Euphorbia Helianthus
 Psebio Malva
 Psecal
 Cisald
 Helgra
 Salapi
 Erioc
 Calmac
 Penspe
 Porodo
 Lyphir
 Belgian
 Eupcal
 Saming
 Datwa
 Helcur
 Aumhen

End: 1530

temp: 70°F

wind: 8-12 mph

cloud cover: 100%

Start: 1230

temp: 75°F

wind: 5-10 gusts to 12

cloud cover: 90%

Black-headed grosbeak

Owl

Navarro's sparrow

Eriophorum ssp

Eriogonum wavy leaf annual

8863 QCB Last 2018 May 11

Start 1230 90% Clouds Wind S-10 gust 12
75°F

End 1530 100% Cloud Wind 8-12
70°F

Butterfly

Gray Hairstreak 1

Aemon Blue 1

Behr's MM 11

Wright's MM 1

Brown Elfin 11

Nectar Sources

Hir inc Erodium

Eri fas Ant nut

Cal ma c Sarcostemma

Cha ore Penstemon

Beb jun Sam nig

Hel gra

Cen mol

Eul cal

Cha art

Datura

Bac sal

Hel cur

APPENDIX I

2020 Quino Checkerspot Butterfly (*Euphydryas editha quino*)
Survey Report for the City of San Diego Dam Maintenance
Program Project

HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard
La Mesa, CA 91942
619.462.1515 tel
619.462.0552 fax
www.helixepi.com



June 22, 2020

SDD-32.20

Ms. Stacey Love
U.S. Fish and Wildlife Service
2177 Salk Ave., Suite 250
Carlsbad, CA 92008

Subject: 2020 Quino Checkerspot Butterfly (*Euphydryas editha quino*) Survey Report for the City of San Diego Dam Maintenance Program Project

Dear Ms. Love:

This letter presents the results of a U.S. Fish and Wildlife Service (USFWS) protocol presence/absence survey of the federally listed as endangered Quino checkerspot butterfly (*Euphydryas editha quino*; QCB) conducted by HELIX Environmental Planning, Inc. (HELIX) for the proposed City of San Diego Dam Maintenance Program Project (project). This report describes the methods used to perform the survey and the results. It is being submitted to the USFWS as a condition of HELIX's Threatened and Endangered Species Permit TE-778195-14.

PROJECT LOCATION

The proposed project includes routine maintenance of 13 City dams and associated infrastructure, including the approximately 13-mile Dulzura Conduit located throughout San Diego County (County), California (Figure 1, *Regional Location*). Surveys for QCB were conducted at seven of the dam sites (Barrett, El Capitan, Morena, San Vicente, Savage [Lower Otay], Sutherland, and Upper Otay) and along the Dulzura Conduit. The dams occur on lands that are owned and managed by the City. The locations of each of these sites are detailed below.

Barrett Dam is located in the eastern portion of the County, in the unincorporated community of Dulzura (Figure 1). It lies within Section 22 of Township 17 South, Range 3 East, on the U.S. Geological Survey (USGS) 7.5-minute Barrett Lake quadrangle map (Figure 2a, *USGS Topography – Barrett Dam*). Barrett Dam is located at the outlet of Barrett Lake along Barrett Lake Road to the north of Campo Road (State Route [SR] 94), south of Skye Valley Road, east of Lyons Valley Road, and west of Horizon View Drive (Figure 3a, *Aerial Photograph – Barrett Dam*). The study area occurs in the City's Barrett Reservoir Open Space area and Cleveland National Forest. The Barrett Dam study area is not located within USFWS-designated critical habitat for the QCB.

El Capitan Dam is located in the eastern portion of the County, in the unincorporated community of Lakeside (Figure 1). It lies within Sections 7 and 8 of Township 15 South, Range 2 East, on the USGS 7.5-minute El Cajon Mountain quadrangle map (Figure 2b, *USGS Topography – El Capitan Dam*). El Capitan Dam is located at the outlet of El Capitan Reservoir along El Monte Road to the north of Interstate (I-) 8, south of Featherstone Canyon Road, east of Lake Jennings Road, and west of Peutz Valley Road (Figure 3b, *Aerial Photograph – El Capitan Dam*). The study area occurs in the City's El Capitan Reservoir Open Space Area and Cleveland National Forest. The El Capitan study area is not located within USFWS-designated critical habitat for the QCB.

Morena Dam is located in the eastern portion of the County, in the unincorporated community of Lake Morena (Figure 1). It lies within Section 23 of Township 17 South, Range 4 East, on the USGS 7.5-minute Morena Reservoir quadrangle map (Figure 2c, *USGS Topography – Morena Dam*). Morena Dam is at the outlet of Morena Reservoir along Morena Reservoir Road, north of Hauser Creek Road, south of Skye Valley Road, and west of Lake Morena Drive (Figure 3c, *Aerial Photograph – Morena Dam*). The study area occurs in the County's Lake Morena Regional Park and Cleveland National Forest. The Morena Dam study area is not located within USFWS-designated critical habitat for the QCB.

San Vicente Dam is located in the central portion of the County, in the unincorporated community of Lakeside (Figure 1). It lies within Sections 31 and 36 of Township 14 South, Ranges 1 West and 1 East, on the USGS 7.5-minute San Vicente Reservoir quadrangle map (Figure 2d, *USGS Topography – San Vicente Dam*). The study area is located at the outlet of San Vicente Reservoir to the north of Morena Avenue, south of Foster Truck Trail, east of SR-67, and west of Muth Valley Road (Figure 3d, *Aerial Photograph – San Vicente Dam*). The study area occurs in the City's San Vicente Reservoir recreation area. The San Vicente Dam study area is not located within USFWS-designated critical habitat for the QCB.

Savage (Lower Otay) Dam is located in the southern portion of the County, in the unincorporated community of Otay (Figure 1). It lies within Sections 13 and 18 and unsectioned lands of Township 18 South, Ranges 1 West and 1 East, on the USGS 7.5-minute Otay Mesa quadrangle map (Figure 2e, *USGS Topography – Savage Dam*). The study area is located at the outlet of Lower Otay Reservoir to the north of Alta Road, south of Otay Lakes Road, east of Wueste Road and Otay Lakes County Park, and west of the Otay Open Space Preserve (Figure 3e, *Aerial Photograph – Savage Dam*). The study area occurs in the City's Otay lakes recreation area. The Savage Dam study area is located within USFWS-designated critical habitat for the QCB (Figure 2e).

Sutherland Dam is located in the northern portion of the County, in the unincorporated community of Ramona (Figure 1). It lies within Sections 20 and 21 of Township 12 South, Range 2 East, on the USGS 7.5-minute Ramona quadrangle map (Figure 2f, *USGS Topography – Sutherland Dam*). The dam is located at the outlet of Lake Sutherland along Sutherland Dam Road to the north of SR-78, south and east of Black Canyon Road, and west of Rancho Ballena Road (Figure 3f, *Aerial Photograph – Sutherland Dam*). The study area occurs in the City's Sutherland Reservoir Open Space area and Cleveland National Forest. The Sutherland Dam study area is not located within USFWS-designated critical habitat for the QCB.

Upper Otay Dam is located in the southern portion of the County, in the unincorporated community of Otay (Figure 1). It lies within unsectioned lands of Township 17 South, Range 1 West, on the USGS 7.5-minute Jamul Mountains quadrangle map (Figure 2g, *USGS Topography – Upper Otay Dam*). The dam is located at the outlet of Upper Otay Reservoir to the north of Otay Lakes Road, south of Proctor Valley Road, east of Centennial Trail, and west of Wueste Road (Figure 3g, *Aerial Photograph – Upper Otay*

Dam). The study area occurs in the City's Otay Lakes recreation area. The Upper Otay study area is located within USFWS-designated critical habitat for the QCB (Figure 2g).

The approximately 13-mile long Dulzura Conduit is located in the eastern portion of the County, in the unincorporated community of Dulzura (Figure 1). It lies within Sections 4, 5, 7, 8, 10, 11, 12, 13, 14, 22, 28, and 33 of Townships 17 and 8 South, Ranges 2 and 3 East, on the USGS 7.5-minute Barrett Lake, Otay Mountain, and Tecate quadrangle maps (Figure 2h, *USGS Topography – Dulzura Conduit*). The northern terminus of the Dulzura Conduit is located at Barrett Dam and the southern terminus is located at the conduit's confluence with Dulzura Creek to the west of the Community Building Road and Flume Road intersection (Figure 3h, *Aerial Photograph – Dulzura Conduit*). The conduit traverses from Barrett Dam southward to Campo Road (SR-94), primarily along the eastern facing slopes west of Lake Barrett Road. The conduit then travels under Campo Road and continues in a westerly direction towards Dulzura Creek with the western underground portion paralleling Flume Road. The Dulzura Conduit study area is not located within USFWS-designated critical habitat for the QCB.

METHODS

Focused presence/absence surveys for QCB were conducted in accordance with the *Quino Checkerspot Butterfly Survey Guidelines* (USFWS 2014). The survey protocol calls for weekly surveys to be conducted between the third week of February through the second Saturday in May. The first observation of adult QCB in San Diego County was on January 27, 2020 in southwestern San Diego County (Quino Biologists United 2020). Due to this early observation of QCB, surveys at the two lower-elevation western dam sites, Savage and Upper Otay, were initiated early during the week of February 10th. Stacey Love of the USFWS approved the early initiation of the surveys and deviation from the survey guidelines on February 11, 2020¹, and HELIX's first protocol surveys at Savage and Upper Otay dams were conducted February 12, 2020. Surveys for the remaining dam sites and Dulzura Conduit commenced the week of February 17th pursuant to the USFWS protocol. Surveys were conducted during a 13-week period for Savage Dam and Upper Otay Dam between February 12 and May 7, 2020. Surveys at the remaining sites (Barrett Dam, El Capitan Dam, Morena Dam, San Vicente Dam, Sutherland Dam, and Dulzura Conduit) were conducted during a 12-week period between February 17 and May 8, 2020. Surveys were conducted by HELIX biologists Amy Mattson (TE 778195-14), Erica Harris (TE 778195-14), Benjamin Rosenbaum (TE 778195-14), Laura Moreton (TE 778195-14), Rob Hogenauer (TE 778195-14), Stacy Nigro (TE 778195-14), and Sally Trnka (TE 778195-14); Rocks Biological Consulting biologists Jim Rocks (TE 063230-5.4), Melanie Rocks (TE 082908-2), Brenda Bennett (TE 063230-5.4), Ian Hirschler (TE 063230-5.4), Chris Thomson (TE 063230-5.4), and Brian Lohstroh (TE-063608-6); and Huffman Environmental biologists Garrett Huffman (TE-20186A-3.1) and Ryan Meszaros (TE-20186A-3.1).

The QCB survey area included all areas of potential habitat present within the study area as defined in the survey guidelines. Areas with closed-canopy woody vegetation (as defined in the survey guidelines), including all of riparian habitat and eucalyptus woodland, were excluded from the survey area along with steep (near vertical) slopes, developed areas, and tunneled portions of Dulzura Conduit which would not be subject to routine maintenance procedures (Figures 4a through 4h, *2020 Quino Checkerspot Butterfly Survey Area*). Additionally, two short sections of Dulzura Conduit were excluded from the survey area where it overlapped with private property: one east and one to the west of Romo Road (Figure 4h-1). In total, the project's QCB survey area encompassed 270.7 acres of potential QCB

¹ Email from Stacey Love (USFWS) to Krista Catelani (HELIX), dated February 11, 2019.

habitat comprised of Diegan coastal sage scrub (including disturbed, baccharis dominated, and laurel sumac dominated), coastal sage-chaparral scrub, chamise chaparral, scrub oak chaparral, southern mixed chaparral, granitic northern mixed chaparral (including sparse), granitic southern mixed chaparral (including disturbed), non-native grassland, non-native vegetation, disturbed habitat (i.e., unpaved trails), and small amounts of developed land (i.e., roads and earthen dams), unvegetated habitat/bedrock, and unvegetated habitat/talus slope (Figures 5a through 5h, *2020 Quino Checkerspot Butterfly and Host Plant Locations*).

Surveys were conducted by walking through potential habitat and identifying all butterflies observed by sight and with the aid of binoculars. All QCB locations were recorded with the aid of hand-held global positioning system (GPS) units and mapped on an aerial photograph. Larval host plants and potential nectar plant species encountered during the surveys were also documented. A minimum of five continuous weekly surveys were conducted pursuant to the survey protocol. If QCB were observed within a portion of the survey area during or following the first five weekly surveys, surveys for that portion of the survey area were discontinued. Weekly surveys continued for all remaining portions of the survey area where QCB had not been observed until the end of the protocol survey period. Weekly surveys that were missed as a result of week-long adverse weather conditions, such as low temperatures, high cloud cover, high winds, and/or rain, were postponed to the following week when protocol weather conditions were met. Postponed weekly surveys were conducted on non-consecutive days with regular weekly surveys pursuant to survey protocol. Surveys covered between 1.60 and 10.56 acres per hour.

Larval host plants within the QCB survey area were mapped during the peak flowering conditions and opportunistically during surveys (Figures 5a through 5h). Biologists walked meandering transects within the survey area recording the location, size, and conditions of host plants. The location of host plants were mapped with the aid of hand-held GPS units. Patches of host plants larger than approximately 250 square feet were mapped as polygons. Patches of host plants were categorized as low density (1 to 99 plants per square meter), medium density (100 to 999 plants per square meter), or high density (1,000 to 9,999 plants per square meter).

Identification of butterflies was based on personal knowledge, museum specimens, online resources such as Butterflies of America (<https://www.butterfliesofamerica.com/index.html>), and field guides by Shiraiwa (2009) and Glassberg (2001). Other nomenclature for this report follows Holland (1986) and Oberbauer (2008) for vegetation communities; Baldwin et al. (2012) and the Jepson eFlora (Jepson Flora Project 2020) for plants; and Pelham (2020) and Davenport (2018) for butterflies.

RESULTS

Dates, times, and weather conditions at the beginning and end of each of the surveys are presented in Attachment A, *Survey Information*. Copies of field forms are provided as Attachment B, *Survey Forms*. Field forms include host plants, nectar resources, and counts of butterfly species observed. A list of total butterflies observed during the 2020 QCB surveys is included as Attachment C, *Butterfly Checklist*. Survey information and results for each dam site and the Dulzura Conduit are presented separately in the Attachments and below.

Barrett Dam

No QCB were observed during the 2020 surveys within the Barrett Dam survey area.

A total 265 butterflies representing at least 22 species were recorded within the Barrett Dam survey area during the surveys (Attachment C). The most common butterflies observed were Pacific Sara Orangetip (*Anthocharis sara sara*) and Painted Lady (*Vanessa cardui*).

One larval host plant was observed within the Barrett Dam survey area (Figure 5a, 2020 Quino Checkerspot Butterfly and Host Plant Locations – Barrett Dam): dwarf plantain (*Plantago erecta*). The species was observed in one patch of medium density, at the southwestern boundary of the survey area.

Three potential nectar resources were noted within the Barrett Dam survey area: fiddleneck (*Amsinckia intermedia*; *A. menziesii*), goldenstar (*Bloomeria* sp.), and popcorn flower (*Cryptantha* sp.; *Plagiobothrys* sp.). Nectar resources within the survey area were relatively abundant during the survey effort.

El Capitan Dam

No QCB were observed during the 2020 surveys within the El Capitan Dam survey area.

A total 733 butterflies representing at least 28 species were recorded within the El Capitan Dam survey area during the surveys (Attachment C). The most common butterflies observed were Pacific Sara Orangetip, Painted Lady, and Southern California Silvery Blue (*Glaucopsyche lygdamus australis*).

One larval host plant was observed within the El Capitan Dam survey area (Figure 5b, 2020 Quino Checkerspot Butterfly and Host Plant Locations – El Capitan Dam): dwarf plantain. The species was observed in patches of low and medium density, primarily at the central and northern portions of the survey area.

Four potential nectar resources were noted within the El Capitan Dam survey area: fiddleneck, popcorn flower, California buckwheat (*Eriogonum fasciculatum*), and goldfields (*Lasthenia* sp.). Nectar resources within the survey area were relatively abundant during the survey effort.

Morena Dam

No QCB were observed during the 2020 surveys within the Morena Dam survey area.

A total 313 butterflies representing at least 26 species were recorded within the Morena Dam survey area during the surveys (Attachment C). The most common butterflies observed were Pacific Sara Orangetip, Painted Lady, and Funereal Duskywing (*Erynnis funeralis*).

One larval host plant was observed within the Morena Dam survey area (Figure 5c, 2020 Quino Checkerspot Butterfly and Host Plant Locations – Morena Dam): rigid bird's beak (*Cordylanthus rigidus*). The species was observed in two patches of low density within the southeastern portion of the survey area.

Two potential nectar resources were noted within the Morena Dam survey area: popcorn flower and California buckwheat. Nectar resources within the survey area were relatively abundant during the survey effort.

San Vicente Dam

No QCB were observed during the 2020 surveys within the San Vicente Dam survey area.

A total 688 butterflies representing at least 28 species were recorded within the San Vicente Dam survey area during the surveys (Attachment C). The most common butterflies observed were Pacific Sara Orangetip, Painted Lady, and Funereal Duskywing.

Two larval host plants were observed within the San Vicente Dam survey area (Figure 5d, *2020 Quino Checkerspot Butterfly and Host Plant Locations – San Vicente Dam*): dwarf plantain and purple owl's clover (*Castilleja exserta*). Dwarf plantain was the most abundant larval host plant recorded during the survey effort. This species was observed in patches of low, medium, and high density throughout the southern and western portions of the survey area. Purple owl's clover was present in patches of low and medium density scattered throughout the southern portion of the survey area.

Seven potential nectar resources were noted within the San Vicente Dam survey area: fiddleneck, goldenstar, popcorn flower, California buckwheat, goldfields, onion (*Allium* sp.), goldenstar (*Bloomeria* sp.), goldfields (*Lasthenia* sp.), and ground pink (*Linanthus dianthiflorus*). Nectar resources within the survey area were relatively abundant during the survey effort.

Savage Dam

A total 7 QCB were observed during the 2020 Savage Dam surveys (Figure 5e, *2020 Quino Checkerspot Butterfly and Host Plant Locations – Savage Dam*), though some of these observations may represent the same individual(s). On February 2, 2020, two females were observed at the northern portion of the survey area to the east of Savage Dam in association with a high density patch of dwarf plantain. One of the females was observed depositing eggs onto the dwarf plantain within a coastal sage scrub opening. One additional QCB was observed just east of the survey area on February 25, 2020 approximately 280 feet southeast of the other two QCB individuals. On March 3, 2020, four QCB individuals were observed within the same high density patch of dwarf plantain where the two QCB females were observed the previous week. Though QCB were observed within the survey area during the first five weekly surveys, surveys continued through the remainder of the survey period as QCB were only detected within the extreme eastern portion of the survey area to east of the dam, and were not observed within potentially suitable habitat to the west. No additional QCB sightings occurred after March 3, 2020 and no QCB were detected within the western portion of the survey area.

A total 631 butterflies representing at least 29 species were recorded within the Savage Dam survey area during the surveys (Attachment C). The most common butterflies observed were Pacific Sara Orangetip, Southern California Silvery Blue, and Painted Lady.

Two larval host plants were observed within the Savage Dam survey area (Figure 5e): dwarf plantain and purple owl's clover. Dwarf plantain was the most abundant larval host plant recorded during the survey effort. This species was observed in patches of low, medium, and high density in the eastern and western portions of the survey area; though the species was more prevalent within the eastern portion of the survey area. Purple owl's clover was observed in one low density patch in the eastern portion of the survey area.

Seven potential nectar resources were noted within the Savage Dam survey area: onion, fiddleneck, goldenstar, popcorn flower, California buckwheat, goldfields, and ground pink. Nectar resources within the survey area were relatively abundant during the survey effort.

Sutherland Dam

No QCB were observed during the 2020 surveys within the Sutherland Dam survey area.

A total 398 butterflies representing at least 22 species were recorded within the Sutherland Dam survey area during the surveys (Attachment C). The most common butterflies observed were Pacific Sara Orangetip, Southern California Silvery Blue, and Painted Lady.

Two larval host plants were observed within the Sutherland Dam survey area (Figure 5f, *2020 Quino Checkerspot Butterfly and Host Plant Locations – Sutherland Dam*): rigid bird's beak and dwarf plantain. Dwarf plantain was the most abundant larval host plant recorded during the survey effort. This species was observed in patches of low and medium density. Dwarf plantain was observed in one low density and one medium density patch at the western portion of the survey area, and one low density patch at the eastern portion of the survey area. Rigid bird's beak was present in patches of low density to the north of the Sutherland Dam wall and near the northern boundary of the survey area.

Five potential nectar resources were noted within the Sutherland Dam survey area: fiddleneck, popcorn flower, California buckwheat, goldfields, and ground pink. Nectar resources within the survey area were relatively abundant during the survey effort.

Upper Otay Dam

No QCB were observed during the 2020 surveys within the Upper Otay Dam survey area.

A total 409 butterflies representing at least 18 species were recorded within the Upper Otay Dam survey area during the surveys (Attachment C). The most common butterflies observed were Pacific Sara Orangetip, Painted Lady, and Common buckeye (*Junonia coenia grisea*).

One larval host plant was observed within the Upper Otay Dam survey area (Figure 5g, *2020 Quino Checkerspot Butterfly and Host Plant Locations – Upper Otay Dam*): dwarf plantain. The species was observed in patches of low, medium, and high density. Dwarf plantain was present in the eastern portion of the survey area to the east and southeast of Upper Otay Dam.

Six potential nectar resources were noted within the Sutherland Dam survey area: onion, fiddleneck, popcorn flower, California buckwheat, goldfields, and ground pink. Nectar resources within the survey area were relatively abundant during the survey effort.

Dulzura Conduit

A total of 11 QCB were observed during the 2020 Dulzura Conduit surveys. On February 28, 2020, four QCB were detected (two individuals each at two separate locations) south of Campo Road/SR-94 between Summit Road and Little Tecate Road (Figure 5h-2, *2020 Quino Checkerspot Butterfly and Host Plant Locations – Dulzura Conduit*). One of the individuals was observed flying along and within the conduit where it briefly alighted on a muddy edge of a small water-filled basin within the channel before

continuing to fly in a northward direction. On March 3, 2020, one QCB individual was observed at the southern end of an access road approximately 260 feet west of Barrett Lake Road (Figure 5h-8). Low and medium density patches of purple owl's clover are present to the east and west of the access road adjacent to where the individual was observed. On March 6, 2020, six QCB were observed south of Campo Road/SR-94 along Little Tecate Road (Figure 5h-2). One QCB individual was observed within the survey in association with low and medium density dwarf plantain patches located along Little Tecate Road. The remaining five QCB individuals were observed approximately 147 feet south of the survey area in association with dwarf plantain patches (these patches were not mapped because they occurred outside of the survey area) located to the east and west of Little Tecate Road.

A total 3,674 butterflies representing at least 40 species were recorded within the Dulzura Conduit survey area during the surveys (Attachment C). The most common butterfly observed was Pacific Sara Orangetip, Painted Lady, and Behr's metalmark (*Apodemia virgulti*).

Three larval host plants were observed within the Dulzura Conduit survey area (Figures 5h-1 through 5h-12, 2020 *Quino Checkerspot Butterfly and Host Plant Locations – Dulzura Conduit*): Dwarf plantain, purple owl's clover, and Chinese houses (*Collinsia* sp.). Dwarf plantain was the most abundant larval host plant recorded during the survey effort. This species was observed in patches of low, medium, and high density throughout the survey area. The largest concentrations of dwarf plantain occur in the western portion of the conduit between Romo Road and Campo Road/SR-94 (Figure 5h-2), the western portion of the conduit just north of Campo Road/SR-94 (Figure 5h-3), and within the central portion of the conduit west of Barrett Lake Road where an access road follows the conduit along a ridgetop (Figure 5h-6). Purple owl's clover was present as scattered patches of low and medium density throughout the survey area. The largest concentrations of purple owl's clover occur in the northeastern portion of the conduit to the north of the Campo Road/SR-94. These include patches located along access roads that follow the conduit along ridgetops (Figures 5h-4 and 5h-6) and access roads leading from Barrett Lake Road to the conduit (Figures 5h-7 and 5h-8). Chinese houses were observed in low and medium density patches within the central and northern portions of the survey area, including along access roads leading from Barrett Lake Road to the conduit (Figures 5h-7 and 5h-9). Larval host plants were mostly absent from the extreme western portion of the conduit to the west of Romo Road (Figure 5h-1) and the northeastern portion of the conduit just south of Barrett Dam (Figures 5h-11 and 5h-12).

Seven potential nectar resources were noted within the Dulzura Conduit survey area: onion, fiddleneck, goldenstar, popcorn flower, California buckwheat, goldfields, and ground pink. Nectar resources within the survey area were patchily abundant during the survey effort.

CERTIFICATION

We certify that the information in this survey report and enclosed exhibit fully and accurately represents our work. Please contact Erica Harris or Shelby Howard at (619) 462-1515 should you have any questions.

Sincerely,



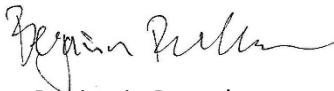
Erica Harris
Senior Scientist



Amy Mattson
Senior Scientist



Laura Moreton
Biologist



Benjamin Rosenbaum
Biologist



Stacy Nigro
Principal Biologist




Sally Trnka
Senior Scientist



Robert Hogenauer
Senior Scientist



Melanie Rocks
Biologist



Jim Rocks
Biologist



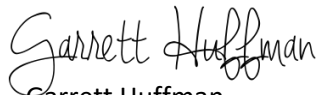
Brenda Bennett
Biologist



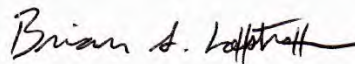
Ian Hirschler
Biologist



Chris Thomson
Biologist



Garrett Huffman
Biologist



Brian Lohstroh
Biologist



Ryan Meszaros
Biologist

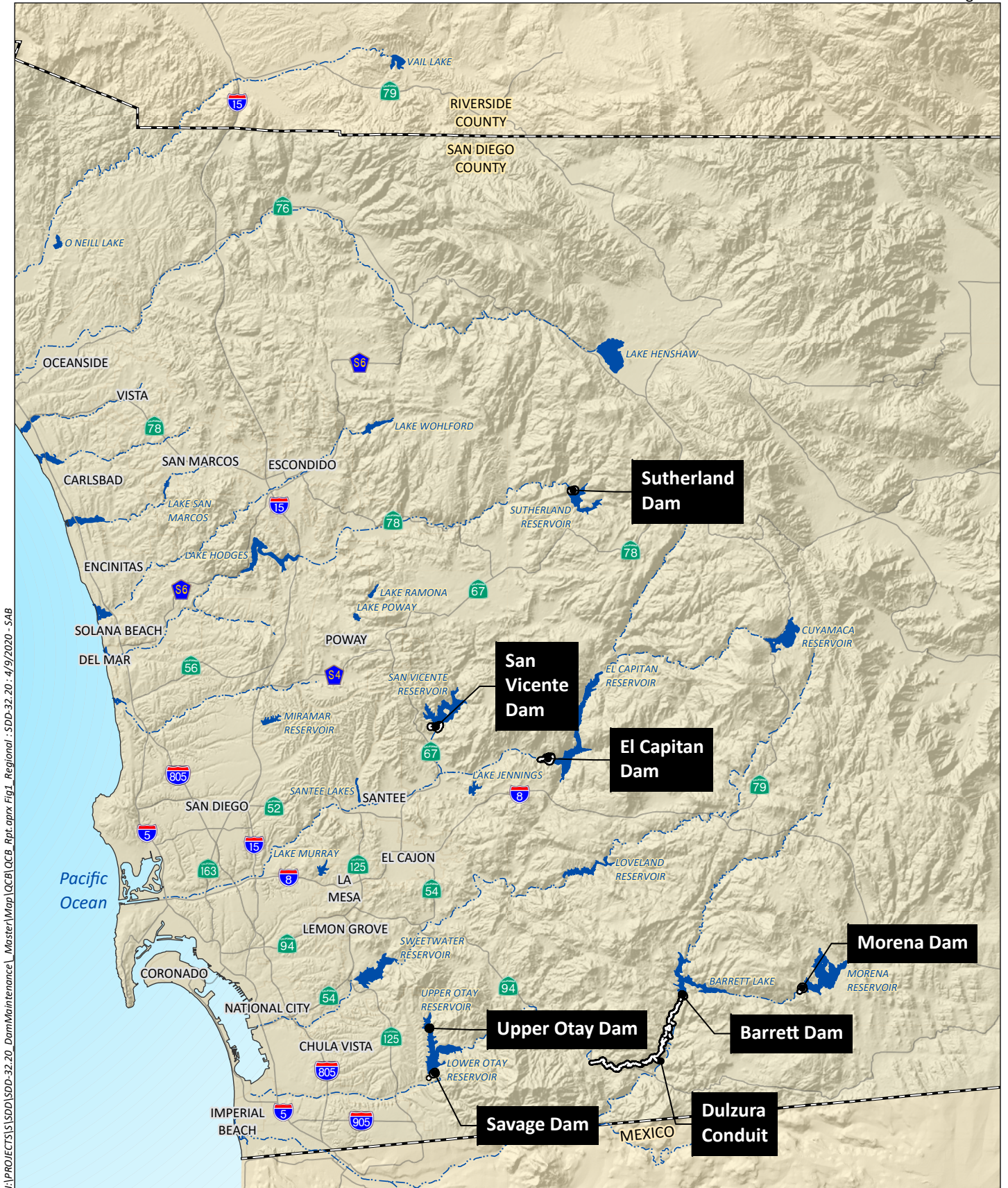
Attachments:

- | | |
|------------|-------------------------------------|
| Figure 1: | Regional Location |
| Figure 2a: | USGS Topography – Barrett Dam |
| Figure 2b: | USGS Topography – El Capitan Dam |
| Figure 2c: | USGS Topography – Morena Dam |
| Figure 2d: | USGS Topography – San Vicente Dam |
| Figure 2e: | USGS Topography – Savage Dam |
| Figure 2f: | USGS Topography – Sutherland Dam |
| Figure 2g: | USGS Topography – Upper Otay Dam |
| Figure 2h: | USGS Topography – Dulzura Conduit |
| Figure 3a: | Aerial Photograph – Barrett Dam |
| Figure 3b: | Aerial Photograph – El Capitan Dam |
| Figure 3c: | Aerial Photograph – Morena Dam |
| Figure 3d: | Aerial Photograph – San Vicente Dam |
| Figure 3e: | Aerial Photograph – Savage Dam |

Figure 3f:	Aerial Photograph – Sutherland Dam
Figure 3g:	Aerial Photograph – Upper Otay Dam
Figure 3h:	Aerial Photograph – Dulzura Conduit
Figure 4a:	2020 Quino Checkerspot Butterfly Survey Area – Barrett Dam
Figure 4b:	2020 Quino Checkerspot Butterfly Survey Area – El Capitan Dam
Figure 4c:	2020 Quino Checkerspot Butterfly Survey Area – Morena Dam
Figure 4d:	2020 Quino Checkerspot Butterfly Survey Area – San Vicente Dam
Figure 4e:	2020 Quino Checkerspot Butterfly Survey Area – Savage Dam
Figure 4f:	2020 Quino Checkerspot Butterfly Survey Area – Sutherland Dam
Figure 4g:	2020 Quino Checkerspot Butterfly Survey Area – Upper Otay Dam
Figure 4h-1 through 6:	2020 Quino Checkerspot Butterfly Survey Area – Dulzura Conduit Dam
Figure 5a:	2020 Quino Checkerspot Butterfly and Host Plant Locations – Barrett Dam
Figure 5b:	2020 Quino Checkerspot Butterfly and Host Plant Locations – El Capitan Dam
Figure 5c:	2020 Quino Checkerspot Butterfly and Host Plant Locations – Morena Dam
Figure 5d:	2020 Quino Checkerspot Butterfly and Host Plant Locations – San Vicente Dam
Figure 5e:	2020 Quino Checkerspot Butterfly and Host Plant Locations – Savage Dam
Figure 5f:	2020 Quino Checkerspot Butterfly and Host Plant Locations – Sutherland Dam
Figure 5g:	2020 Quino Checkerspot Butterfly and Host Plant Locations – Upper Otay Dam
Figure 5h-1 through 12:	2020 Quino Checkerspot Butterfly and Host Plant Locations – Dulzura Conduit
Attachment A:	Survey Information
Attachment B:	Survey Forms
Attachment C:	Butterfly Checklist

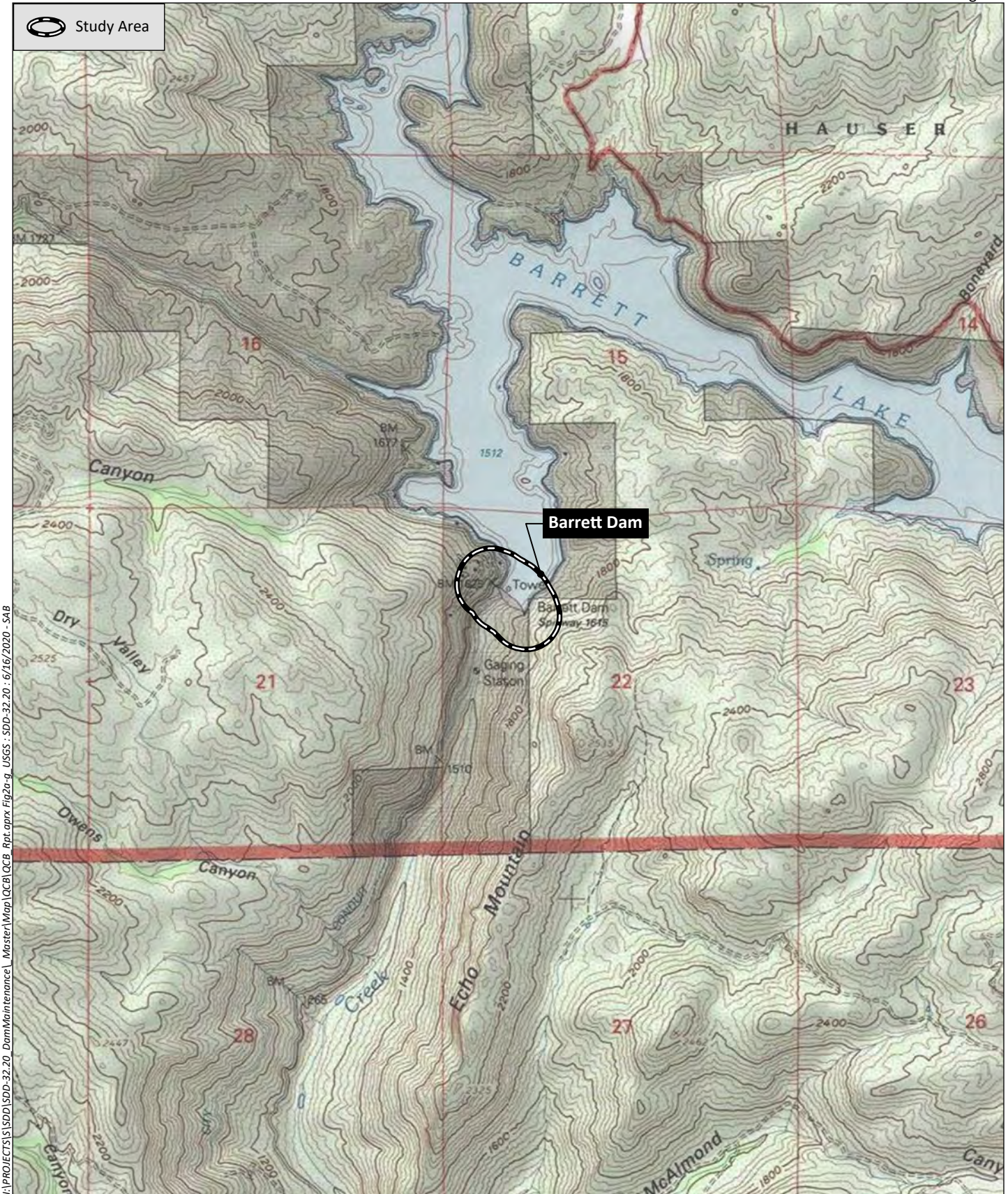
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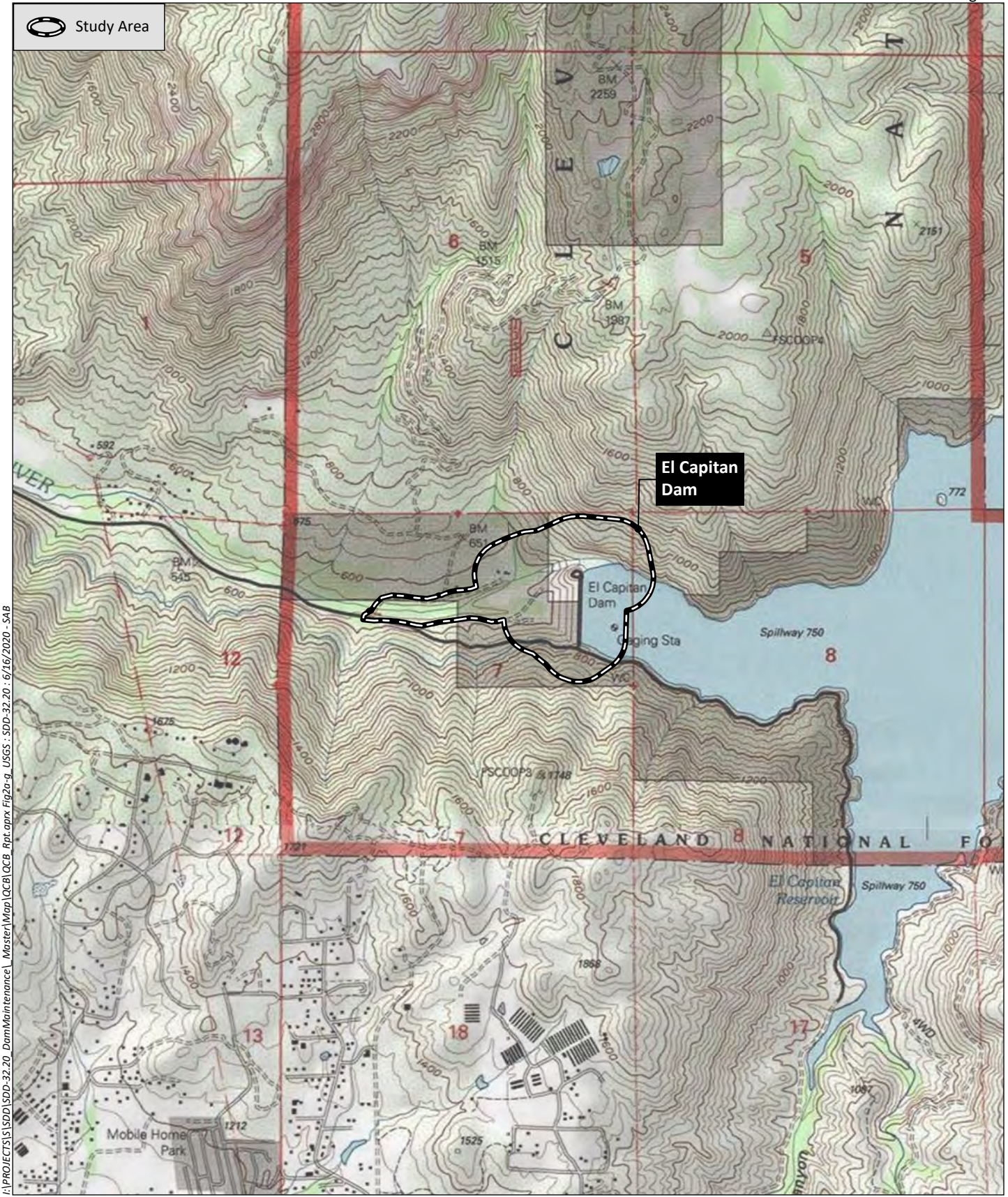
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Source: Base Map Layers (SanGIS, 2016)



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Source: BARRETT LAKE 7.5' Quad (USGS)



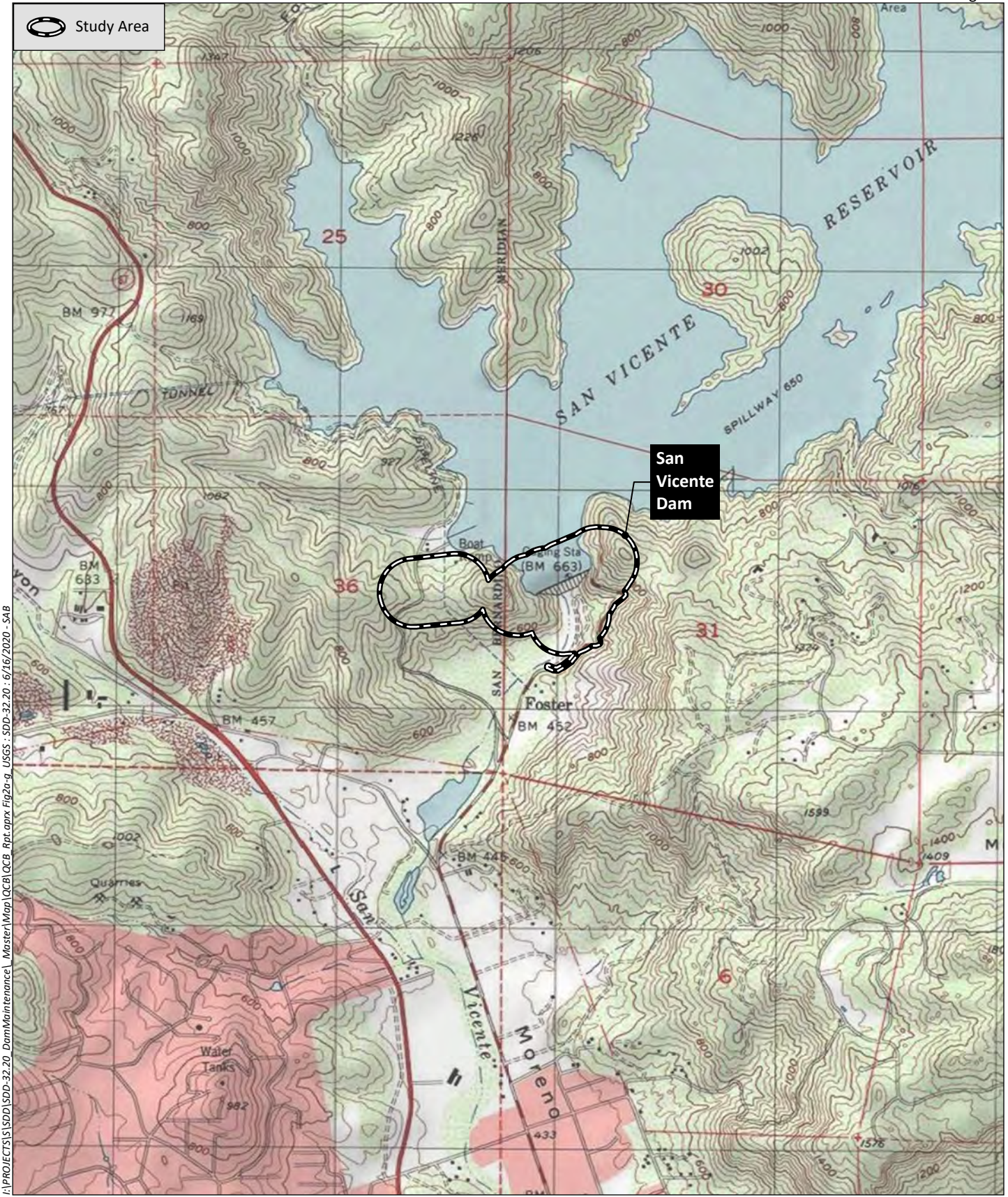
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El Capitan Dam

CLEVELAND NATIONAL FOREST

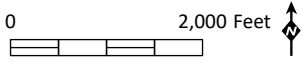
0 2,000 Feet



Source: EL CAJON MTN. 7.5' Quad (USGS)

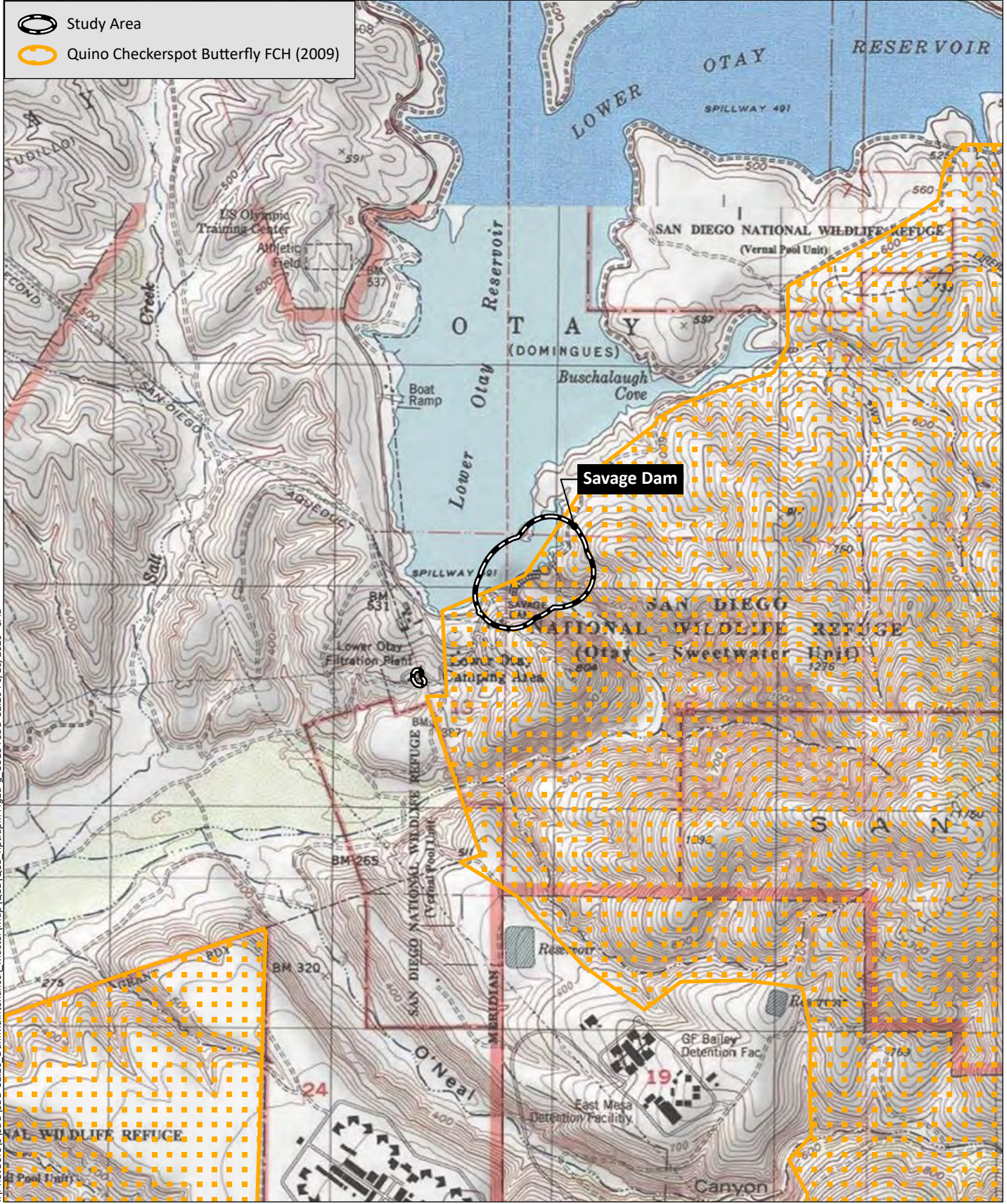


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Source: SAN VICENTE RESERVOIR 7.5' Quad (USGS)

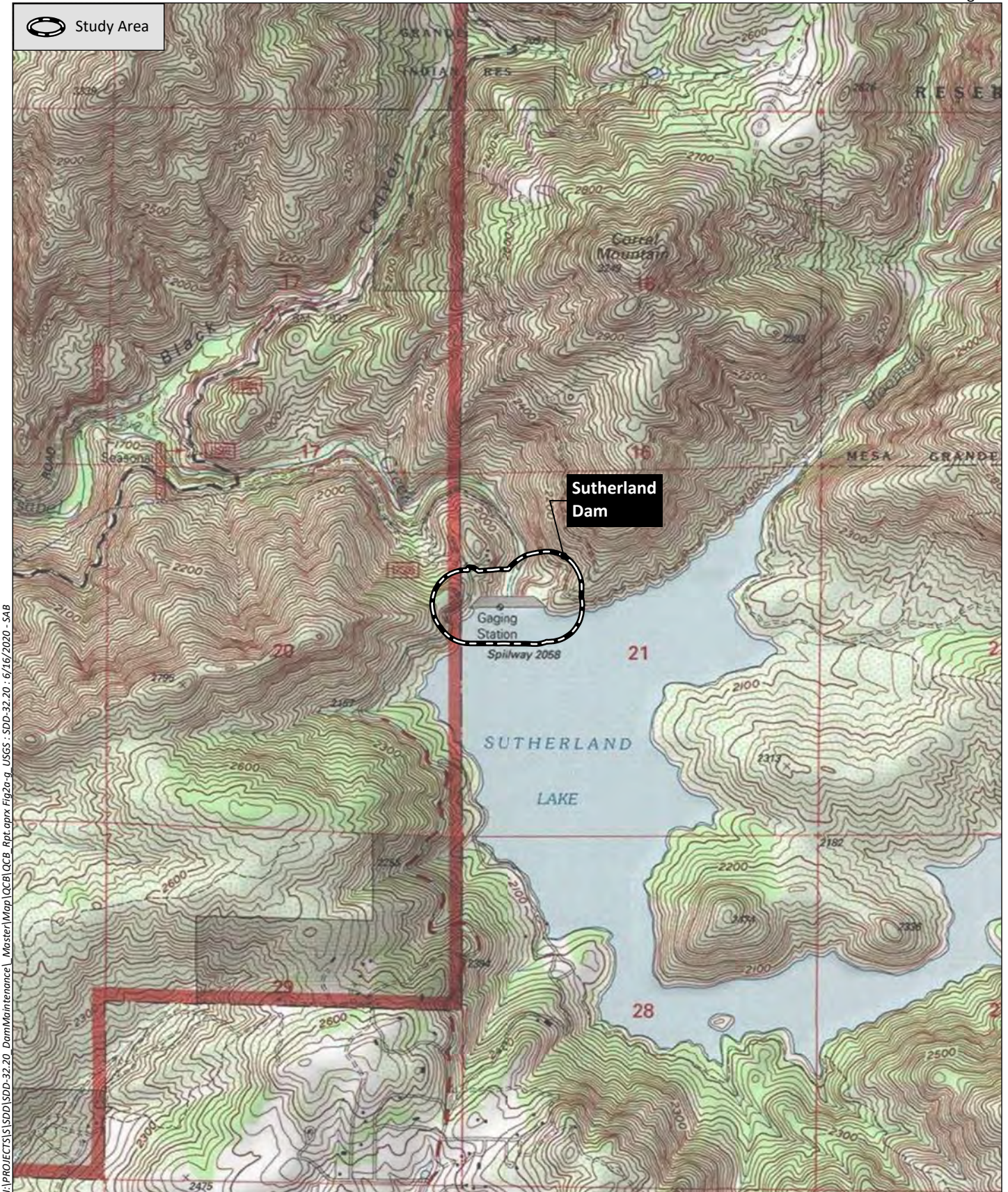


-  Study Area
-  Quino Checkerspot Butterfly FCH (2009)





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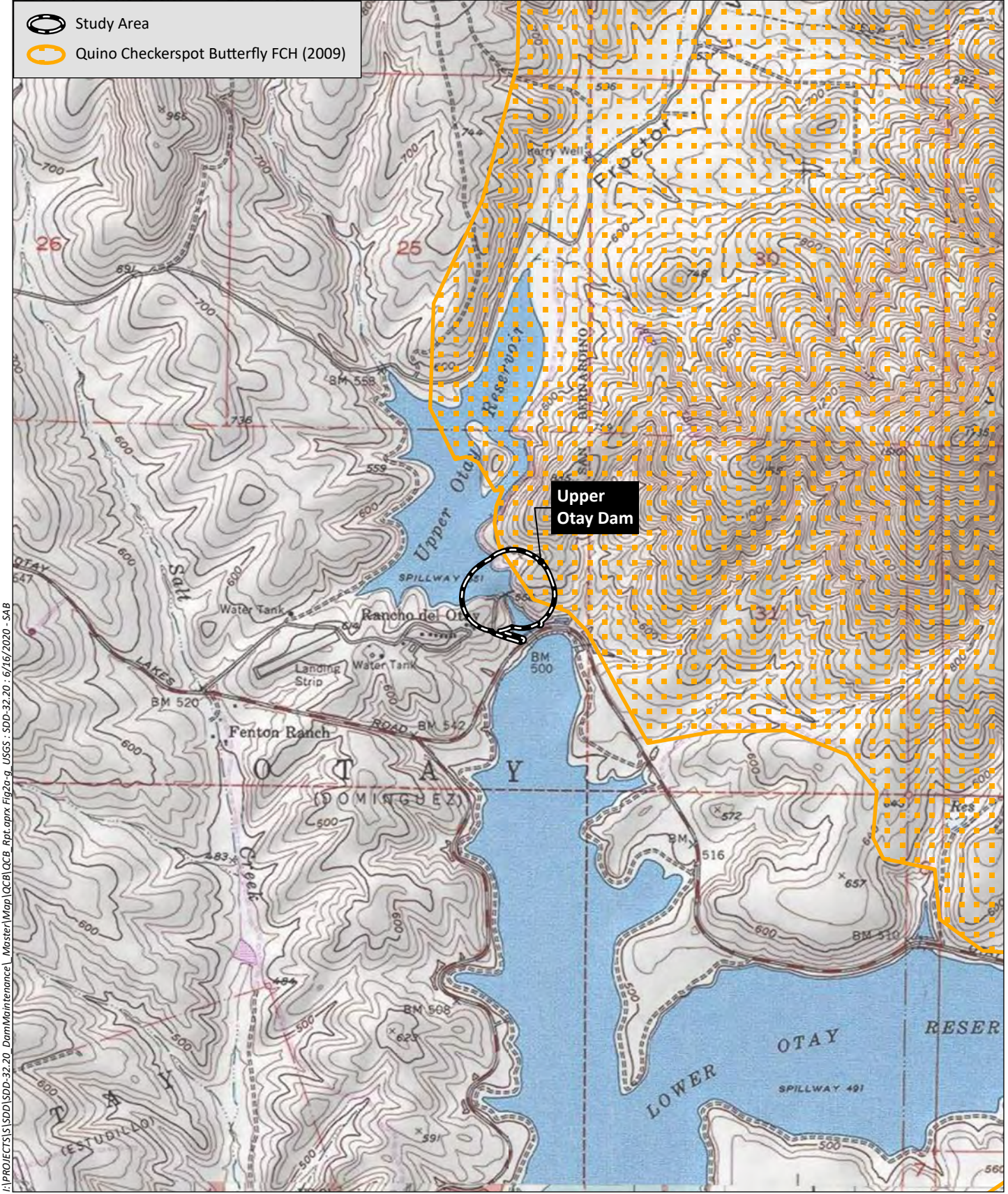
Source: OTAY MESA 7.5' Quad (USGS)



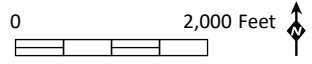
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Source: RAMONA 7.5' Quad (USGS)

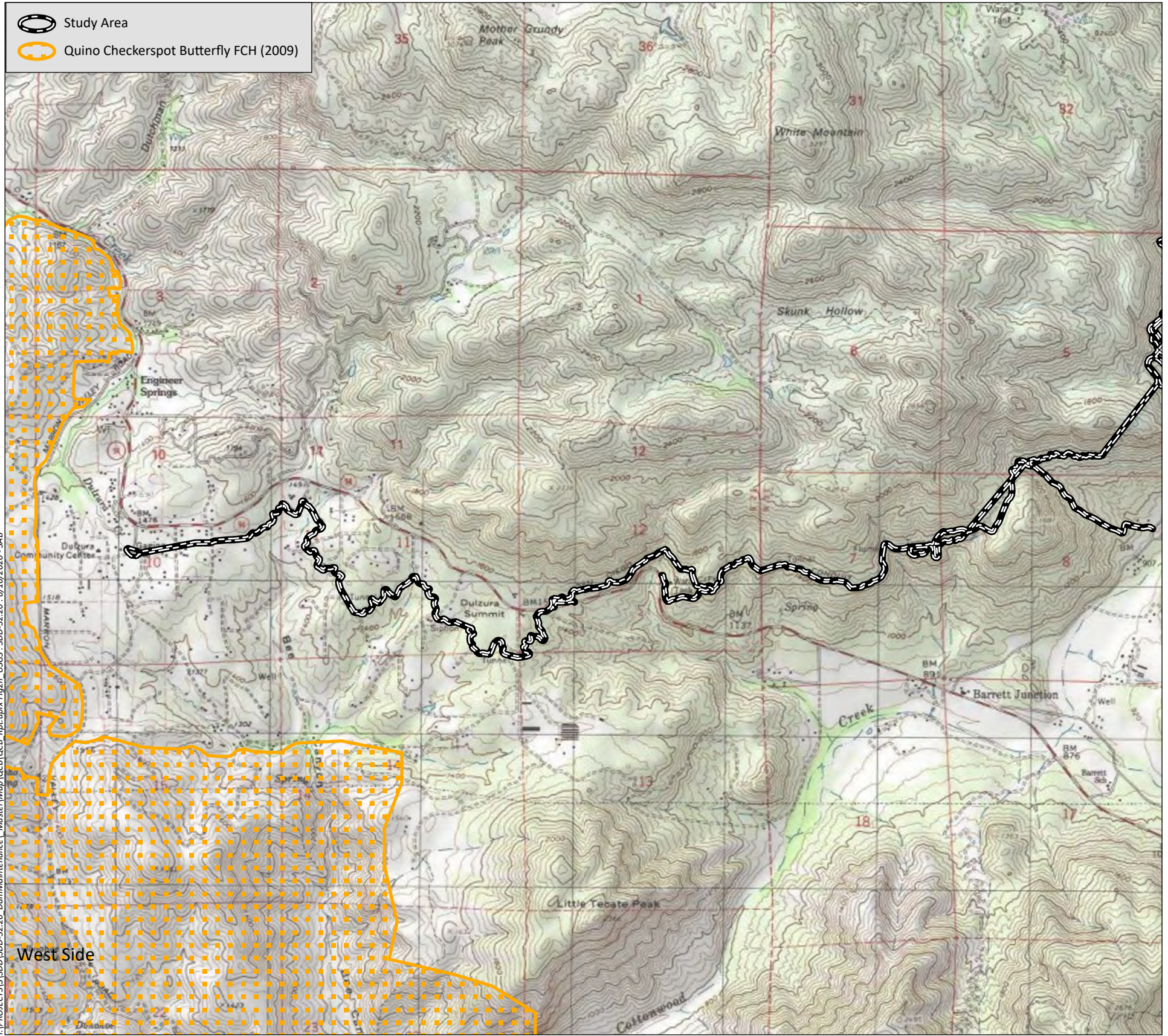
 Study Area
 Quino Checkerspot Butterfly FCH (2009)



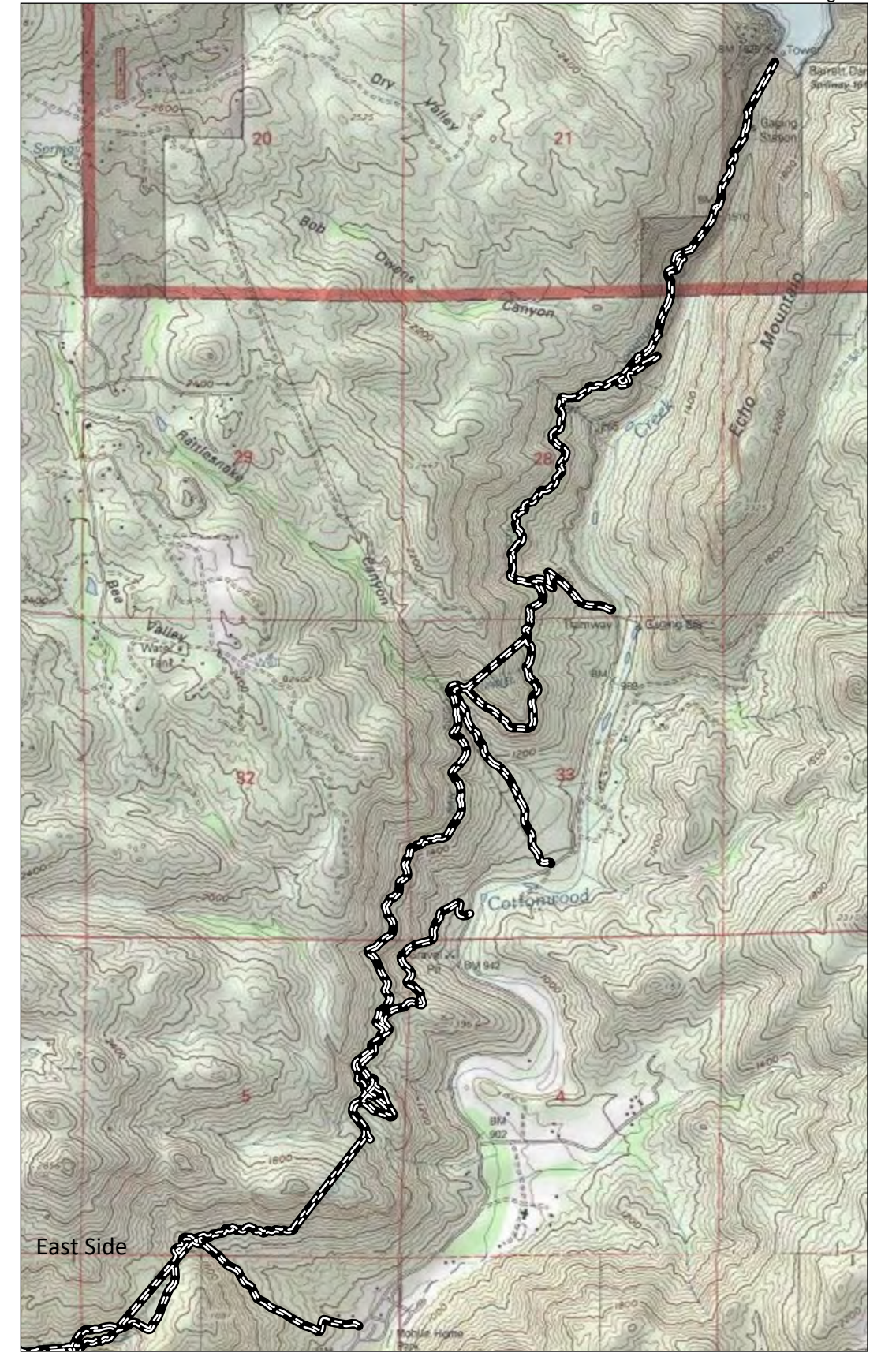
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Source: JAMUL MOUNTAINS 7.5' Quad (USGS)



Source: OTAY MOUNTAIN, BARRETT LAKE & TECATE 7.5' Quad (USGS)



Source: BARRETT LAKE & TECATE 7.5' Quad (USGS)



I:\PROJECTS\1501\1501 Dam Maintenance\Map\OCB\OCB Rpt.aprx Fig3a-g Aerial : SDD-32.20 : 6/16/2020 - SAB

0 400 Feet

Source: Aerial (SanGIS, 2017)



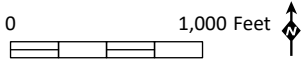
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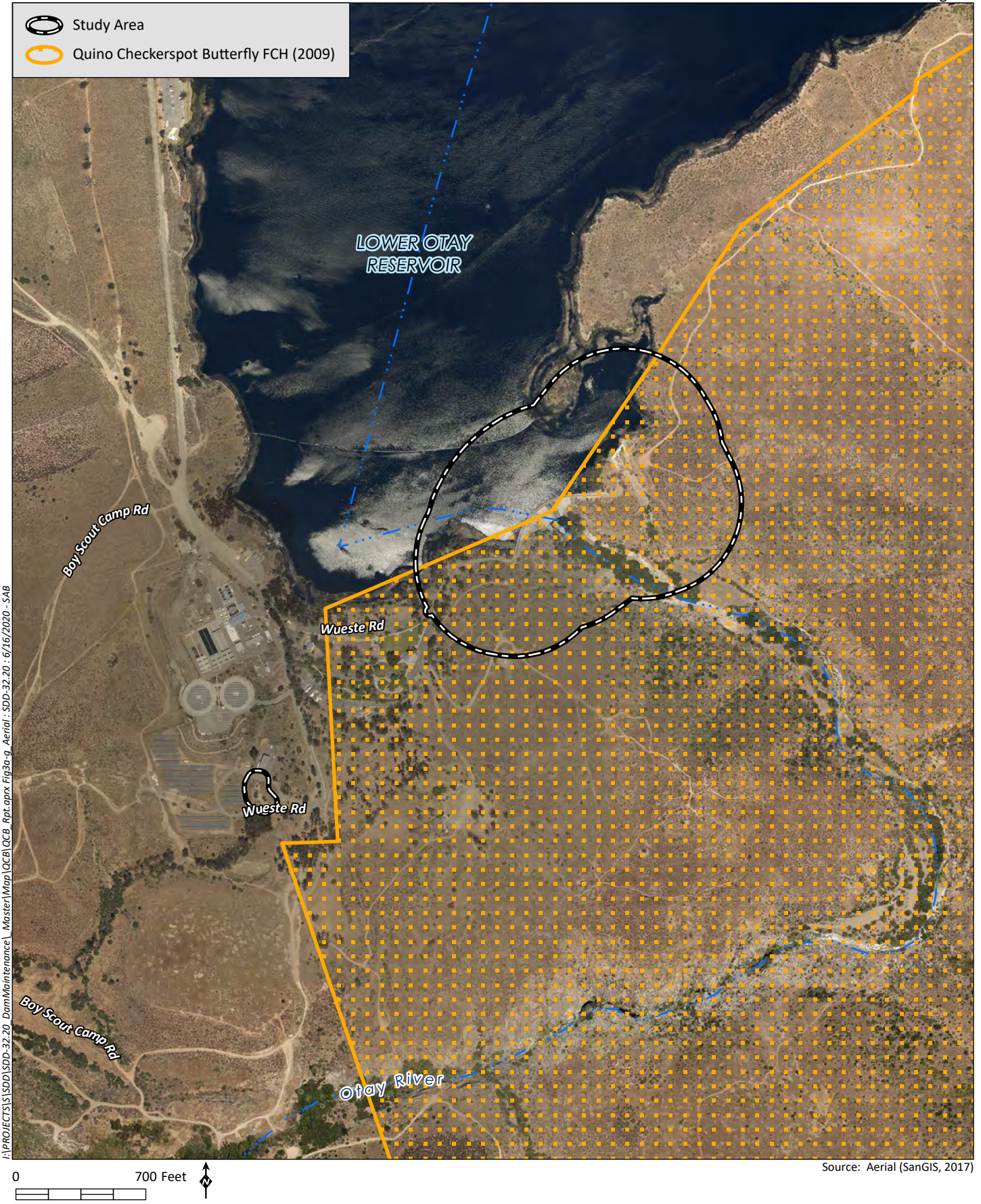


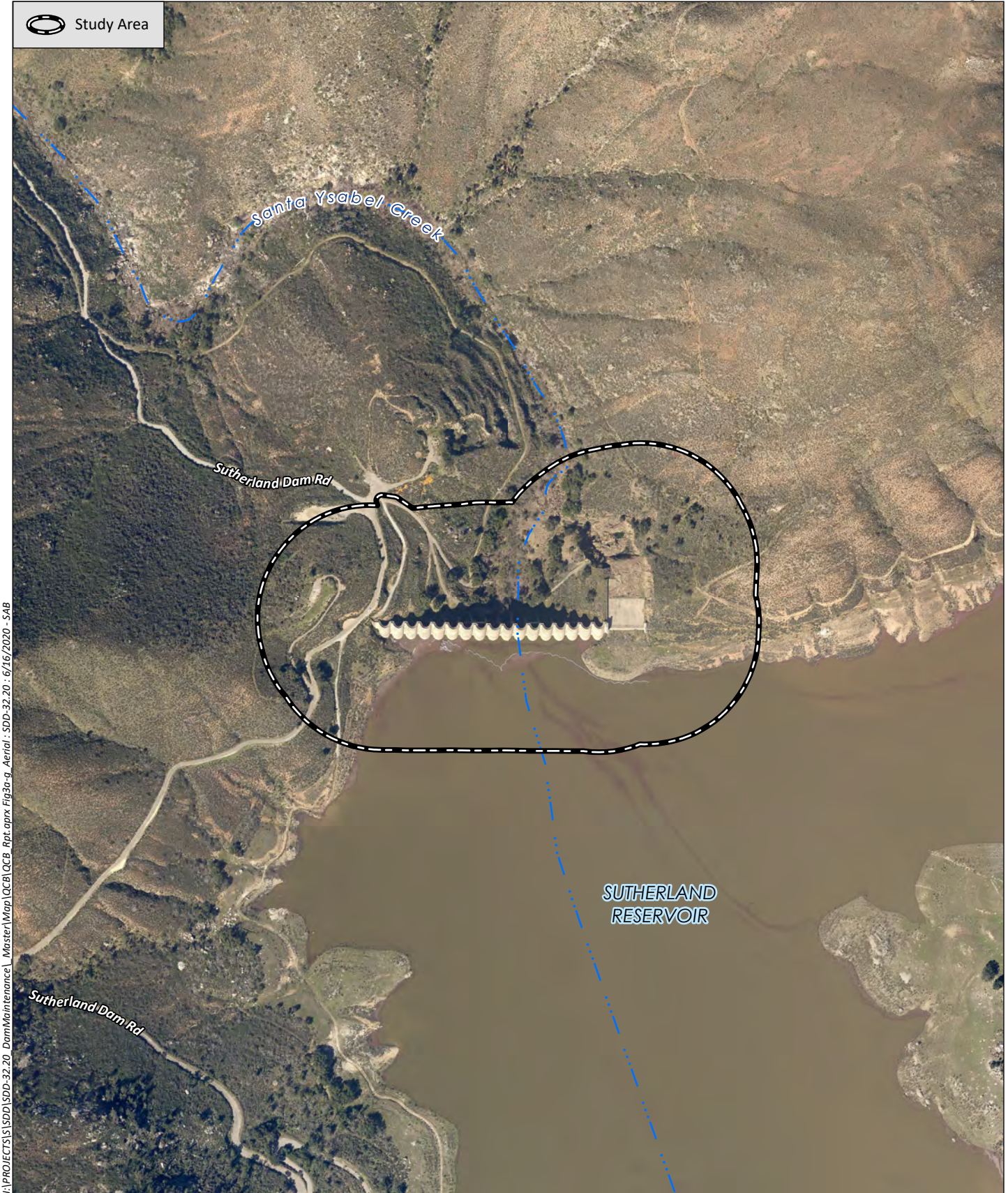
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Ermanos Dr



Source: Aerial (SanGIS, 2017)







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0 600 Feet

Source: Aerial (SanGIS, 2017)




-  Study Area
-  Quino Checkerspot Butterfly FCH (2009)



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Source: Aerial (SanGIS, 2017)

-  Study Area
-  Quino Checkerspot Butterfly (*Euphydras editha quino*) Survey Area
-  Quino Checkerspot Butterfly Survey Exclusion Area






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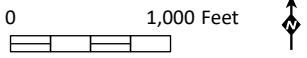
Source: Aerial (SanGIS, 2017)

2020 Quino Checkerspot Butterfly Survey Area - Barrett Dam

-  Study Area
-  Quino Checkerspot Butterfly (*Euphydras editha quino*) Survey Area
-  Quino Checkerspot Butterfly Survey Exclusion Area






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Source: Aerial (SanGIS, 2017)

2020 Quino Checkerspot Butterfly Survey Area - El Capitan Dam

-  Study Area
-  Quino Checkerspot Butterfly (*Euphydras editha quino*) Survey Area
-  Quino Checkerspot Butterfly Survey Exclusion Area



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Source: Aerial (SanGIS, 2017)



2020 Quino Checkerspot Butterfly Survey Area - Morena Dam



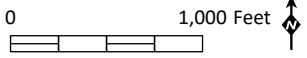
Figure 4c

-  Study Area
-  Quino Checkerspot Butterfly (*Euphydras editha quino*) Survey Area
-  Quino Checkerspot Butterfly Survey Exclusion Area



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Source: Aerial (SanGIS, 2017)



2020 Quino Checkerspot Butterfly Survey Area - San Vicente Dam



Figure 4d

-  Study Area
-  Quino Checkerspot Butterfly (*Euphydras editha quino*) Survey Area
-  Quino Checkerspot Butterfly Survey Exclusion Area



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Source: Aerial (SanGIS, 2017)

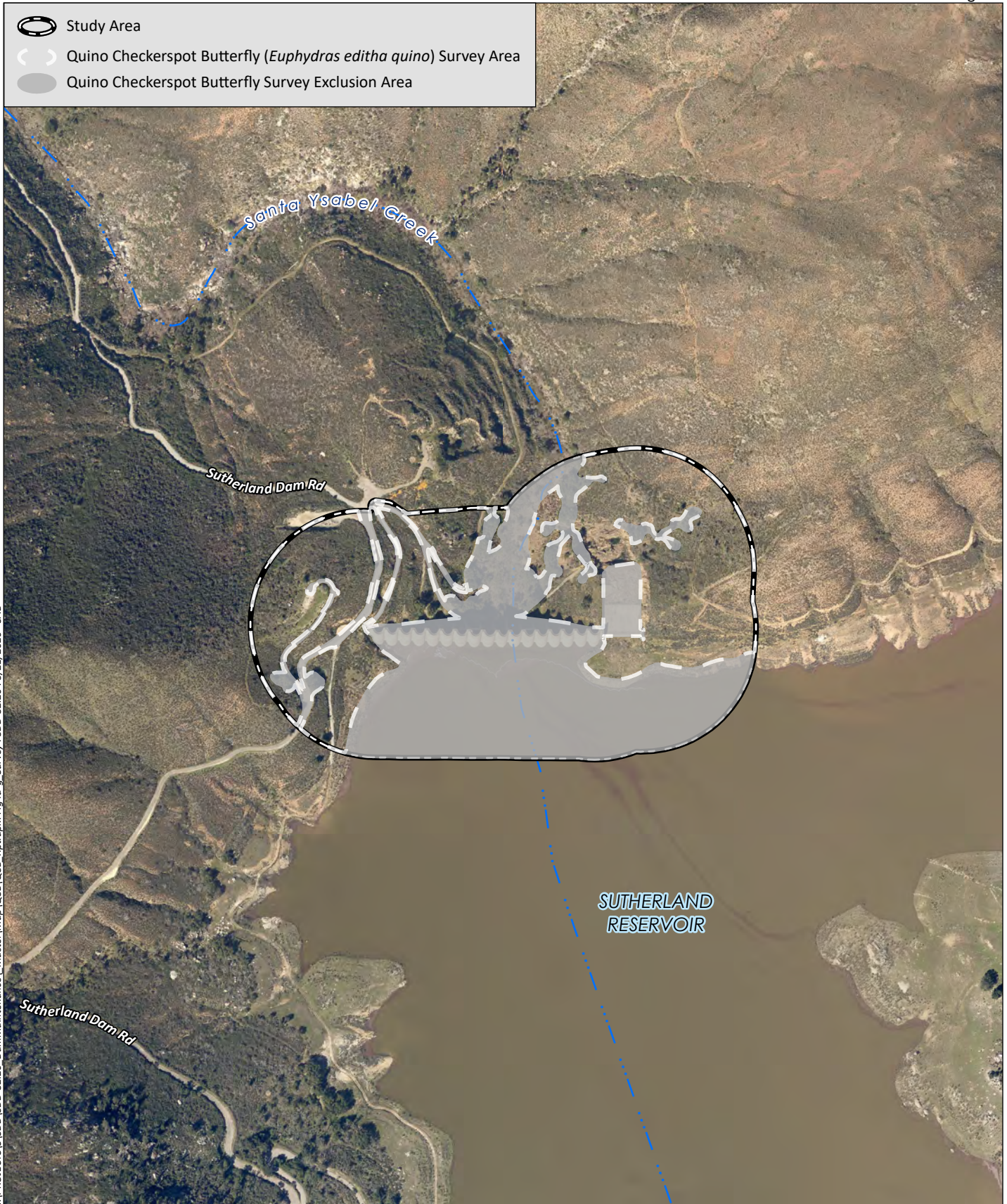


2020 Quino Checkerspot Butterfly Survey Area - Savage Dam

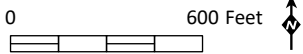


Figure 4e

-  Study Area
-  Quino Checkerspot Butterfly (*Euphydras editha quino*) Survey Area
-  Quino Checkerspot Butterfly Survey Exclusion Area






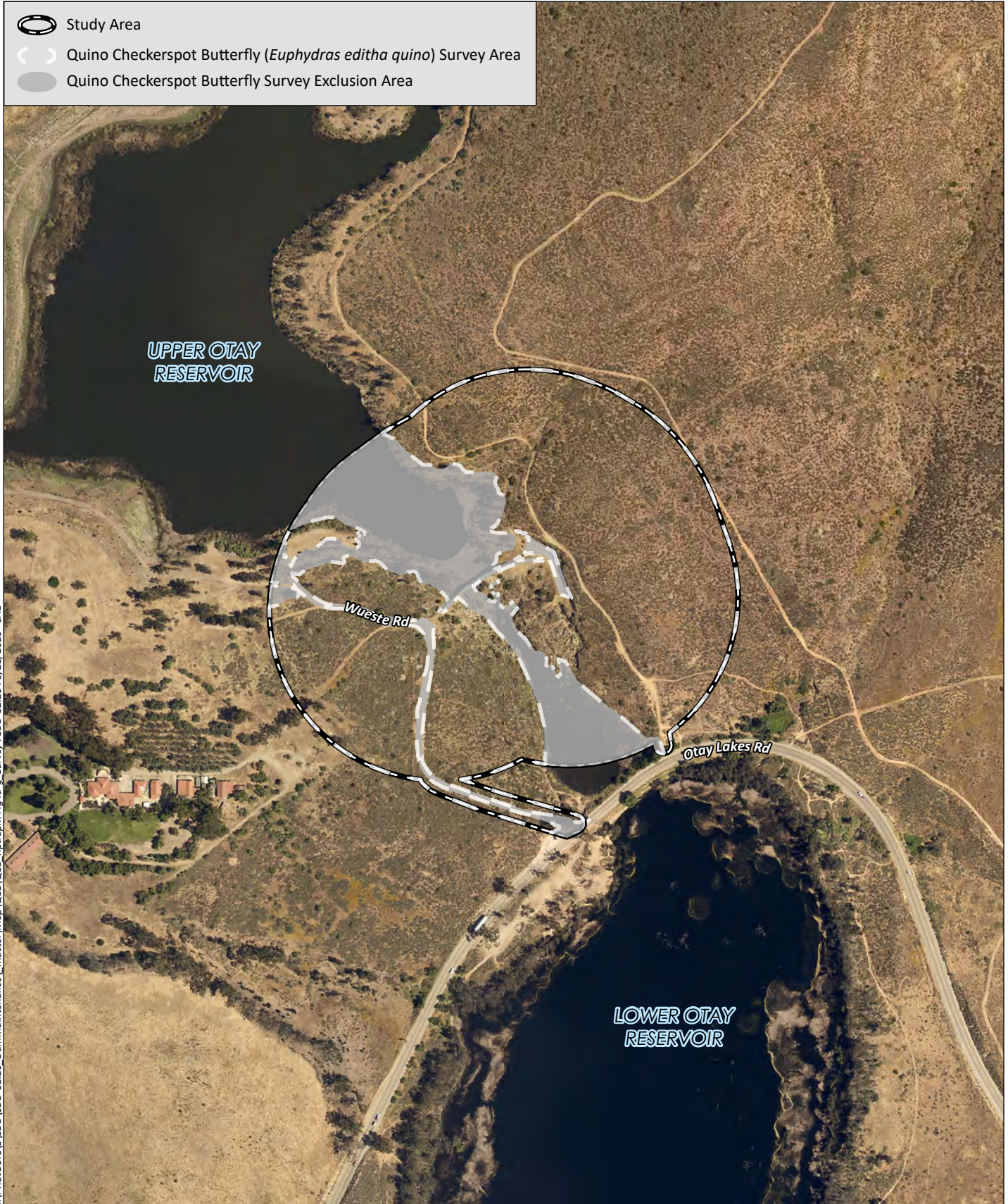
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Source: Aerial (SanGIS, 2017)

2020 Quino Checkerspot Butterfly Survey Area - Sutherland Dam

-  Study Area
-  Quino Checkerspot Butterfly (*Euphydras editha quino*) Survey Area
-  Quino Checkerspot Butterfly Survey Exclusion Area



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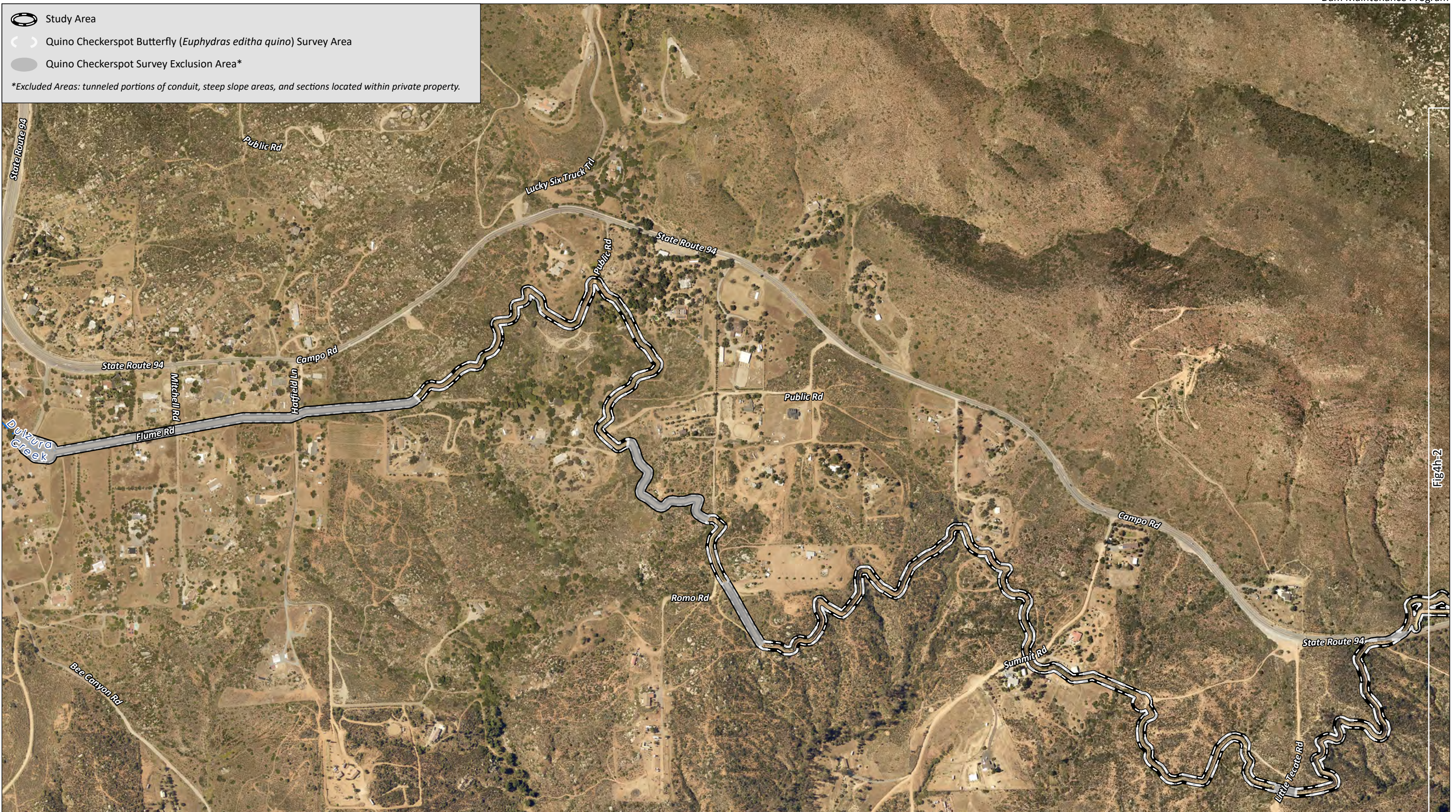
Source: Aerial (SanGIS, 2017)

2020 Quino Checkerspot Butterfly Survey Area - Upper Otay Dam



Figure 4g

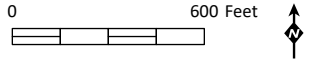
 Study Area
 Quino Checkerspot Butterfly (*Euphydras editha quino*) Survey Area
 Quino Checkerspot Survey Exclusion Area*
 *Excluded Areas: tunneled portions of conduit, steep slope areas, and sections located within private property.



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Fig4h-2

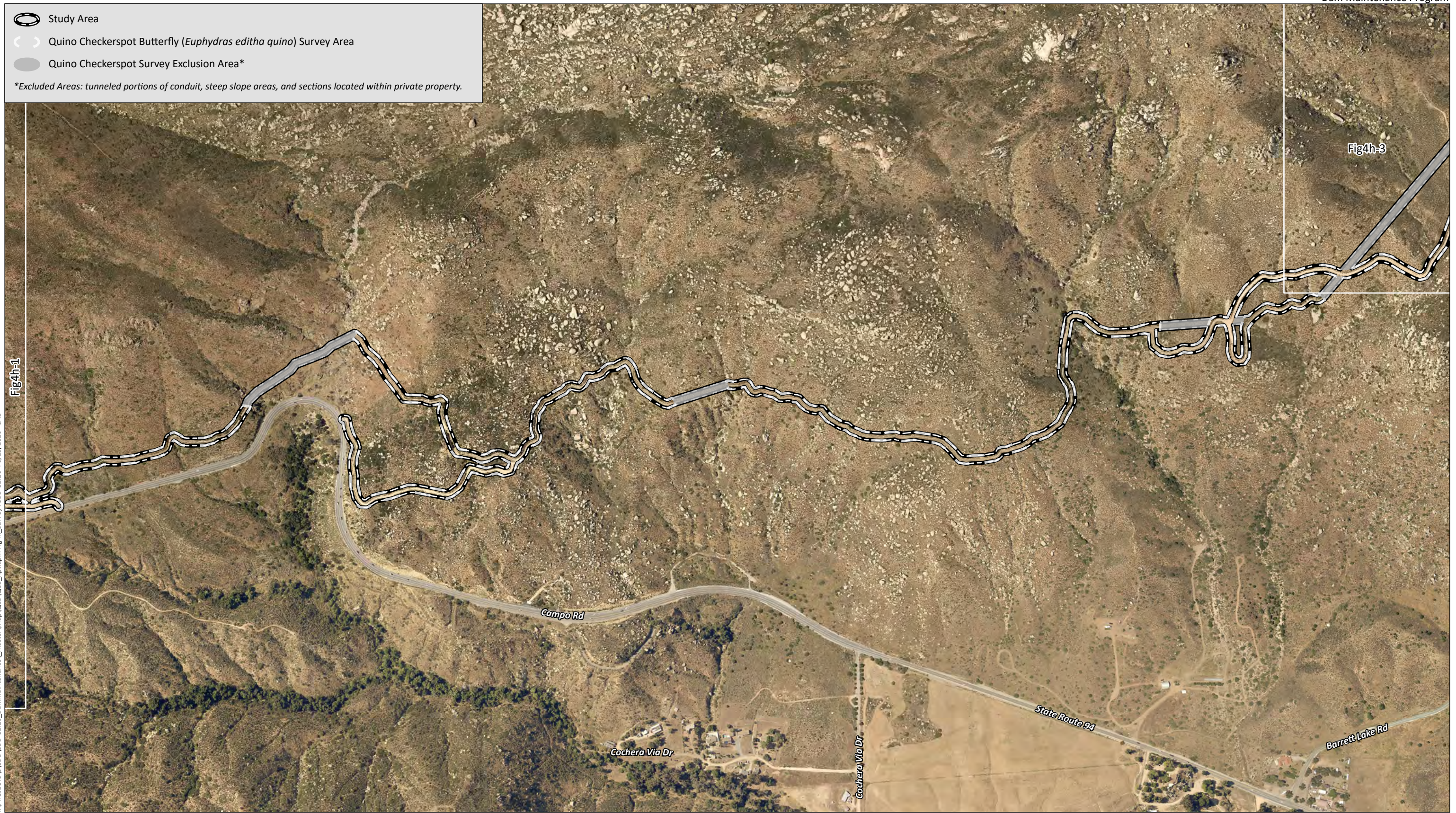
Source: Aerial (SanGIS, 2017)



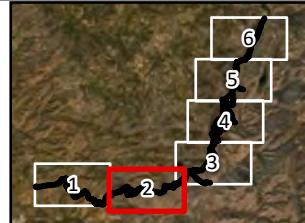
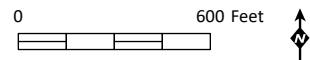
2020 Quino Checkerspot Butterfly Survey Area - Dulzura Conduit

Figure 4h-1

-  Study Area
 -  Quino Checkerspot Butterfly (*Euphydras editha quino*) Survey Area
 -  Quino Checkerspot Survey Exclusion Area*
- *Excluded Areas: tunneled portions of conduit, steep slope areas, and sections located within private property.



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Source: Aerial (SanGIS, 2017)




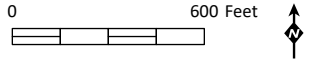
 Study Area
 Quino Checkerspot Butterfly (*Euphydras editha quino*) Survey Area
 Quino Checkerspot Survey Exclusion Area*
 *Excluded Areas: tunneled portions of conduit, steep slope areas, and sections located within private property.






Fig4h-4

Fig4h-2

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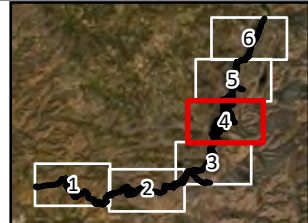
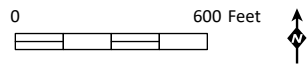


Source: Aerial (SanGIS, 2017)




-  Study Area
 -  Quino Checkerspot Butterfly (*Euphydras editha quino*) Survey Area
 -  Quino Checkerspot Survey Exclusion Area*
- *Excluded Areas: tunneled portions of conduit, steep slope areas, and sections located within private property.

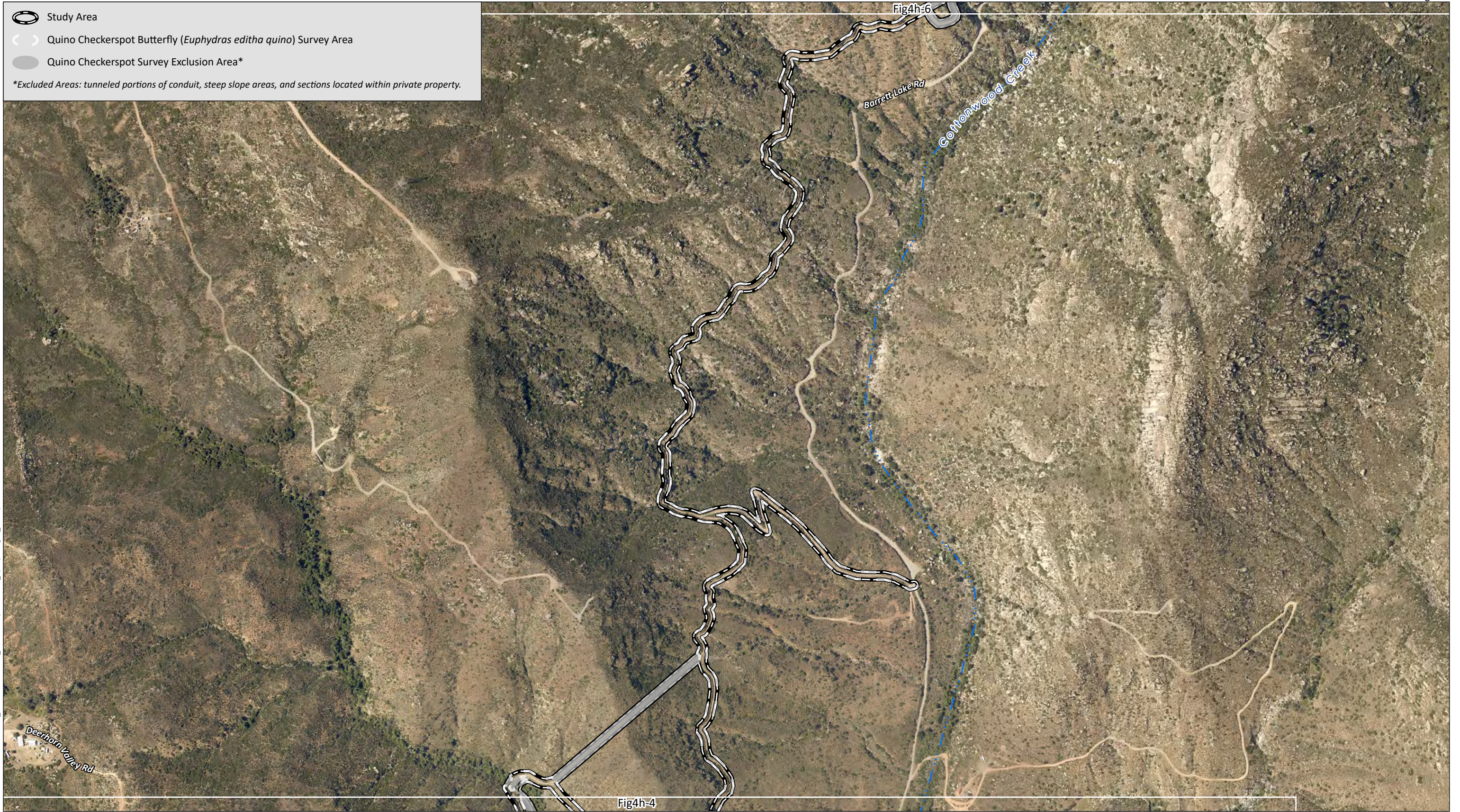


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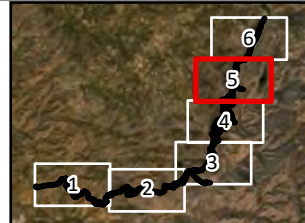
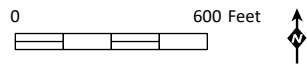
Source: Aerial (SanGIS, 2017)




-  Study Area
 -  Quino Checkerspot Butterfly (*Euphydras editha quino*) Survey Area
 -  Quino Checkerspot Survey Exclusion Area*
- *Excluded Areas: tunneled portions of conduit, steep slope areas, and sections located within private property.

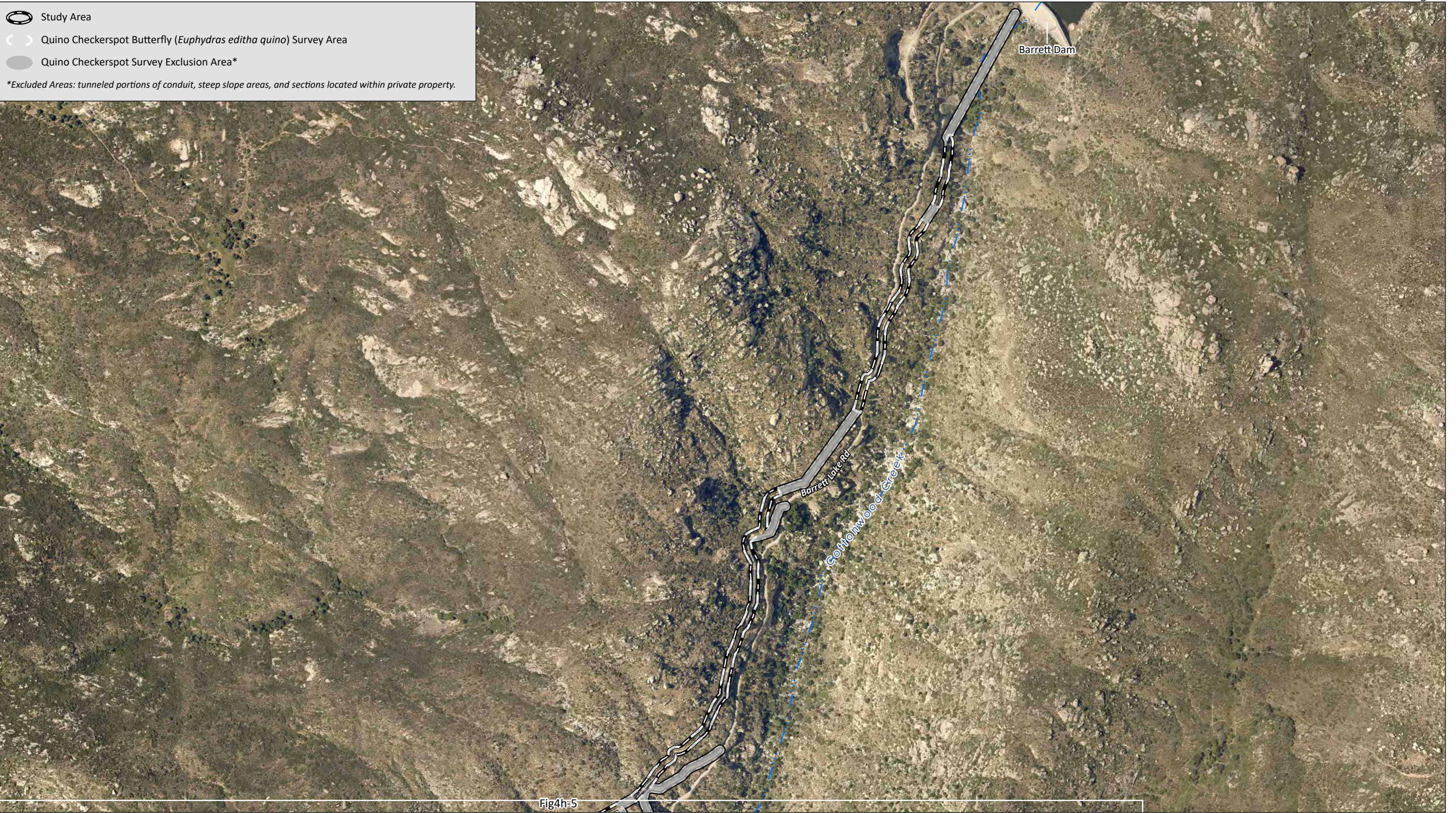


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Source: Aerial (SanGIS, 2017)



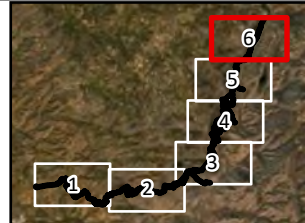
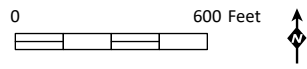
-  Study Area
 -  Quino Checkerspot Butterfly (*Euphydras editha quino*) Survey Area
 -  Quino Checkerspot Survey Exclusion Area*
- *Excluded Areas: tunneled portions of conduit, steep slope areas, and sections located within private property.













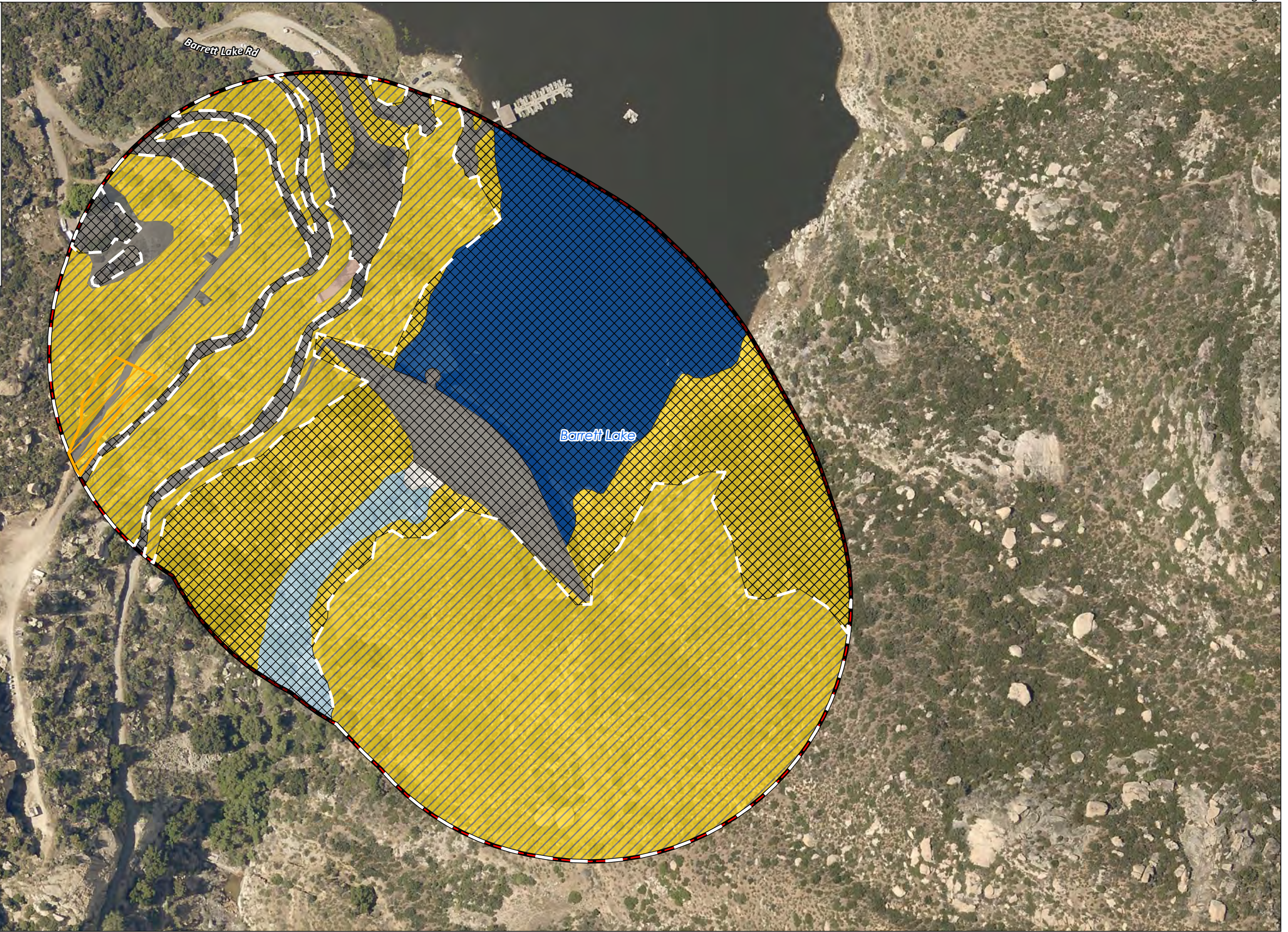
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Fig4h-5

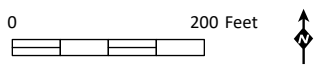
Source: Aerial (SanGIS, 2017)



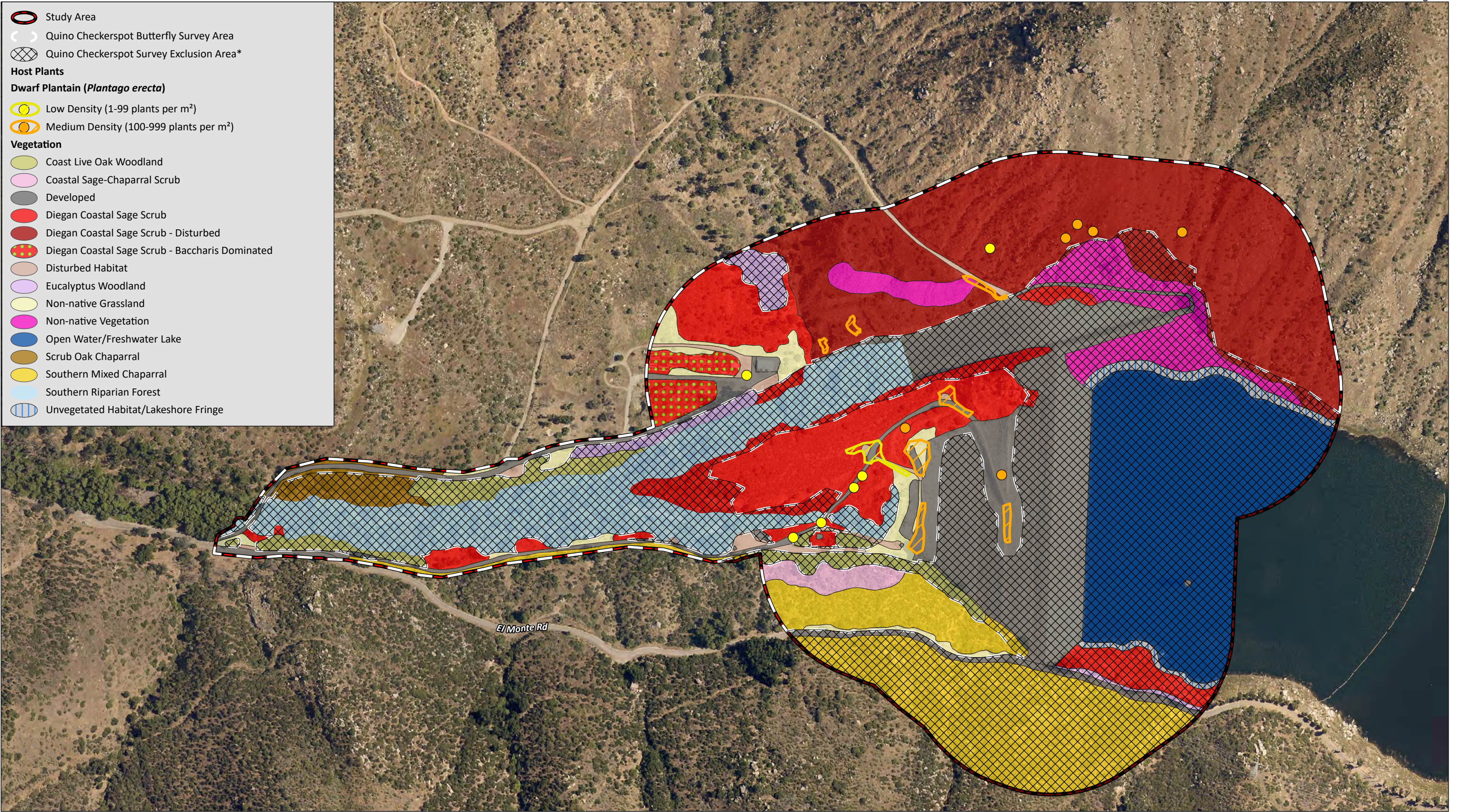
 Study Area
 Quino Checkerspot Butterfly Survey Area
 Quino Checkerspot Survey Exclusion Area
Host Plants
Dwarf Plantain (*Plantago erecta*)
 Medium Density (100-999 plants per m²)
Vegetation
 Developed
 Disturbed Habitat
 Granitic Southern Mixed Chaparral
 Natural Flood Channel
 Open Water/Freshwater Lake
 Southern Riparian Forest



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Source: Aerial (SanGIS, 2017)



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Study Area

- Study Area
- Quino Checkerspot Butterfly Survey Area
- Quino Checkerspot Survey Exclusion Area

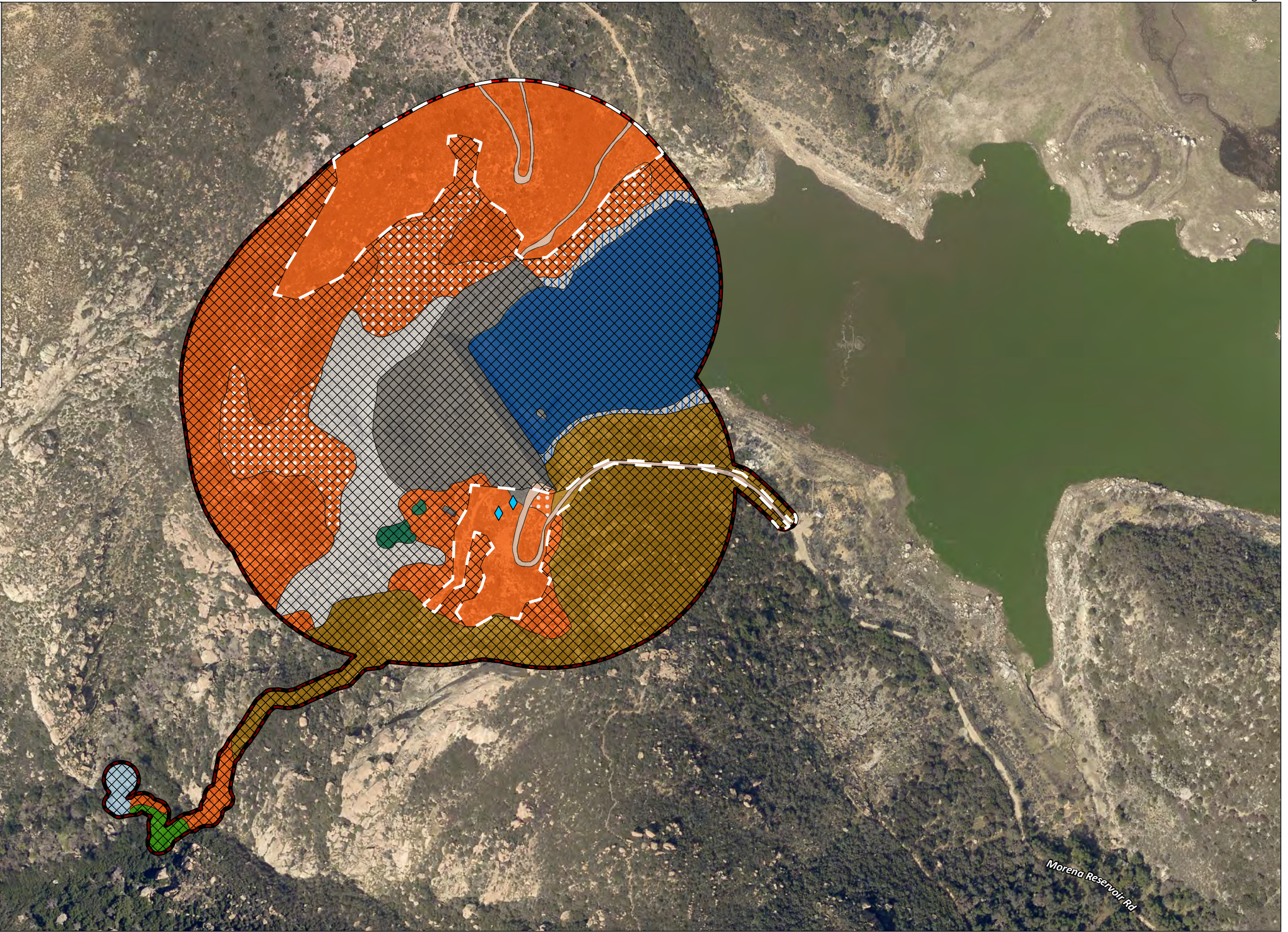
Host Plants

Rigid Bird's Beak (*Cordylanthus rigidus*)

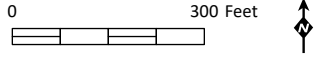
- Low Density (1-99 plants per m²)

Vegetation

- Developed
- Disturbed Habitat
- Granitic Northern Mixed Chaparral
- Granitic Northern Mixed Chaparral - Sparse
- Mixed Oak Woodland
- Open Water/Freshwater Lake
- Riparian Woodland
- Scrub Oak Chaparral
- Southern Riparian Forest
- Unvegetated Habitat/Lakeshore Fringe
- Unvegetated Habitat/Talus Slope



I:\PROJECTS\15\1500\SDD-32.20_DamMaintenance\Master\Map\QCB\QCB_Rpt.aprx Fig5c_Morena : SDD-32.20 : 6/15/2020 - SAB



Source: Aerial (SanGIS, 2017)

Study Area

- Study Area
- Quino Checkerspot Butterfly Survey Area
- Quino Checkerspot Survey Exclusion Area

Host Plants

Dwarf Plantain (*Plantago erecta*)

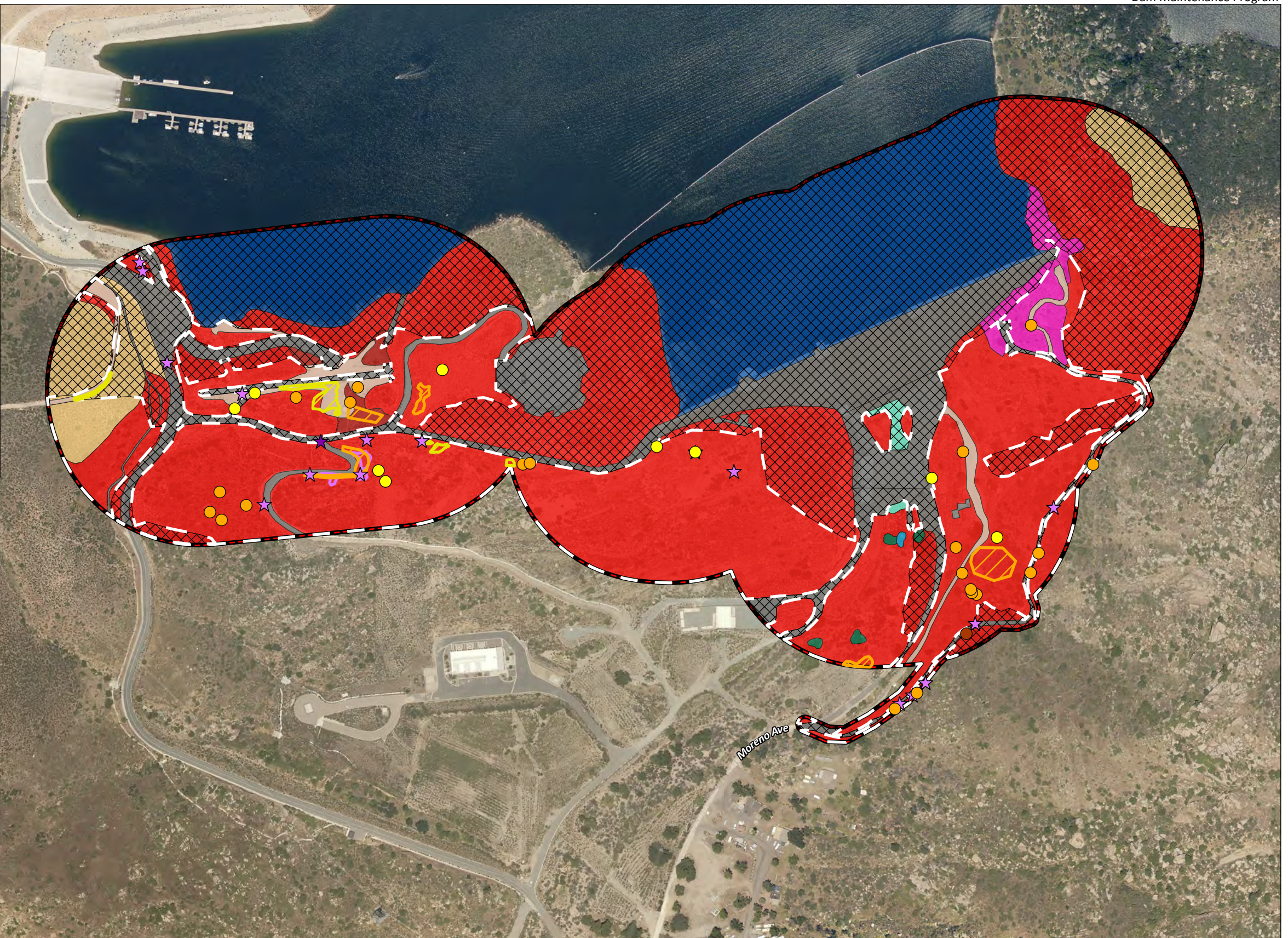
- Low Density (1-99 plants per m²)
- Medium Density (100-999 plants per m²)
- High Density (1,000-9,999 plants per m²)

Owl's Clover (*Castilleja exserta*)

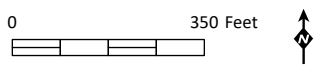
- Low Density (1-99 plants per m²)
- Medium Density (100-999 plants per m²)

Vegetation

- Chamise Chaparral
- Developed
- Diegan Coastal Sage Scrub
- Diegan Coastal Sage Scrub - Disturbed
- Disturbed Habitat
- Freshwater Marsh
- Non-native Vegetation
- Open Water/Freshwater Lake
- Riparian Woodland
- Southern Willow Scrub



I:\PROJECTS\5\5DD\5DD-32.20_DamMaintenance\Master\Map\CCB\CCB_Rpt.aprx Fig5d_SanVicente : 5DD-32.20 : 6/15/2020 - SAB



Source: Aerial (SanGIS, 2017)

Study Area

- Study Area
- Quino Checkerspot Butterfly Survey Area
- Quino Checkerspot Survey Exclusion Area

Quino Checkerspot Butterfly (*Euphydras editha quino*)

- Location

Host Plants

Dwarf Plantain (*Plantago erecta*)

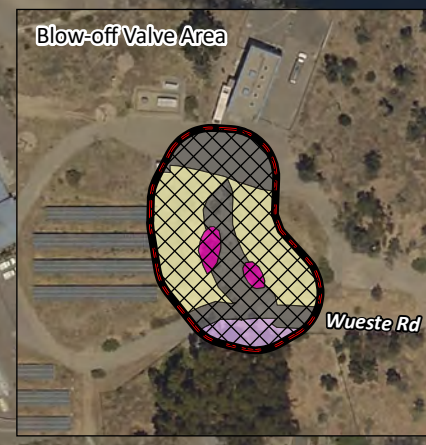
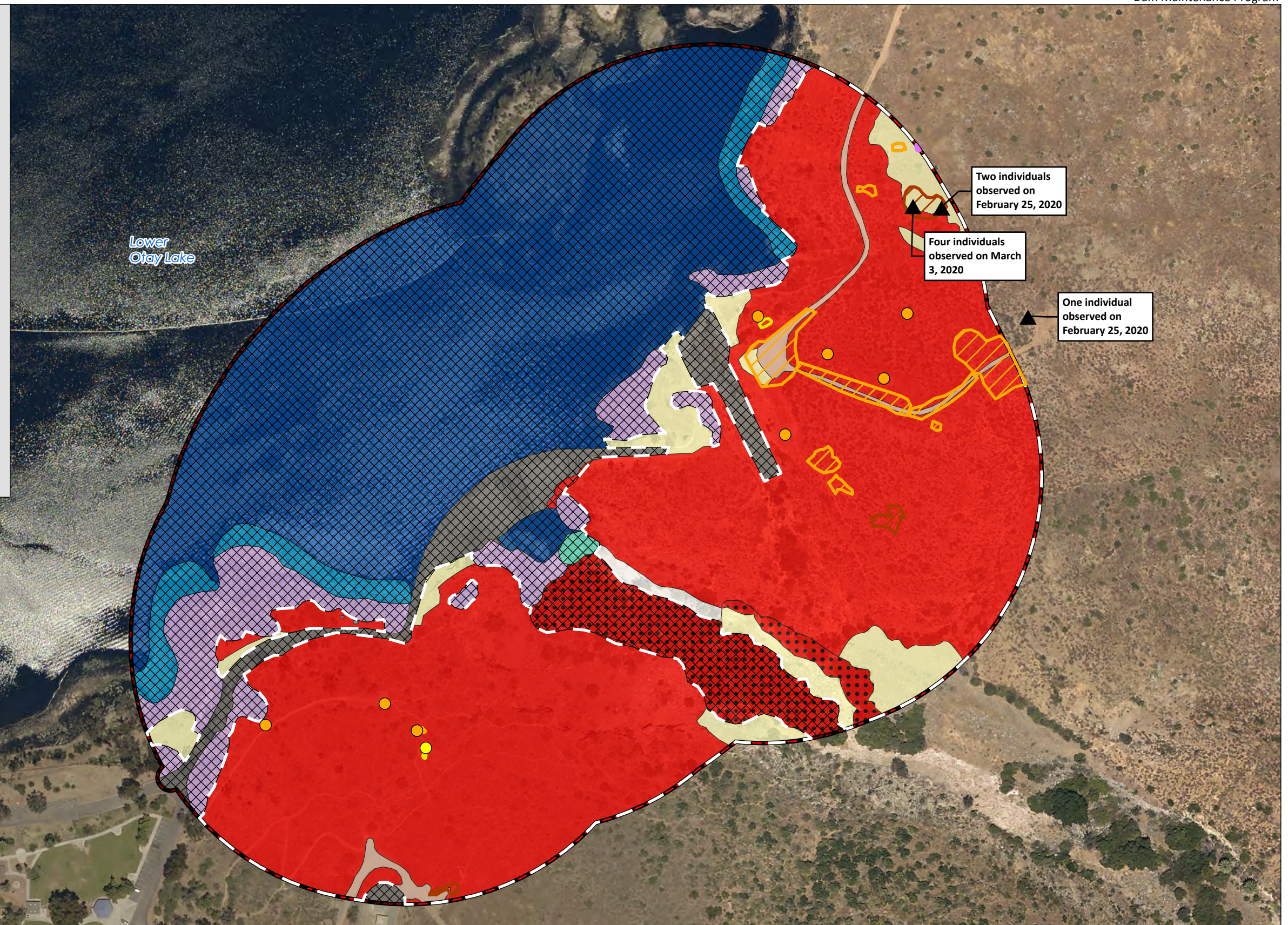
- Low Density (1-99 plants per m²)
- Medium Density (100-999 plants per m²)
- High Density (1,000-9,999 plants per m²)

Owl's Clover (*Castilleja exserta*)

- Low Density (1-99 plants per m²)

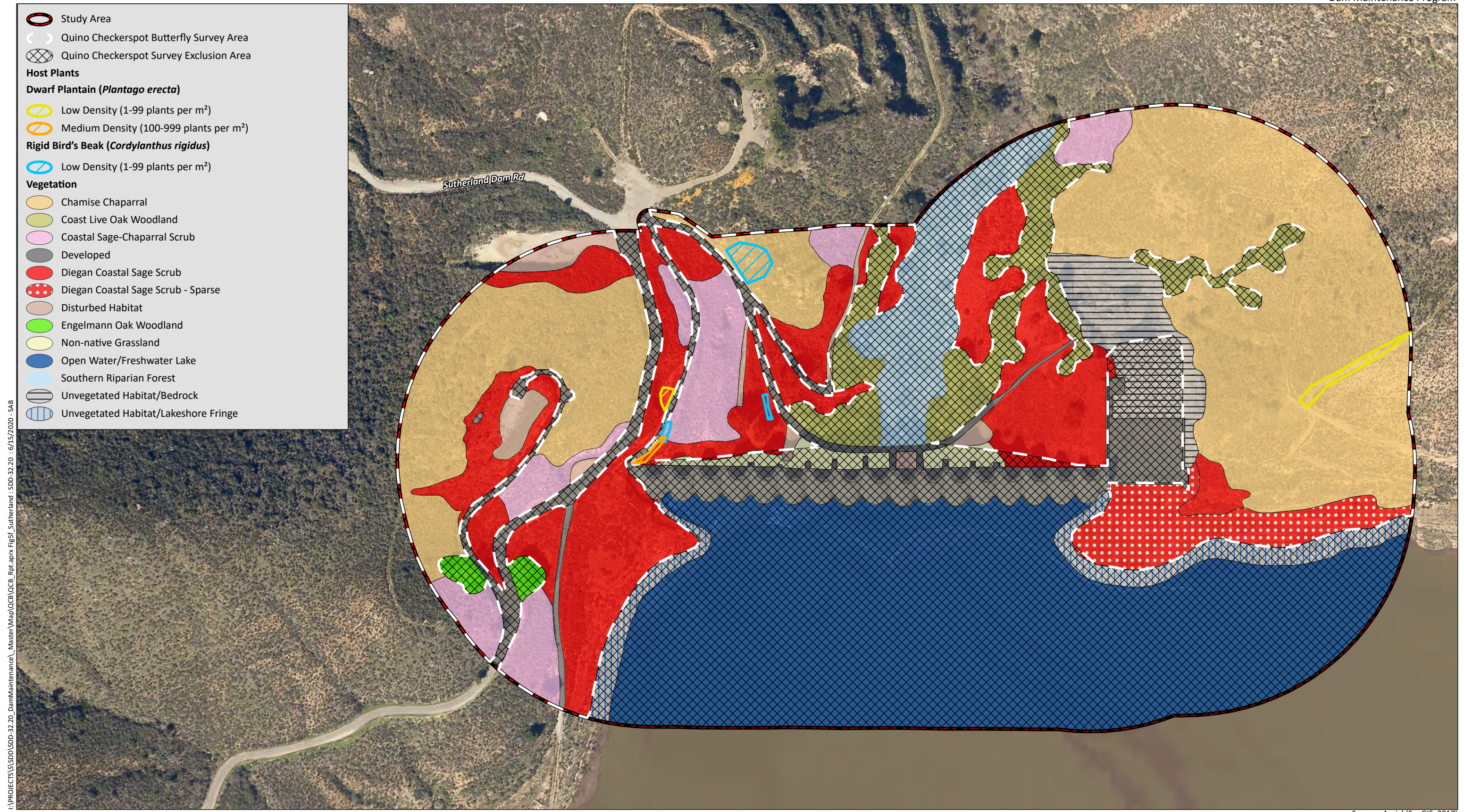
Vegetation

- Developed
- Diegan Coastal Sage Scrub
- Diegan Coastal Sage Scrub - Laurel Sumac Dominated
- Disturbed Habitat
- Eucalyptus Woodland
- Freshwater Marsh
- Natural Flood Channel
- Non-native Grassland
- Open Water/Freshwater Lake
- Southern Willow Scrub



I:\PROJECTS\32.20_DamMaintenance\Map\CCB\CCB_Rpt.aprx Fig5e_Savage : SDD-32.20 - 6/15/2020 - SAB

Source: Aerial (SanGIS, 2017)



I:\PROJECTS\15\1500\1500-32.20_DamMaintenance\1500-32.20_DamMaintenance\Map\CCB\CCB_Rpt.aprx Fig5f_Sutherland : SDD-32.20 : 6/15/2020 - SAB

Study Area

- Study Area
- Quino Checkerspot Butterfly Survey Area
- Quino Checkerspot Survey Exclusion Area

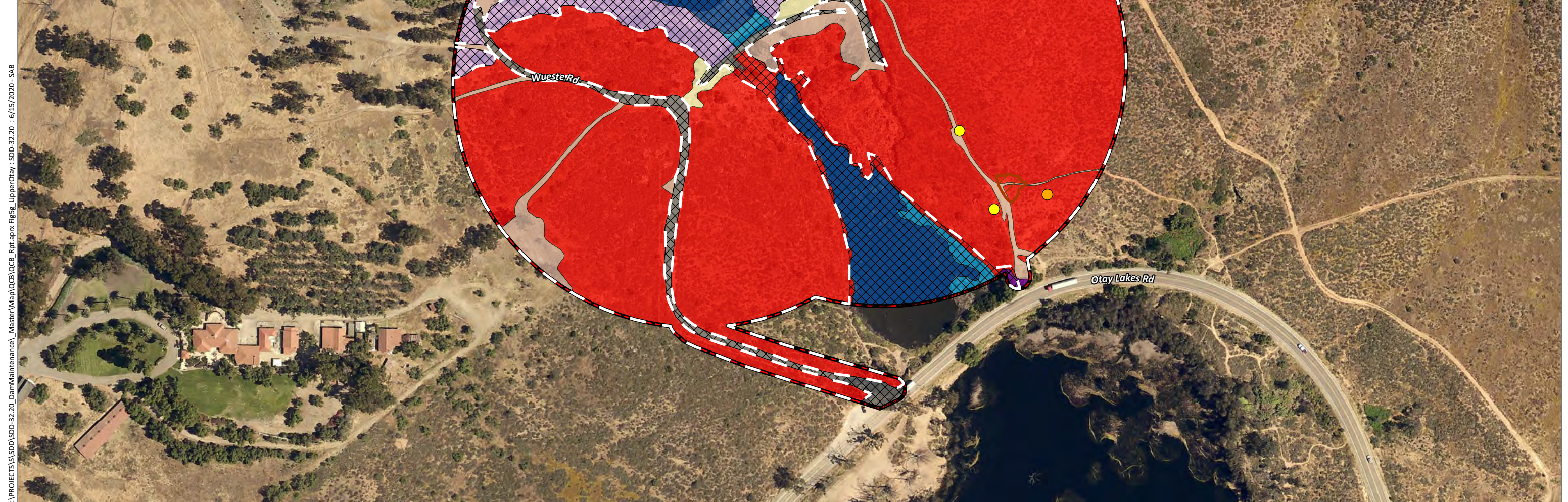
Host Plants

Dwarf Plantain (*Plantago erecta*)

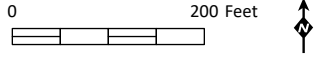
- Low Density (1-99 plants per m²)
- Medium Density (100-999 plants per m²)
- High Density (1,000-9,999 plants per m²)

Vegetation

- Developed
- Diegan Coastal Sage Scrub
- Disturbed Habitat
- Eucalyptus Woodland
- Freshwater Marsh
- Non-native Grassland
- Non-native Vegetation/Ornamental
- Open Water/Freshwater Lake
- Tamarisk Scrub



I:\PROJECTS\5\5DD\5DD-32.20_DamMaintenance\Master\Map\CCB\CCB_Rpt.aprx Fig5g_UpperOtay : 5DD-32.20 : 6/15/2020 - SAB



Source: Aerial (SanGIS, 2017)

Study Area

- Study Area
- Quino Checkerspot Butterfly Survey Area
- Quino Checkerspot Survey Exclusion Area*

Host Plants

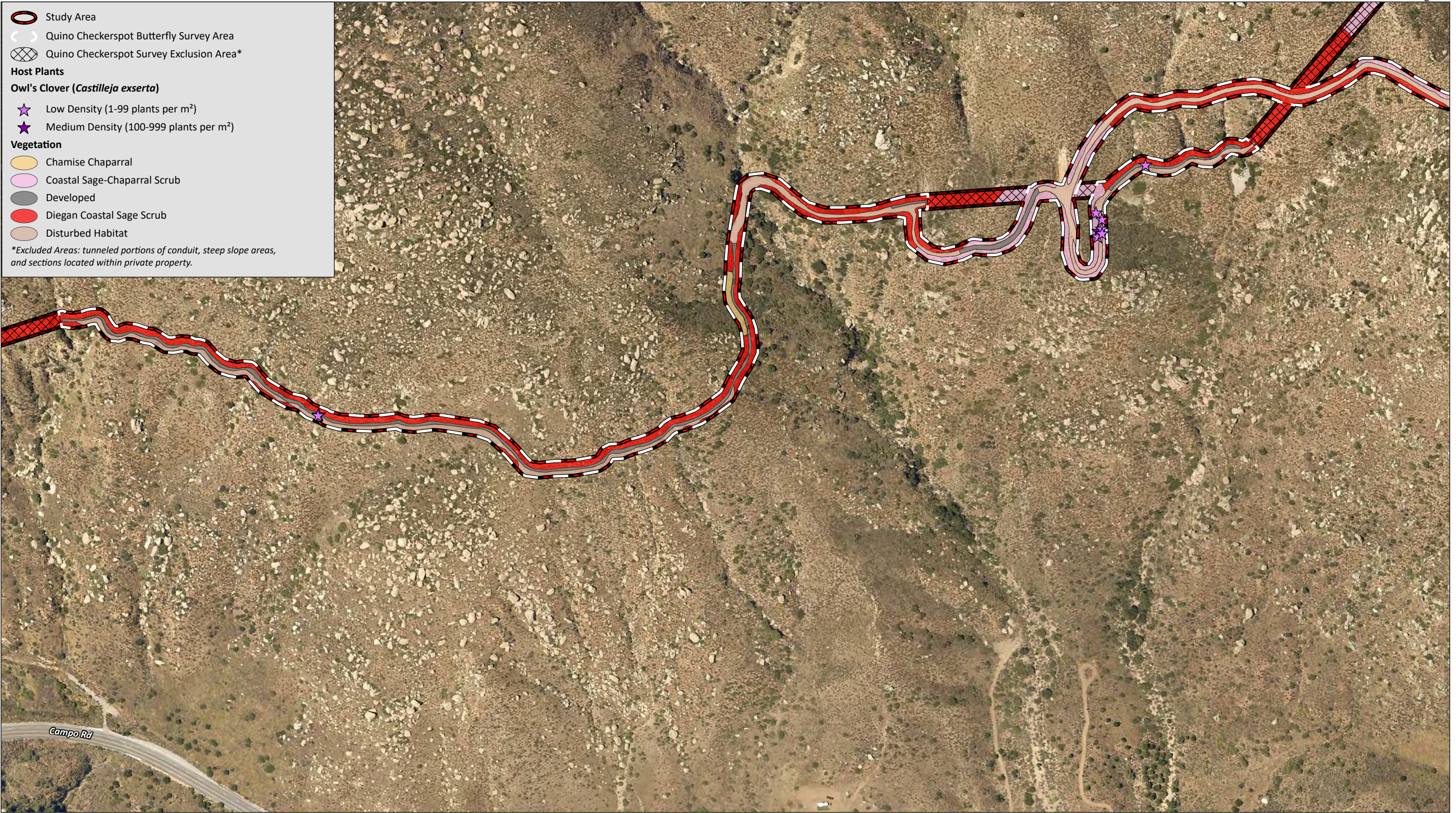
Owl's Clover (*Castilleja exserta*)

- Low Density (1-99 plants per m²)
- Medium Density (100-999 plants per m²)

Vegetation

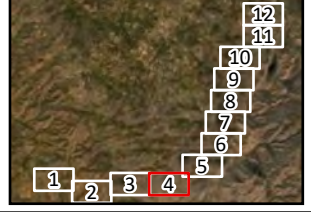
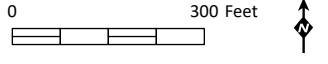
- Chamise Chaparral
- Coastal Sage-Chaparral Scrub
- Developed
- Diegan Coastal Sage Scrub
- Disturbed Habitat

**Excluded Areas: tunneled portions of conduit, steep slope areas, and sections located within private property.*



I:\PROJECTS\15\SD\32.20_DamMaintenance\Master\Map\CCB\CCB_Rpt.aprx Fig5h_Dulzura : SDD-32.20 : 6/15/2020 - SAB

Source: Aerial (SanGIS, 2017)



Study Area

- Study Area
- Quino Checkerspot Butterfly Survey Area
- Quino Checkerspot Survey Exclusion Area*

Host Plants

Dwarf Plantain (*Plantago erecta*)

- Medium Density (100-999 plants per m²)

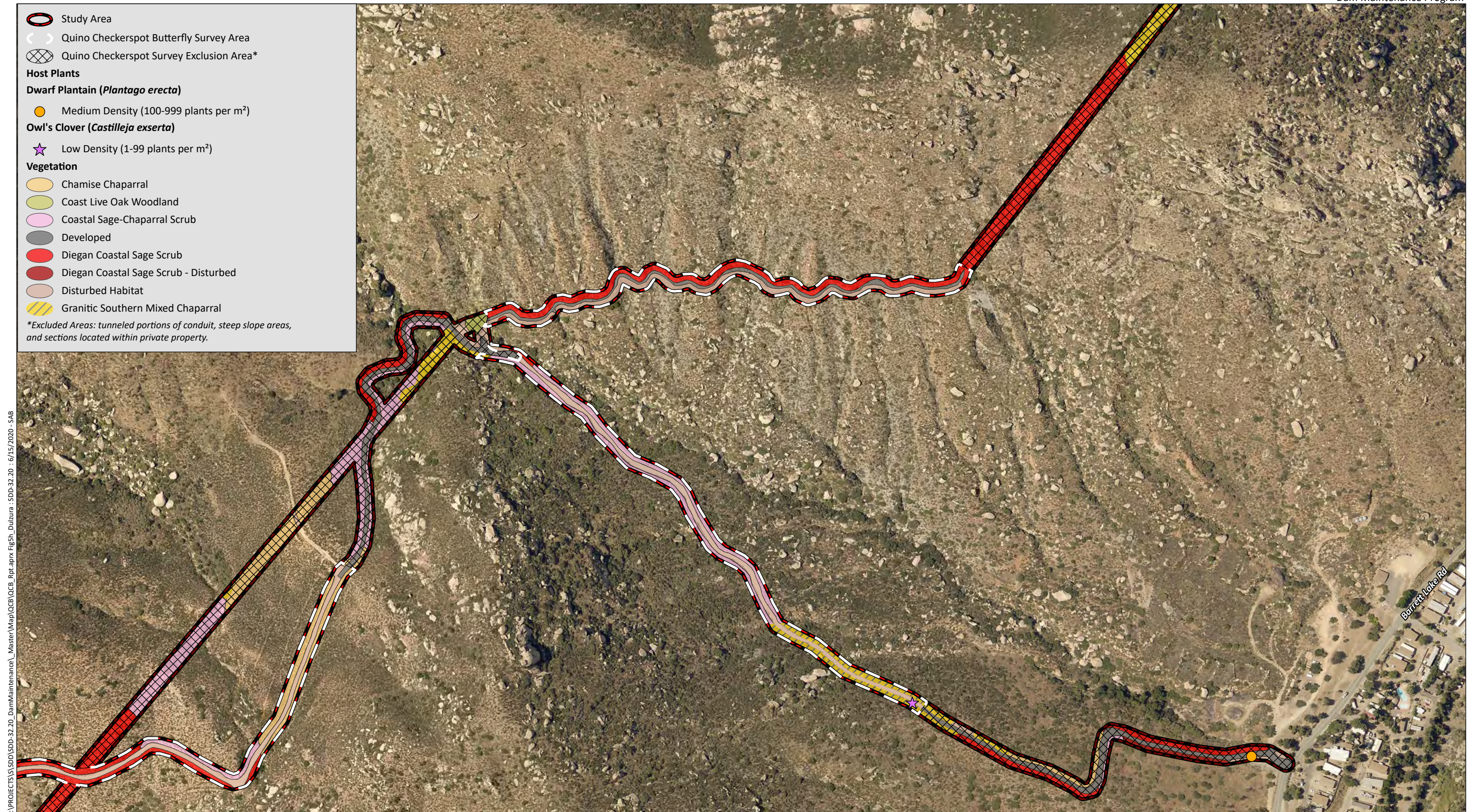
Owl's Clover (*Castilleja exserta*)

- Low Density (1-99 plants per m²)

Vegetation

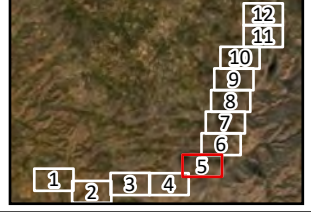
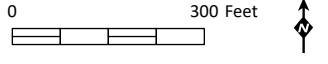
- Chamise Chaparral
- Coast Live Oak Woodland
- Coastal Sage-Chaparral Scrub
- Developed
- Diegan Coastal Sage Scrub
- Diegan Coastal Sage Scrub - Disturbed
- Disturbed Habitat
- Granitic Southern Mixed Chaparral

**Excluded Areas: tunneled portions of conduit, steep slope areas, and sections located within private property.*



I:\PROJECTS\51\SDD\32.20_DamMaintenance\Master\Map\CCB\CCB_Rpt.aprx Fig5h_Dulzura : SDD-32.20 : 6/15/2020 - SAB

Source: Aerial (SanGIS, 2017)



Study Area

- Study Area
- Quino Checkerspot Butterfly Survey Area
- Quino Checkerspot Survey Exclusion Area*

Host Plants

Dwarf Plantain (*Plantago erecta*)

- Low Density (1-99 plants per m²)
- Medium Density (100-999 plants per m²)

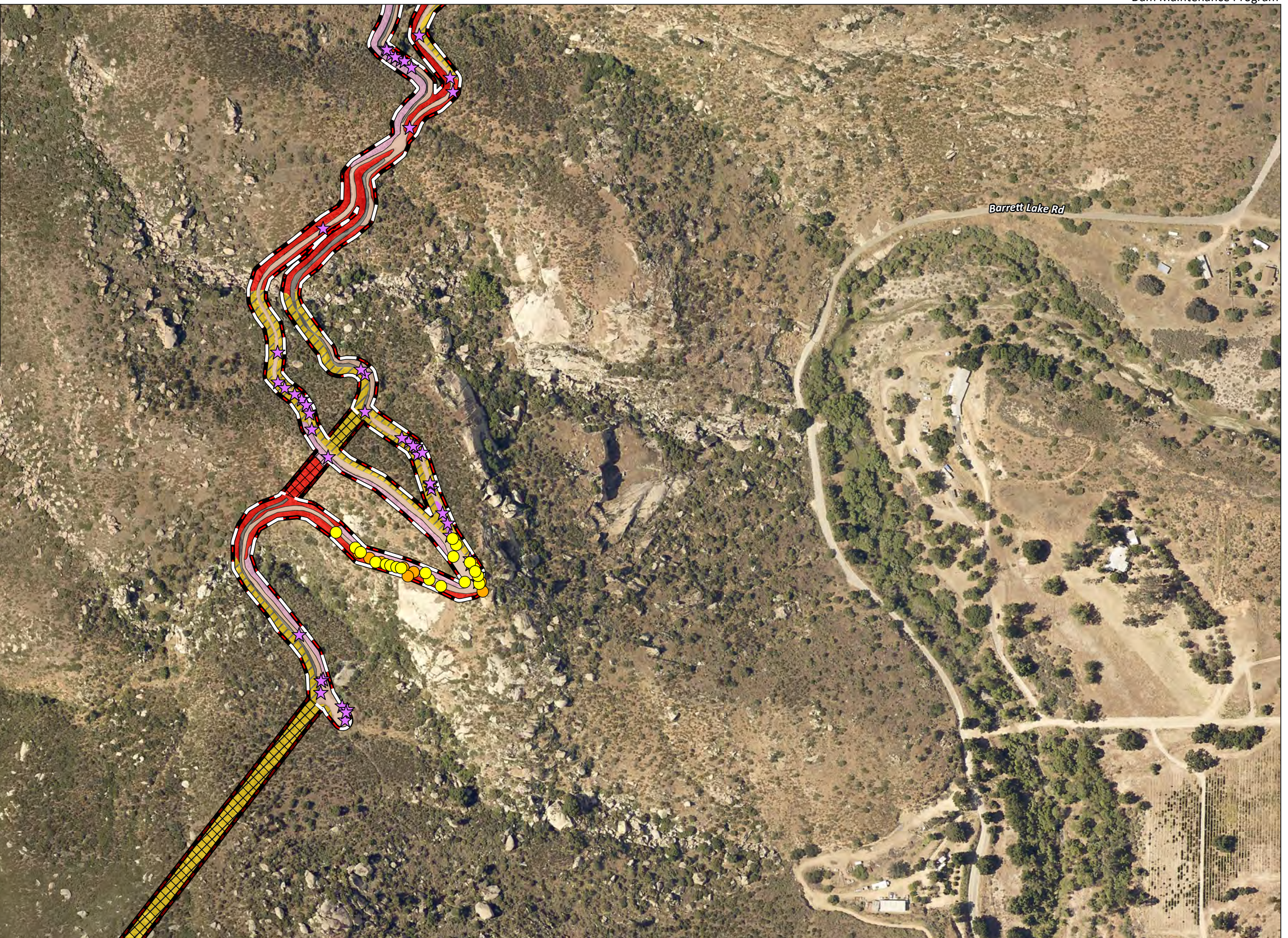
Owl's Clover (*Castilleja exserta*)

- Low Density (1-99 plants per m²)

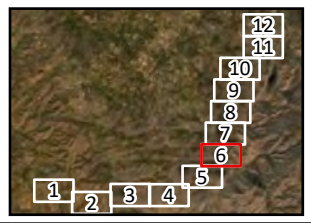
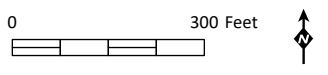
Vegetation

- Coastal Sage-Chaparral Scrub
- Developed
- Diegan Coastal Sage Scrub
- Disturbed Habitat
- Granitic Southern Mixed Chaparral

**Excluded Areas: tunneled portions of conduit, steep slope areas, and sections located within private property.*



I:\PROJECTS\15\1500\SDD-32.20_DamMaintenance\Master\Map\CCB\CCB_Rpt.aprx Fig5h_Dulzura : SDD-32.20 : 6/15/2020 - SAB



Source: Aerial (SanGIS, 2017)

Study Area

- Study Area
- Quino Checkerspot Butterfly Survey Area
- Quino Checkerspot Survey Exclusion Area*

Quino Checkerspot Butterfly (*Euphydras editha quino*)

- Location

Host Plants

Dwarf Plantain (*Plantago erecta*)

- Low Density (1-99 plants per m²)
- Medium Density (100-999 plants per m²)

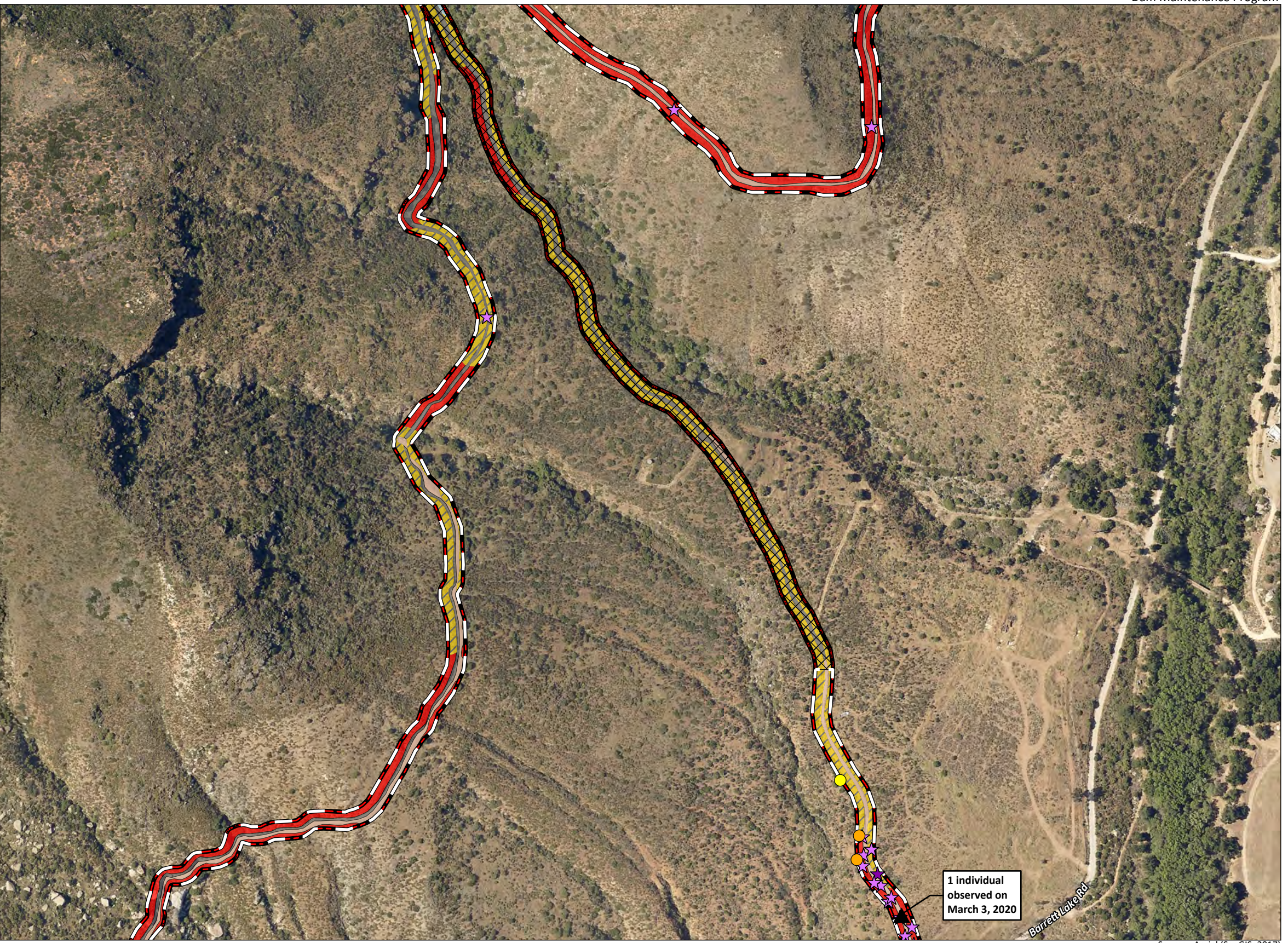
Owl's Clover (*Castilleja exserta*)

- Low Density (1-99 plants per m²)
- Medium Density (100-999 plants per m²)

Vegetation

- Developed
- Diegan Coastal Sage Scrub
- Disturbed Habitat
- Granitic Southern Mixed Chaparral
- Southern Riparian Forest

**Excluded Areas: tunneled portions of conduit, steep slope areas, and sections located within private property.*

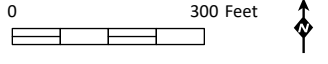


I:\PROJECTS\5\5DD\SDD-32.20_DamMaintenance\Master\Map\CCB\CCB_Rpt.aprx Fig5h_Dulzura : SDD-32.20 : 6/15/2020 - SAB

Barrett Lake Rd

1 individual observed on March 3, 2020

Source: Aerial (SanGIS, 2017)



Study Area

- Study Area
- Quino Checkerspot Butterfly Survey Area
- Quino Checkerspot Survey Exclusion Area

Host Plants

Dwarf Plantain (*Plantago erecta*)

- Low Density (1-99 plants per m²)
- Medium Density (100-999 plants per m²)
- High Density (1,000-9,999 plants per m²)

Owl's Clover (*Castilleja exserta*)

- Low Density (1-99 plants per m²)

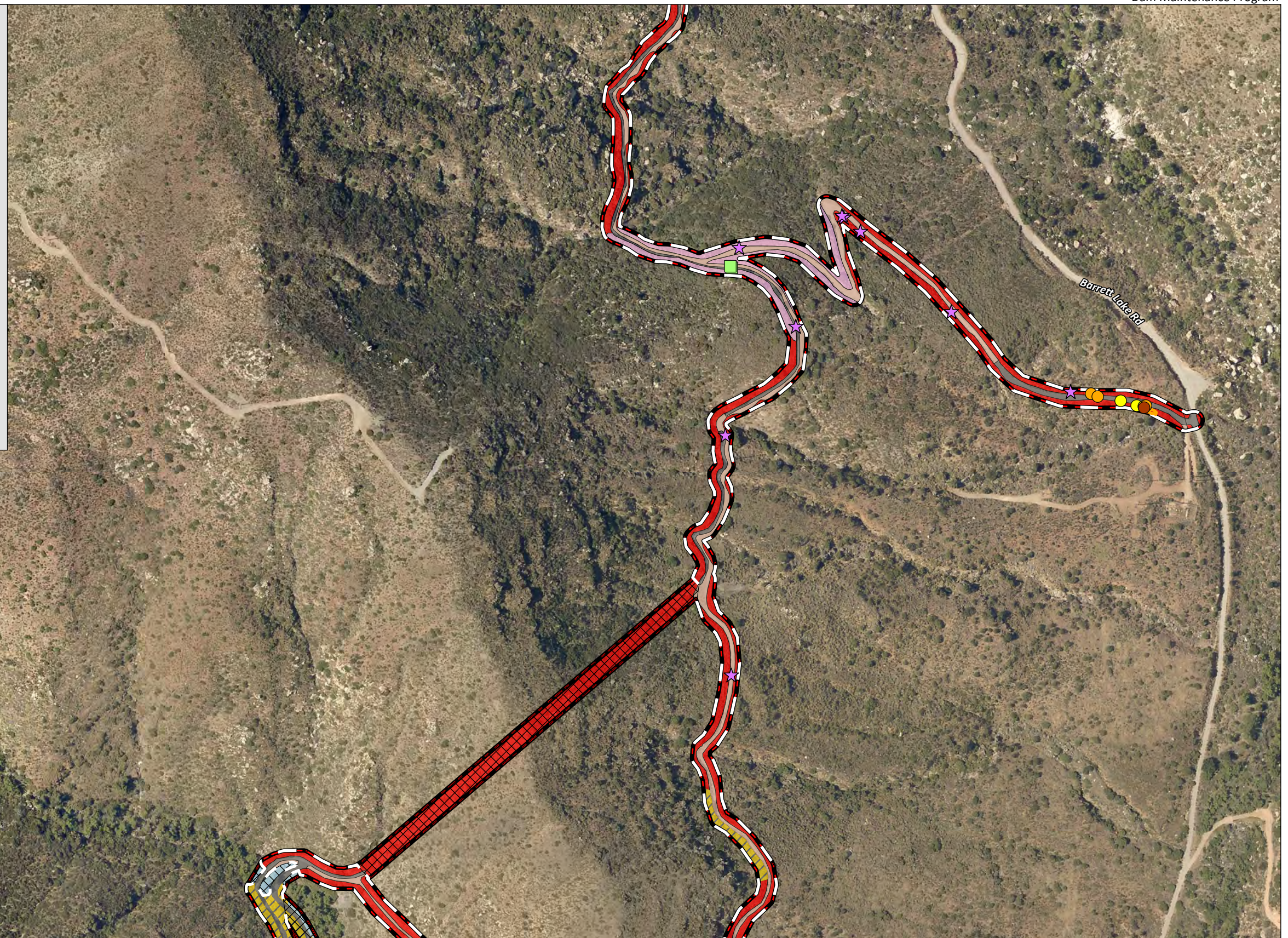
Chinese Houses (*Collinsia* sp.)

- Low Density (1-99 plants per m²)

Vegetation

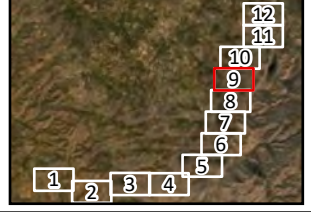
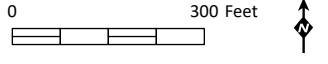
- Coastal Sage-Chaparral Scrub
- Developed
- Diegan Coastal Sage Scrub
- Disturbed Habitat
- Granitic Southern Mixed Chaparral
- Southern Riparian Forest

**Excluded Areas: tunneled portions of conduit, steep slope areas, and sections located within private property.*



I:\PROJECTS\5\5DD\5DD-32.20_DamMaintenance\Master\Map\CCB\CCB_Rpt.aprx Fig5h_Dulzura : 5DD-32.20 : 6/15/2020 - SAB

Source: Aerial (SanGIS, 2017)



Study Area

- Study Area
- Quino Checkerspot Butterfly Survey Area
- Quino Checkerspot Survey Exclusion Area*

Host Plants

Dwarf Plantain (*Plantago erecta*)

- Low Density (1-99 plants per m²)

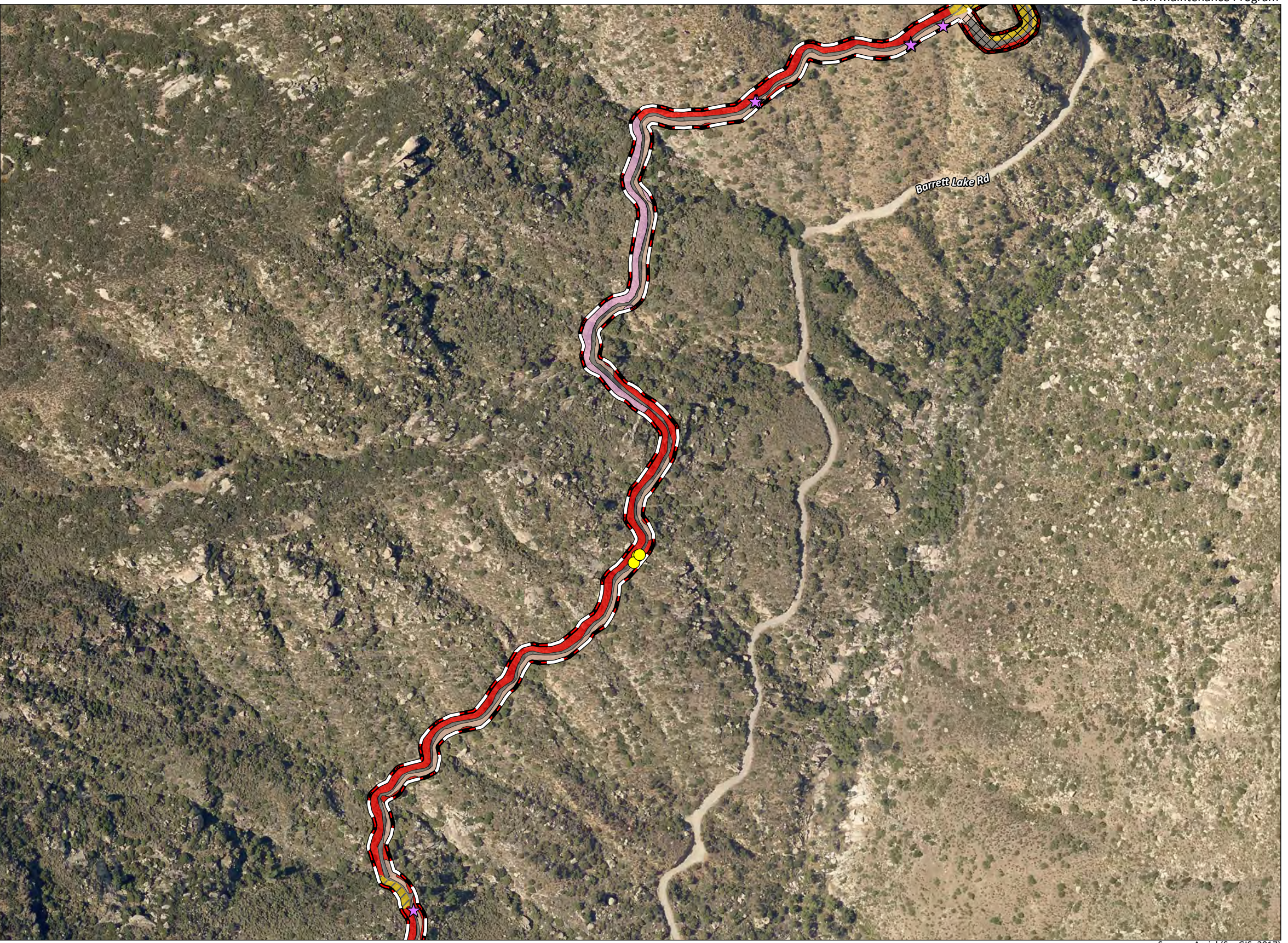
Owl's Clover (*Castilleja exserta*)

- Low Density (1-99 plants per m²)

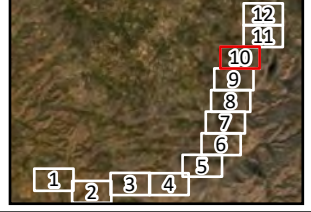
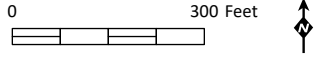
Vegetation

- Coastal Sage-Chaparral Scrub
- Developed
- Diegan Coastal Sage Scrub
- Disturbed Habitat
- Granitic Southern Mixed Chaparral

*Excluded Areas: tunneled portions of conduit, steep slope areas, and sections located within private property.



I:\PROJECTS\5\5DD\5DD-32.20_DamMaintenance\Master\Map\CCB\CCB_Rpt.aprx Fig5h_Dulzura : SDD-32.20 : 6/15/2020 - SAB



Source: Aerial (SanGIS, 2017)

Study Area

Quino Checkerspot Butterfly Survey Area

Quino Checkerspot Survey Exclusion Area*

Host Plants

Dwarf Plantain (*Plantago erecta*)

Low Density (1-99 plants per m²)

Owl's Clover (*Castilleja exserta*)

Low Density (1-99 plants per m²)

Vegetation

Developed

Diegan Coastal Sage Scrub

Disturbed Habitat

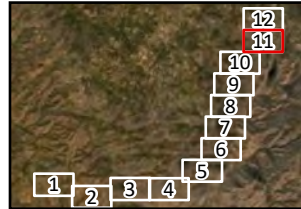
Granitic Southern Mixed Chaparral

**Excluded Areas: tunneled portions of conduit, steep slope areas, and sections located within private property.*











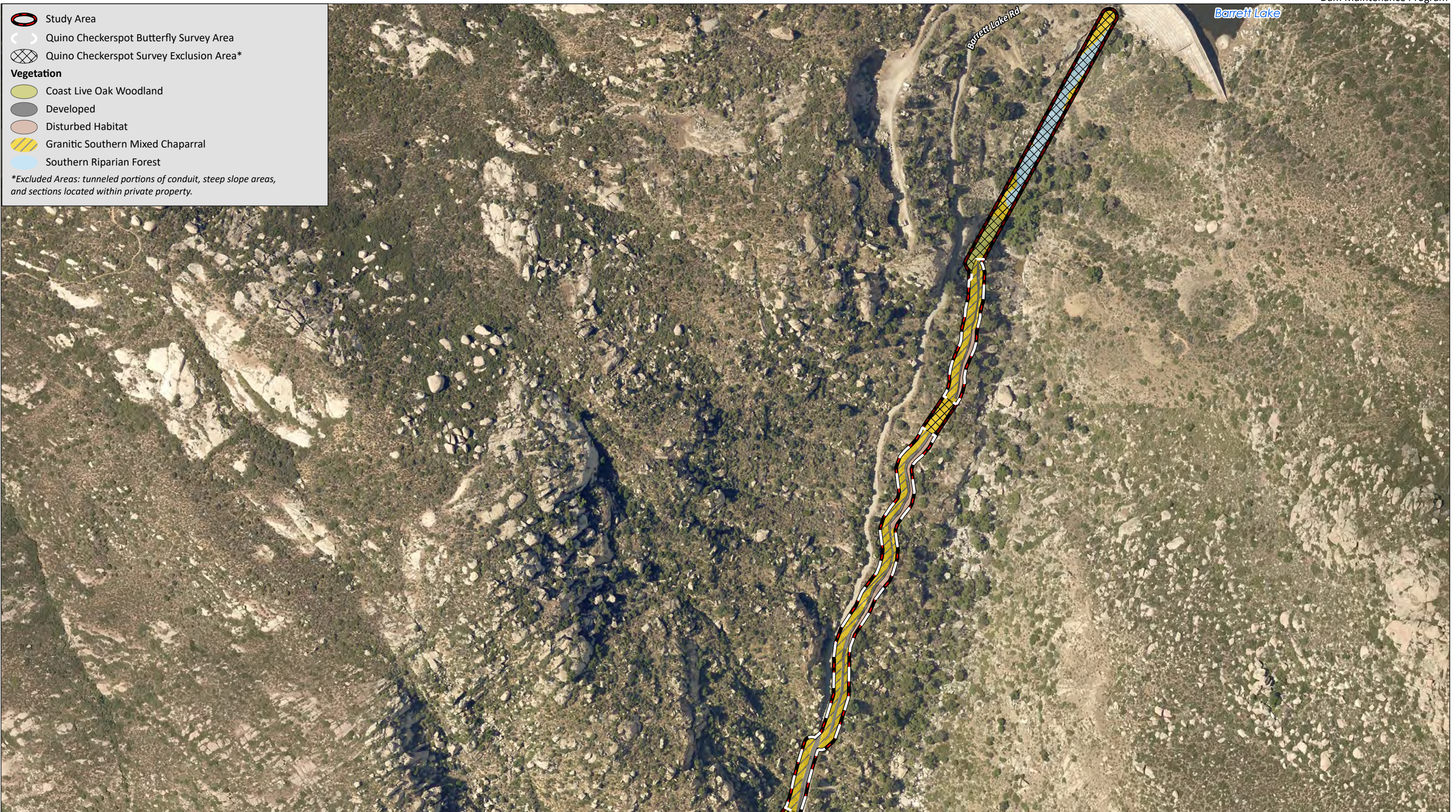
I:\PROJECTS\5\5DD\32.20_DamMaintenance\Master\Map\CCB\CCB_Rpt.aprx Fig5h_Dulzura : SDD-32.20 : 6/15/2020 - SAB

0 300 Feet

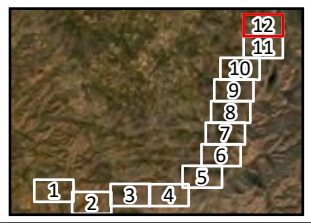
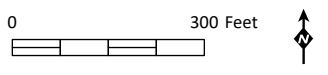


Source: Aerial (SanGIS, 2017)

 Study Area
 Quino Checkerspot Butterfly Survey Area
 Quino Checkerspot Survey Exclusion Area*
Vegetation
 Coast Live Oak Woodland
 Developed
 Disturbed Habitat
 Granitic Southern Mixed Chaparral
 Southern Riparian Forest
**Excluded Areas: tunneled portions of conduit, steep slope areas, and sections located within private property.*



I:\PROJECTS\51\SDD\SDD-32.20_DamMaintenance\Master\Map\CCB\CCB_Rpt.aprx Fig5h_Dulzura : SDD-32.20 : 6/15/2020 - SAB



Source: Aerial (SanGIS, 2017)

Attachment A

Survey Information

Attachment A Survey Information

Site Visit	Date	Biologist(s)	Acres	Acres/ Hour	Time (Start/Stop)	Weather Conditions		Results†
						Start	End	
Barrett Dam*								
Host Plant Mapping	2/20/20	Ian Hirschler ¹ , Brenda Bennett ¹ , Ryan Meszaros ²	N/A	N/A	N/A	N/A	N/A	N/A
1	2/20/20	Ian Hirschler ¹ , Brenda Bennett ¹ , Ryan Meszaros ²	19.70	4.38	1330/1500	74.6°F, wind 1-4 mph, 50% clouds	76.9°F, wind 3-8 mph, 20% clouds	No QCB Observed
2	2/28/20	Ian Hirschler ¹ , Brenda Bennett ¹	19.70	6.57	1310/1440	76.6°F, wind 1-4 mph, 40% clouds	75.3°F, wind 0-2 mph, 40% clouds	No QCB Observed
3	3/6/20	Ian Hirschler ¹	19.70	7.88	1230/1500	74.5°F, wind 3-9 mph, 0% clouds	72.5°F, wind 5-9 mph, 0% clouds	No QCB Observed
4	3/21/20	Brenda Bennett ¹	19.70	9.08	1320/1530	66°F, wind 2-4 mph, 40% clouds	66°F, wind 1-4 mph, 40% clouds	No QCB Observed
5	3/30/20	Chris Thomson ¹	19.70	8.45	1125/1345	63.7°F, wind 1-4mph, 0% clouds	67.2°F, wind 2-6, 0% clouds	No QCB Observed
6	4/2/20	Ryan Meszaros ²	19.70	7.88	1100/1330	68.1°F, wind 1-4 mph, 5% clouds	69°F, wind 5-9 mph, 5% clouds	No QCB Observed
7	4/4/20	Ryan Meszaros ²	19.70	7.88	1030/1300	64.2°F, wind 1-4 mph, 0% clouds	69.8°F, wind 1-3 mph, 5% clouds	No QCB Observed
8	4/14/20	Ryan Meszaros ²	19.70	7.88	0930/1200	65.5°F, wind 1-2 mph, 0% clouds	73.8°F, wind 5-8 mph, 0% clouds	No QCB Observed
9	4/16/20	Ian Hirschler ¹	19.70	7.88	1300/1530	71.6°F, wind 3-7 mph, 0% clouds	70.3°F, wind 5-11 mph, 0% clouds	No QCB Observed
10	4/23/20	Chris Thomson ¹	19.70	7.88	1155/1425	80.4°F, wind 2-4 mph, 0% clouds	83.3°F, wind 3-8 mph, 0% clouds	No QCB Observed
11	4/29/20	Ian Hirschler ¹	19.70	7.88	1245/1515	82.8°F, wind 3-7 mph, 30% clouds	78.3°F, wind 1-4 mph, 50% clouds	No QCB Observed
12	5/6/20	Chris Thomson ¹	19.70	6.57	1000/1300	74.1°F, wind 1-3 mph, 0% clouds	83.6°F, wind 2-5 mph, 0% clouds	No QCB Observed

* Barrett Dam Total Survey Time = 28 hours; Survey Rate = 4.38 to 9.08 acres per hour

† QCB = Quino checkerspot butterfly (*Euphydryas editha quino*)

¹ Rocks Biological Consulting Biologist (USFWS Permit TE-063230-5.4)

² Huffman Environmental Biologist (USFWS Permit TE-20186A-3.1)

**Attachment A (cont.)
Survey Information**

Site Visit	Date	Biologist(s)	Acres	Acres/ Hour	Time (Start/Stop)	Weather Conditions		Results†
						Start	End	
El Capitan Dam								
Host Plant Mapping	3/5/20	Ian Hirschler ¹ , Ryan Meszaros ²	N/A	N/A	N/A	N/A	N/A	N/A
1	2/18/20	Ryan Meszaros ²	49.30	8.22	1000/1600	60.2°F, wind 1-4 mph, 35% clouds	61.7°F, wind 0-3 mph, 10% clouds	No QCB Observed
2	2/24/20	Ian Hirschler ¹	49.30	10.56	935/1415	60°F, wind 1-3 mph, 5% clouds	73.2°F, wind 2-4 mph, 0% clouds	No QCB Observed
3	3/5/20	Ian Hirschler ¹ , Ryan Meszaros ²	49.30	6.72	920/1300	64.4°F, 1-3 mph, 5% clouds	83.6°F, wind 0-2 mph, 15% clouds	No QCB Observed
4	3/21/20	Ian Hirschler ¹ , Chris Thomson ¹ , Ryan Meszaros ²	49.30	8.22	1115/1315	61.3°F, wind 2-6 mph, 40% clouds	66.2°F, wind 1-4 mph, 30% clouds	No QCB Observed
5	3/30/20	Ian Hirschler ¹	49.30	9.86	1020/1520	61.1°F, wind 1-4 mph, 0% clouds	73.1°F, wind 4-9 mph, 0% clouds	No QCB Observed
6	4/1/20	Chris Thomson ¹	49.30	8.33	0955/1550	64.5°F, wind 2-5 mph, 25% clouds	66.1°F, wind 1-4 mph, 0% clouds	No QCB Observed
7	4/4/20	Chris Thomson ¹	49.30	9.86	1105/1605	64.2°F, wind 1-4 mph, 15% clouds	66.1°F, wind 2-6 mph, 20% clouds	No QCB Observed
8	4/15/20	Chris Thomson ¹	49.30	8.22	1030/1630	69.3°F, wind 1-3 mph, 0% clouds	68.4°F, wind 3-9 mph, 0% clouds	No QCB Observed
9	4/17/20	Chris Thomson ¹ , Brenda Bennett ¹	49.30	8.22	1100/1400	63°F, wind 4-6 mph, 25% clouds	73°F, wind 3-7 mph, 40% clouds	No QCB Observed
10	4/22/20	Melanie Rocks ³	49.30	7.99	0920/1530	64°F, wind 0-2 mph, 0% clouds	81°F, wind 3-6 mph, 5% clouds	No QCB Observed
11	4/30/20	Ian Hirschler ¹	49.30	8.22	0945/1545	70.1°F, wind 1-4 mph, 100% clouds	81.4°F, wind 4-9 mph, 0% clouds	No QCB Observed
12	5/7/20	Chris Thomson ¹	49.30	8.33	0935/1530	69.2°F, wind 1-5 mph, 0% clouds	78.4°F, wind 3-7 mph, 0% clouds	No QCB Observed

* El Capitan Dam Total Survey Time = 59 hours and 21 minutes; Survey Rate = 6.72 to 10.56 acres per hour

† QCB = Quino checkerspot butterfly (*Euphydryas editha quino*)

¹ Rocks Biological Consulting Biologist (USFWS Permit TE-063230-5.4)

² Huffman Environmental Biologist (USFWS Permit TE-20186A-3.1)

³ Rocks Biological Consulting Biologist (USFWS Permit TE-082908-2)

Attachment A (cont.)
Survey Information

Site Visit	Date	Biologist(s)	Acres	Acres/ Hour	Time (Start/Stop)	Weather Conditions		Results†
						Start	End	
Morena Dam								
Host Plant Mapping	2/28/20	Ian Hirschler ¹ , Brenda Bennett ¹	N/A	N/A	N/A	N/A	N/A	N/A
1	2/20/20	Ian Hirschler ¹ , Brenda Bennett ¹ , Ryan Meszaros ²	9.60	1.60	1000/1200	63.1°F, wind 4-8 mph, 30% clouds	68.6°F, wind 2-6 mph, 40% clouds	No QCB Observed
2	2/28/20	Ian Hirschler ¹ , Brenda Bennett ¹	9.60	2.74	1000/1145	66°F, wind 8-12 mph, 30% clouds	69°F, wind 1-4 mph, 20% clouds	No QCB Observed
3	3/6/20	Ian Hirschler ¹	9.60	5.49	940/1125	60.5°F, wind 0-2 mph, 0% clouds	67.5°F, wind 3-8 mph, 5% clouds	No QCB Observed
4	3/30/20	Chris Thomson ¹	9.60	5.25	1505/1655	67.6°F, wind 3-8 mph, 5% clouds	64°F, wind 5-9 mph, 0% cloud	No QCB Observed
5	4/2/20	Ryan Meszaros ²	9.60	6.40	1500/1630	73.6°F, wind 5-9 mph, 0% clouds	74.8°F, wind 8-12 mph, 0% clouds	No QCB Observed
6	4/4/20	Ryan Meszaros ²	9.60	6.40	1425/1555	68.5°F, wind 5-9 mph, 10% clouds	69.9°F, wind 6-10 mph, 20% clouds	No QCB Observed
7	4/14/20	Ryan Meszaros ²	9.60	5.49	1345/1530	71.6°F, wind 2-9 mph, 0% clouds	73.9°F, wind 1-3 mph, 0% clouds	No QCB Observed
8	4/16/20	Ian Hirschler ¹	9.60	6.40	1000/1130	63.4°F, wind 2-6 mph, 0% clouds	68.1°F, wind 3-9 mph, 0% clouds	No QCB Observed
9	4/21/20	Chris Thomson ¹	9.60	5.49	1400/1545	60.4°F, wind 4-9 mph, 15% clouds	60.8°F, wind 5-10 mph, 20% clouds	No QCB Observed
10	4/23/20	Chris Thomson ¹	9.60	5.49	1545/1730	82.1°F, wind 3-7 mph, 0% clouds	79.8°F, wind 5-8 mph, 0% clouds	No QCB Observed
11	4/29/20	Ian Hirschler ¹	9.60	6.40	1015/1145	80.2°F, wind 1-4 mph, 5% clouds	83.3°F, wind 3-7 mph, 15% clouds	No QCB Observed
12	5/6/20	Chris Thomson ¹	9.60	5.49	1410/1555	86.8°F, wind 3-8 mph, 0% clouds	88.4°F, wind 3-8 mph, 0% clouds	No QCB Observed

* Morena Dam Total Survey Time = 20 hours and 20 minutes; Survey Rate = 1.60 to 6.40 acres per hour

† QCB = Quino checkerspot butterfly (*Euphydryas editha quino*)

¹ Rocks Biological Consulting Biologist (USFWS Permit TE-063230-5.4)

² Huffman Environmental Biologist (USFWS Permit TE-20186A-3.1)

Attachment A (cont.)
Survey Information

Site Visit	Date	Biologist(s)	Acres	Acres/ Hour	Time (Start/Stop)	Weather Conditions		Results†
						Start	End	
San Vicente Dam								
Host Plant Mapping	3/04/20	Ian Hirschler ¹ , Ryan Meszaros ²	N/A	N/A	N/A	N/A	N/A	N/A
1	2/18/20	Ian Hirschler ¹	40.00	8.89	1030/1500	64°F, wind 1-2 mph, 35% clouds	74.7°F, wind 1-5 mph, 10% clouds	No QCB Observed
2	2/24/20	Brenda Bennett ¹	40.00	8.89	1030/1500	64.5°F, wind 1-3 mph, 0% clouds	68.7°F, wind 2-5 mph, 0% clouds	No QCB Observed
3	3/4/20	Ian Hirschler ¹ , Ryan Meszaros ²	40.00	5.33	925/1310	63.9°F, wind 1-3 mph, 0% clouds	77.2°F, wind 4-8 mph, 5% clouds	No QCB Observed
4	3/9/20	Ian Hirschler ¹ , Chris Thomson ¹	40.00	6.67	1045/1345	62°F, wind 1-4 mph, 10% clouds	67.4°F, wind 2-5 mph, 10% clouds	No QCB Observed
5	3/21/20	Ian Hirschler ¹ , Chris Thomson ¹ , Ryan Meszaros ²	40.00	6.67	1350/1550	64°F, wind 0-2mph, 40% clouds	70.2°F, wind 1-4mph, 50% clouds	No QCB Observed
6	3/27/20	Ian Hirschler ¹ , Ryan Meszaros ²	40.00	6.67	1245/1545	68.8°F, wind 2-6 mph, 20% clouds	69.8°F, wind 3-9 mph, 5% clouds	No QCB Observed
7	3/31/20	Chris Thomson ¹	40.00	6.67	1150/1750	70.1°F, wind 0-2 mph, 90% clouds	70.4°F, wind 1-4 mph, 100% clouds	No QCB Observed
8	4/15/20	Ryan Meszaros ²	40.00	8.00	0830/1330	64.9°F, wind 1-5 mph, 0% clouds	79.7°F, wind 1-3 mph, 0% clouds	No QCB Observed
9	4/23/20	Ryan Meszaros ²	40.00	8.00	0900/1400	72°F, wind 0-2 mph, 0% clouds	84°F, wind 0-2 mph, 0% clouds	No QCB Observed
10	4/25/20	Chris Thomson ¹	40.00	6.67	0830/1430	68.1°F, wind 1-3 mph, 0% clouds	91.7°F, wind 2-4 mph, 0% clouds	No QCB Observed
11	5/1/20	Chris Thomson ¹	40.00	6.67	0925/1525	63.5°F, wind 0-3 mph, 0% clouds	79.8°F, wind 1-3 mph, 0% clouds	No QCB Observed
12	5/8/20	Chris Thomson ¹	40.00	6.67	0805/1405	62.9°F, wind 1-5 mph, 20% clouds	80.2°F, wind 3-7 mph, 0% clouds	No QCB Observed

* San Vicente Dam Total Survey Time = 54 hours and 45 minutes; Survey Rate = 5.33 to 8.89 acres per hour

† QCB = Quino checkerspot butterfly (*Euphydryas editha quino*)

¹ Rocks Biological Consulting Biologist (USFWS Permit TE-063230-5.4)

² Huffman Environmental Biologist (USFWS Permit TE-20186A-3.1)

Attachment A (cont.) Survey Information

Site Visit	Date	Biologist(s)	Acres	Acres/ Hour	Time (Start/Stop)	Weather Conditions		Results†
						Start	End	
Savage Dam								
Host Plant Mapping	3/3/20	Jim Rocks ¹	N/A	N/A	N/A	N/A	N/A	N/A
0	2/12/20	Ian Hirschler ¹ , Ryan Meszaros ²	24.40	4.57	1020/1300	60°F, wind 1-4 mph, 0% clouds	66.4°F, wind 1-3 mph, 0% clouds	No QCB
1	2/17/20	Ian Hirschler ¹ , Ryan Meszaros ²	24.40	5.42	1015/1230	60.4°F, wind 0-1 mph, 0% clouds	66.3°F, wind 0-2 mph, 0% clouds	No QCB
2	2/25/20	Brenda Bennett ¹ , Ryan Meszaros ²	24.40	2.22	1230/1610	77.2°F, wind 0-2 mph, 0% clouds	76.4°F, wind 0-2 mph, 0% clouds	Two individuals observed within northeastern portion of study area. One individual observed just east of the study area.
3	3/3/20	Jim Rocks ¹	24.40	6.37	0940/1330	63°F, wind 0-1 mph, 0% clouds	77°F, wind 1-3 mph, 0% clouds	Four individuals observed within northeastern portion of the study area.
4	3/8/20	Chris Thomson ¹ , Brenda Bennett ¹	24.40	5.24	1300/1520	63°F, wind 1-4 mph, 30% clouds	62.5°F, wind 2-6 mph, 30% clouds	No QCB
5	3/23/18	Ian Hirschler ¹	24.40	8.13	1315/1615	67.4°F, wind 1-4 mph, 40% clouds	64.4°F, wind 1-4 mph, 40% clouds	No QCB
6	3/27/18	Chris Thomson ¹	24.40	8.13	1215/1515	61.2°F, wind 1-4mph, 40% clouds	63.1°F, wind 2-6 mph, 25% clouds	No QCB
7	4/4/18	Brenda Bennett ¹	24.40	8.87	1215/1500	65.6°F, wind 2-4 mph, 40% clouds	68.2°F, wind 3-5 mph, 20% clouds	No QCB
8	4/14/20	Chris Thomson ¹	24.40	8.13	1330/1630	71.8°F, wind 2-5 mph, 0% clouds	70.2°F, wind 4-8 mph, 5% clouds	No QCB
9	4/16/20	Chris Thomson ¹	24.40	8.13	1045/1345	63.2°F, wind 1-4 mph, 0% clouds	69.2°F, wind 3-9 mph, 0% clouds	No QCB
10	4/22/20	Chris Thomson ¹	24.40	8.13	1305/1605	77°F, wind 2-4 mph, 0% clouds	78.5°F, wind 3-7 mph, 0% clouds	No QCB
11	4/27/20	Chris Thomson ¹	24.40	8.13	1400/1700	74.7°F, wind 1-4 mph, 0% clouds	81.5°F, wind 1-3 mph, 0% clouds	No QCB
12	5/7/20	Ian Hirschler ¹	24.40	8.13	0900/1200	75.2°F, wind 1-3 mph, 0% clouds	80.3°F, wind 3-6 mph, 0% clouds	No QCB

* Savage Dam Total Survey Time = 24 hours and 24 minutes; Survey Rate = 2.22 to 8.87 acres per hour

† QCB = Quino checkerspot butterfly (*Euphydryas editha quino*)

¹ Rocks Biological Consulting Biologist (USFWS Permit TE-063230-5.4)

² Huffman Environmental Biologist (USFWS Permit TE-20186A-3.1)

Attachment A (cont.)
 Survey Information

Site Visit	Date	Biologist(s)	Acres	Acres/ Hour	Time (Start/Stop)	Weather Conditions		Results†
						Start	End	
Sutherland Dam								
Host Plant Mapping	4/14/20	Garrett Huffman ²	N/A	N/A	N/A	N/A	N/A	N/A
1	2/19/20	Garrett Huffman ²	29.50	7.38	930/1330	61°F, wind 1-3 mph, 10% clouds	71°F, wind 2-5 mph, 10% clouds	No QCB Observed
2	2/26/20	Garrett Huffman ²	29.50	7.38	1030/1430	65°F, wind 2-4 mph, 30% clouds	73°F, wind 3-6 mph, 10% clouds	No QCB Observed
3	3/4/20	Garrett Huffman ²	29.50	7.38	1030/1430	61°F, wind 0-3 mph, 0% clouds	71°F, wind 2-5 mph, 0% clouds	No QCB Observed
4	3/27/20	Garrett Huffman ²	29.50	7.38	1230/1630	60°F, wind 2-4 mph, 30% clouds	65°F, wind 2-4 mph, 30% clouds	No QCB Observed
5	3/29/20	Garrett Huffman ²	29.50	7.38	1330/1730	62°F, wind 2-5 mph, 0% clouds	67°F, wind 2-6 mph, 0% clouds	No QCB Observed
6	4/1/20	Garrett Huffman ²	29.50	7.38	1100/1500	65°F, wind 2-5 mph, 10% clouds	72°F, wind 3-6 mph, 10% clouds	No QCB Observed
7	4/3/20	Garrett Huffman ²	29.50	7.38	1000/1400	60°F, wind 2-7 mph, 45% clouds	65°F, wind 3-6 mph, 45% clouds	No QCB Observed
8	4/14/20	Garrett Huffman ²	29.50	7.38	1000/1400	65°F, wind 3-10 mph, 0% clouds	71°F, wind 3-6 mph, 0% clouds	No QCB Observed
9	4/16/20	Garrett Huffman ²	29.50	7.38	1100/1500	68°F, wind 2-5 mph, 0% clouds	73°F, wind 2-5 mph, 0% clouds	No QCB Observed
10	4/22/20	Garrett Huffman ²	29.50	7.38	1000/1400	72°F, wind 2-4 mph, 0% clouds	82°F, wind 2-5 mph, 0% clouds	No QCB Observed
11	4/29/20	Garrett Huffman ²	29.50	7.38	1000/1400	73°F, wind 2-6 mph, 0% clouds	80°F, wind 2-6 mph, 0% clouds	No QCB Observed
12	5/7/20	Garrett Huffman ²	29.50	7.38	1130/1530	90°F, wind 1-3 mph, 1% clouds	93°F, wind 2-4 mph, 1% clouds	No QCB Observed

* Sutherland Dam Total Survey Time = 48 hours and 0 minutes; Survey Rate = 7.38 acres per hour

† QCB = Quino checkerspot butterfly (*Euphydryas editha quino*)

² Huffman Environmental Biologist (USFWS Permit TE-20186A-3.1)

³ Rocks Biological Consulting Biologist (USFWS Permit TE-082908-2)

Attachment A (cont.)
Survey Information

Site Visit	Date	Biologist(s)	Acres	Acres/ Hour	Time (Start/Stop)	Weather Conditions		Results†
						Start	End	
Upper Otay Dam								
Host Plant Mapping	3/3/20	Jim Rocks ¹	N/A	N/A	N/A	N/A	N/A	N/A
1	2/12/20	Ian Hirschler ¹ , Ryan Meszaros ²	23.80	6.80	1335/1520	64.6°F, wind 1-4 mph, 2% clouds	65°F, wind 5-7 mph, 0% clouds	No QCB Observed
2	2/17/20	Ian Hirschler ¹ , Ryan Meszaros ²	23.80	7.93	1300/1430	67.2°F, wind 2-5 mph, 0% clouds	74.1°F, wind 1-3 mph, 0% clouds	No QCB Observed
3	2/26/20	Ian Hirschler ¹	23.80	9.22	900/1145	71.4°F, wind 4-6 mph, 0% clouds	79.5°F, wind 1-3 mph, 0% clouds	No QCB Observed
4	3/3/20	Jim Rocks ¹	23.80	9.52	1345/1615	72°F, wind 1-4 mph, 0% clouds	71°F wind 1-4 mph, 0% clouds	No QCB Observed
5	3/8/20	Ian Hirschler ¹	23.80	9.52	1245/1515	70.5°F, wind 3-7 mph, 40% clouds	68.4°F, wind 3-7 mph, 30% clouds	No QCB Observed
6	3/21/20	Melanie Rocks ³	23.80	5.01	1145/1630	62°F, wind 0-2 mph, 40% clouds	64°F, wind 2-6 mph, 5% clouds	No QCB Observed
7	3/24/20	Ian Hirschler ¹	23.80	9.52	1245/1515	70°F, wind 2-4 mph, 40% clouds	71.4°F, wind 2-6 mph, 50% clouds	No QCB Observed
8	4/2/20	Chris Thomson ¹	23.80	7.93	1205/1505	63.2°F, wind 0-3 mph, 20% clouds	64.1°F, wind 4-9 mph, 15% clouds	No QCB Observed
9	4/14/20	Chris Thomson ¹	23.80	7.93	1015/1315	61.4°F, wind 1-4 mph, 5% clouds	72.1°F, wind 1-4 mph, 0% clouds	No QCB Observed
10	4/16/20	Chris Thomson ¹	23.80	7.93	1400/1700	69.0°F, wind 2-6 mph, 0% clouds	68.6°F, wind 3-9 mph, 0% clouds	No QCB Observed
11	4/22/20	Chris Thomson ¹	23.80	7.93	0950/1250	63.7°F, wind 2-5 mph, 0% clouds	76.6°F, wind 2-5 mph, 0% clouds	No QCB Observed
12	4/27/20	Chris Thomson ¹	23.80	7.93	1045/1345	81.7°F, wind 1-3 mph, 0% clouds	82.1°F, wind 2-5 mph, 0% clouds	No QCB Observed
13	5/7/20	Ian Hirschler ¹	23.80	9.52	1230/1500	82.6°F, wind 3-6 mph, 10% clouds	83.8°F, wind 1-4 mph, 0% clouds	No QCB Observed

* Upper Otay Dam Total Survey Time = 23 hours and 48 minutes; Survey Rate = 5.01 to 9.52 acres per hour

† QCB = Quino checkerspot butterfly (*Euphydryas editha quino*)

¹ Rocks Biological Consulting Biologist (USFWS Permit TE-063230-5.4)

² Huffman Environmental Biologist (USFWS Permit TE-20186A-3.1)

³ Rocks Biological Consulting Biologist (USFWS Permit TE-082908-2)

**Attachment A (cont.)
Survey Information**

Site Visit	Date	Biologist(s)	Acres	Acres/ Hour	Time (Start/Stop)	Weather Conditions		Results†
						Start	End	
Dulzura Conduit								
Host Plant Mapping	4/20/20	Laura Moreton ⁴ , Benjamin Rosenbaum ⁴	N/A	N/A	N/A	N/A	N/A	N/A
	4/23/20	Amy Mattson ⁴ , Laura Moreton ⁴	N/A	N/A	N/A	N/A	N/A	N/A
	4/24/20	Laura Moreton ⁴ , Benjamin Rosenbaum ⁴	N/A	N/A	N/A	N/A	N/A	N/A
1	2/17/20	Benjamin Rosenbaum ⁴	17.51	5.69	1010/1235	65°F, wind 1-2 mph, 0% clouds	73°F, wind 3-6 mph, 0% clouds	No QCB Observed
					1320/1400	76°F, wind 3-6 mph, 0% clouds	76°F, wind 3-6 mph, 0% clouds	No QCB Observed
	2/17/20	Amy Mattson ⁴	18..97	9.12	1040/1245	71°F, wind 0-1 mph, 0% clouds	74°F, wind 0-4 mph, 0% clouds	No QCB Observed
	2/18/20	Laura Moreton ⁴	12.22	7.32	1005/1130	61°F, wind 0 mph, <5% clouds	71°F, wind 0-1 mph, 30% clouds	No QCB Observed
					1148/1203	71°F, wind 0-1 mph, 25% clouds	72°F, wind 0-1 mph, 25% clouds	No QCB Observed
	2/18/20	Amy Mattson ⁴	10.91	6.31	1012/1132	61°F, wind 1-3 mph, <5% clouds	71°F, wind 0-2 mph, 35% clouds	No QCB Observed
					1232/1256	65°F, wind 0-1 mph, 25% clouds	72°F, wind 3-5 mph, 49% clouds	No QCB Observed
	2/19/20	Laura Moreton ⁴	8.90	6.27	0945/1035	70°F, wind 0-1 mph, 0% clouds	72°F, wind 0-1 mph, 0% clouds	No QCB Observed
					1155/1230	76°F, wind 1-3 mph, 0% clouds	70°F, wind 1-3 mph, 0% clouds	No QCB Observed
	2/19/20	Amy Mattson ⁴	8.43	5.20	1007/1058	69°F, wind 0-2 mph, 0% clouds	69°F, wind 2-3 mph, 0% clouds	No QCB Observed
1144/1230					71°F, wind 2-4 mph, 0% clouds	72°F, wind 2-4 mph, 0% clouds	No QCB Observed	
2/24/20	Benjamin Rosenbaum ⁴	15.65	7.21	1125/1335	70°F, wind 1-2 mph, 0% clouds	76°F, wind 1-2 mph, 0% clouds	No QCB Observed	
2/24/20	Laura Moreton ⁴	15.72	8.19	1210/1340	68°F, wind 1-2 mph, <5% clouds	76°F, wind 1-2 mph, 0% clouds	No QCB Observed	
				1248/1258	76°F, wind 1-2 mph, 0% clouds	76°F, wind 1-2 mph, 0% clouds	No QCB Observed	
				1410/1425	73°F, wind 1-2 mph, 0% clouds	73°F, wind 1-2 mph, 0% clouds	No QCB Observed	
2/27/20	Benjamin Rosenbaum ⁴	10.18	5.56	1000/1100	78°F, wind 2-7 mph, 50% clouds	76°F, wind 5-10 mph, 60% clouds	No QCB Observed	
				1125/1145	76°F, wind 5-10 mph, 60% clouds	76°F, wind 5-10 mph, 60% clouds	No QCB Observed	
				1225/1250	81°F, wind 2-5 mph, 60% clouds	81°F, wind 2-10 mph, 60% clouds	No QCB Observed	
2/27/20	Laura Moreton ⁴	15.42	6.85	0945/1115	77°F, wind 2-7 mph, 70% clouds	76°F, wind 5-10 mph, 60% clouds	No QCB Observed	
				1135/1200	78°F, wind 5-10 mph, 60% clouds	78°F, wind 3-8 mph, 65% clouds	No QCB Observed	
				1235/1255	81°F, wind 3-8 mph, 90% clouds	81°F, wind 0-1 mph, 80% clouds	No QCB Observed	
2/28/20	Benjamin Rosenbaum ⁴	8.43	5.27	1030/1206	79°F, wind 2-11 mph, 40% clouds	82°F, wind 1-3 mph, 50% clouds	No QCB Observed	

**Attachment A (cont.)
Survey Information**

Site Visit	Date	Biologist(s)	Acres	Acres/ Hour	Time (Start/Stop)	Weather Conditions		Results†
						Start	End	
Dulzura Conduit (cont.)								
2 (cont.)	2/28/20	Brian Lohstroh ⁵	8.90	3.82	1025/1245	75°F, wind 2-8 mph, 30% clouds	81°F, wind 2-6 mph, 30% clouds	4 QCB detected south of SR-94 between Summit Road and Little Tecate Road.
3	3/3/20	Laura Moreton ⁴	20.10	6.34	1035/1300	75°F, wind 0-1 mph, 0% clouds	79°F, wind 1-2 mph, 0% clouds	1 QCB observed at the southern end of an access trail west of Barrett Lake Road.
					1340/1405	77°F, wind 2-5 mph, 0% clouds	78°F, wind 2-5 mph, 0% clouds	
					1435/1455	77°F, wind 1-3 mph, 0% clouds	77°F, wind 3-5 mph, 0% clouds	
	3/3/20	Sally Trnka ⁴	17.67	6.88	1120/1300	71°F, wind 0-5 mph, 0% clouds	79°F, wind 1-2 mph, 0% clouds	No QCB Observed
					1335/1403	79°F, wind 2-8 mph, 0% clouds	78°F, wind 5-12 mph, 0% clouds	
					1430/1456	78°F, wind 2-8 mph, 0% clouds	76°F, wind 2-8 mph, 0% clouds	
	3/4/20	Benjamin Rosenbaum ⁴	9.20	5.51	0940/1100	65°F, wind 1-2 mph, 0% clouds	70°F, wind 0-3 mph, 10% clouds	No QCB Observed
					1130/1150	70°F, wind 0-3 mph, 10% clouds	70°F, wind 2-7 mph, 20% clouds	
3/4/20	Laura Moreton ⁴	10.00	5.46	0930/1120	65°F, wind 1-2 mph, 0% clouds	70°F, wind 0-3 mph, 0% clouds	No QCB Observed	
3/3/20	Erica Harris ⁴	5.52	3.02	1015/1205	73°F, wind 2-4 mph, 0% clouds	73°F, wind 1-3 mph, 0% clouds	6 QCB observed south of SR-94, along Little Tecate Road.	
3/3/20	Brian Lohstroh ⁵	11.81	3.73	0900/1210	65°F, wind 0-2 mph, 0% clouds	73°F, wind 1-8 mph, 0% clouds	No QCB Observed	
4	3/21/20	Erica Harris ⁴	14.00	5.09	1155/1440	71°F, wind 2-5 mph, 15% clouds	71°F, wind 1-3 mph, 40% clouds	No QCB Observed
	3/21/20	Rob Hogenauer ⁴	10.15	5.58	1218/1342	64°F, wind 3-5 mph, 30% clouds	63°F, wind 2-4 mph, 30% clouds	No QCB Observed
					1408/1433	64°F, wind 1-3 mph, 40% clouds	62°F, wind 2-4 mph, 40% clouds	
	3/21/20	Amy Mattson ⁴	11.47	3.80	1145/1232	65°F, wind 0-3 mph, 20% clouds	65°F, wind 0-5 mph, 30% clouds	No QCB Observed
					1254/1508	65°F, wind 0-5 mph, 25% clouds	65°F, wind 0-7 mph, 45% clouds	
	3/21/20	Laura Moreton ⁴	13.01	7.43	1135/1245	71°F, wind 0-1 mph, 25% clouds	74°F, wind 0-1 mph, 30% clouds	No QCB Observed
					1310/1455	72°F, wind 0-1 mph, 45% clouds	70°F, wind 1-3 mph, 45% clouds	
	3/21/20	Stacy Nigro ⁴	10.00	4.81	1130/1250	61°F, wind 0 mph, 20% clouds	64°F, wind 2-4 mph, 40% clouds	No QCB Observed
1345/1430					64°F, wind 3-5 mph, 20% clouds	66°F, wind 3-5 mph, 20% clouds		
3/21/20	Benjamin Rosenbaum ⁴	15.65	6.47	1100/1325	62°F, wind 1-3 mph, 15% clouds	66°F, wind 0-2 mph, 45% clouds	No QCB Observed	

Attachment A (cont.) Survey Information

Site Visit	Date	Biologist(s)	Acres	Acres/ Hour	Time (Start/Stop)	Weather Conditions		Results†
						Start	End	
Dulzura Conduit (cont.)								
5	3/28/20	Erica Harris ⁴	15.27	5.55	1045/1305	60°F, wind 2-5 mph, 15% clouds	72°F, wind 1-5 mph, 5% clouds	No QCB Observed
					1350/1415	67°F, wind 2-5 mph, 5% clouds	67°F, wind 2-5 mph, 5% clouds	
	3/28/20	Rob Hogenauer ⁴	13.38	4.22	1045/1320	60°F, wind 4-6 mph, 10% clouds	64°F, wind 3-5 mph, 20% clouds	No QCB Observed
					1335/1410	63°F, wind 3-5 mph, 20% clouds	62°F, wind 4-6 mph, 40% clouds	
	3/28/20	Garrett Huffman ²	13.78	3.94	1100/1430	63°F, wind 1-3 mph, 0% clouds	69°F, wind 2-4 mph, 0% clouds	No QCB Observed
3/28/20	Laura Moreton ⁴	13.95	4.78	1155/1450	62°F, wind 0-1 mph, 10% clouds	64°F, wind 0-1 mph, 35% clouds	No QCB Observed	
3/28/20	Benjamin Rosenbaum ⁴	17.92	7.17	1045/1315	60°F, wind 0-2 mph, 15% clouds	65°F, wind 0-2 mph, 20% clouds	No QCB Observed	
6	3/30/20	Laura Moreton ⁴	18.60	4.86	1105/1455	61°F, wind 0-1 mph, 0% clouds	61°F, wind 3-5 mph, 1% clouds	No QCB Observed
	3/30/20	Benjamin Rosenbaum ⁴	17.92	5.97	1015/1315	62°F, wind 0-3 mph, 0% clouds	76°F, wind 0-3 mph, 5% clouds	No QCB Observed
	3/31/20	Laura Moreton ⁴	14.66	2.17	1130/1255	70°F, wind 0-1 mph, 95% clouds	70°F, wind 0-1 mph, 100% clouds	No QCB Observed
					1315/1320	70°F, wind 0-1 mph, 100% clouds	70°F, wind 0-1 mph, 100% clouds	
					1335/1415	70°F, wind 2-5 mph, 100% clouds	71°F, wind 0-2 mph, 100% clouds	
3/31/20	Benjamin Rosenbaum ⁴	16.35	5.60	1135/1430	70°F, wind 1-3 mph, 60% clouds	72°F, wind 1-3 mph, 60% clouds	No QCB Observed	
7	4/1/20	Erica Harris ⁴	18.60	5.72	0945/1300	66°F, wind 0-2 mph, 20% clouds	75°F, wind 2-6 mph, 0% clouds	No QCB Observed
	4/1/20	Benjamin Rosenbaum ⁴	17.87	5.50	0910/1225	60°F, wind 0-3 mph, 45% clouds	77°F, wind 0-3 mph, 5% clouds	No QCB Observed
	4/2/20	Laura Moreton ⁴	14.66	4.76	1110/1330	66°F, wind 3-5 mph, 15% clouds	70°F, wind 0-1 mph, 10% clouds	No QCB Observed
					1345/1350	72°F, wind 0-1 mph, 20% clouds	73°F, wind 0-1 mph, 20% clouds	
					1405/1445	74°F, wind 1-2 mph, 35% clouds	73°F, wind 2-4 mph, 30% clouds	
4/2/20	Benjamin Rosenbaum ⁴	16.35	4.36	1015/1400	64°F, wind 0-3 mph, 45% clouds	74°F, wind 4-6 mph, 20% clouds	No QCB Observed	
8	4/14/20	Benjamin Rosenbaum ⁴	17.92	4.36	0950/1250	64°F, wind 0-2 mph, 0% clouds	75°F, wind 4-8 mph, 0% clouds	No QCB Observed
	4/14/20	Laura Moreton ⁴	18.60	6.57	1030/1320	61°F, wind 0-1 mph, 0% clouds	67°F, wind 3-8 mph, 1% clouds	No QCB Observed
	4/14/20	Erica Harris ⁴	18.23	6.08	1000/1230	67°F, wind 2-4 mph, 0% clouds	83°F, wind 1-6 mph, 0% clouds	No QCB Observed
					1355/1425	79°F, wind 3-8 mph, 0% clouds	80°F, wind 2-6 mph, 0% clouds	
	4/14/20	Amy Mattson ⁴	12.78	3.70	0930/1105	61°F, wind 0-6 mph, 0% clouds	71°F, wind 0-8 mph, 1% clouds	No QCB Observed
				1125/1230	76°F, wind 2-8 mph, 1% clouds	78°F, wind 2-8 mph, 0% clouds		
				1243/1330	78°F, wind 0-4 mph, 0% clouds	77°F, wind 0-8 mph, 0% clouds		

**Attachment A (cont.)
Survey Information**

Site Visit	Date	Biologist(s)	Acres	Acres/ Hour	Time (Start/Stop)	Weather Conditions		Results†
						Start	End	
Dulzura Conduit (cont.)								
9	4/16/20	Benjamin Rosenbaum ⁴	17.92	5.24	0930/1255	64°F, wind 0-2 mph, 45% clouds	73°F, wind 0-2 mph, 5% clouds	No QCB Observed
	4/16/20	Laura Moreton ⁴	18.60	6.76	0955/1240	68°F, wind 0-1 mph, 0% clouds	75°F, wind 0-1 mph, 0% clouds	No QCB Observed
	4/16/20	Erica Harris ⁴	18.23	5.61	0930/1215	66°F, wind 1-3 mph, 0% clouds	76°F, wind 2-4 mph, 0% clouds	No QCB Observed
					1325/1355	76°F, wind 1-3 mph, 0% clouds	76°F, wind 1-3 mph, 0% clouds	
	4/16/20	Amy Mattson ⁴	12.78	4.15	0905/1030	67°F, wind 0-2 mph, 0% clouds	77°F, wind 0-2 mph, 0% clouds	No QCB Observed
					1053/1233	77°F, wind 0-3 mph, 0% clouds	75°F, wind 0-2 mph, 0% clouds	
10	4/21/20	Erica Harris ⁴	17.92	6.52	1200/1445	70°F, wind 1-3 mph, 40% clouds	75°F, wind 2-6 mph, 80% clouds	No QCB Observed
	4/21/20	Laura Moreton ⁴	18.60	7.21	1135/1410	69°F, wind 1-3 mph, 45% clouds	68°F, wind 3-5 mph, 40% clouds	No QCB Observed
	4/21/20	Amy Mattson ⁴	11.81	5.49	1055/1145	66°F, wind 0-4 mph, 45% clouds	69°F, wind 0-6 mph, 45% clouds	No QCB Observed
					1215/1315	67°F, wind 0-4 mph, 45% clouds	65°F, wind 0-4 mph, 49% clouds	
					1356/1415	67°F, wind 0-6 mph, 49% clouds	69°F, wind 0-4 mph, 49% clouds	
	4/23/20	Erica Harris ⁴	19.20	5.49	0910/1150	73°F, wind 0-1 mph, 0% clouds	89°F, wind 1-3 mph, 0% clouds	No QCB Observed
1330/1420					86°F, wind 2-5 mph, 0% clouds	86°F, wind 3-6 mph, 0% clouds		
11	4/27/20	Laura Moreton ⁴	18.60	5.31	0900/1230	70°F, wind 0-1 mph, 0% clouds	76°F, wind 2-4 mph, 0% clouds	No QCB Observed
	4/27/20	Amy Mattson ⁴	11.81	3.63	0820/1055	69°F, wind 0-5 mph, 0% clouds	85°F, wind 0-6 mph, 0% clouds	No QCB Observed
					1103/1143	85°F, wind 0-6 mph, 0% clouds	85°F, wind 0-4 mph, 0% clouds	
	4/28/20	Amy Mattson ⁴	17.92	5.38	0820/1140	63°F, wind 1-5 mph, 0% clouds	94°F, wind 0-6 mph, 0% clouds	No QCB Observed
4/28/20	Erica Harris ⁴	19.20	6.40	1100/1400	84°F, wind 2-5 mph, 0% clouds	88°F, wind 2-4 mph, 0% clouds	No QCB Observed	
12	5/5/20	Benjamin Rosenbaum ⁴	17.92	5.51	0940/1255	83°F, wind 0-3 mph, 0% clouds	92°F, wind 0-3 mph, 0% clouds	No QCB Observed
	5/5/20	Erica Harris ⁴	22.58	6.60	0850/1105	77°F, wind 0-1 mph, 0% clouds	96°F, wind 1-4 mph, 0% clouds	No QCB Observed
					1140/1220	96°F, wind 1-4 mph, 0% clouds	96°F, wind 1-3 mph, 0% clouds	
					1235/1305	94°F, wind 2-6 mph, 0% clouds	94°F, wind 2-6 mph, 0% clouds	
5/6/20	Garrett Huffman ²	27.03	4.51	1000/1600	83°F, wind 1-3 mph, 5% clouds	94°F, wind 2-4 mph, 5% clouds	No QCB Observed	

* Dulzura Conduit Total Survey Time = 153 hours and 23 minutes; Survey Rate = 3.02 to 9.12 acres per hour

† QCB = Quino checkerspot butterfly (*Euphydryas editha quino*)

² Huffman Environmental Biologist (TE-20186A-3.1)

⁴ HELIX Environmental Planning, Inc. Biologist (USFWS Permit TE-778195-14)

⁵ Rocks Biological Consulting Biologist (TE-063608-6)

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Attachment B

Survey Forms

Barrett Dam

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Brenda Bennett, Ian Hirschler, Ryan Meszaros Date: February 20, 2020

Site Name: Dam Maintenance Program – Barrett Dam Site Visit No: 1

Area(s) Surveyed Barrett Dam Acres Surveyed 19.7 Survey Time: 1.5 Acres per Hour: 4.38

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1330	74.6	1-4	50
End	1500	76.9	3-8	20
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Southern mixed chaparral, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) <u>Yes</u> No		New Area or Existing Area (circle) <u>New</u> Existing Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	15	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	1
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatainae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilZippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)	1	Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		unidentified butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)		Harford's Sulphur (<i>Colias harfordii</i>)	
Wright's Metalmark (<i>Calephelis wrighti</i>)		New Species (write-in)	
Column Subtotal	16	Column Subtotal	1
		Total	17

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Brenda Bennett, Ian Hirschler Date: February 28, 2020

Site Name: Dam Maintenance Program – Barrett Dam Site Visit No: 2

Area(s) Surveyed Barrett Dam Acres Surveyed 19.7 Survey Time: 1.5 Acres per Hour: 6.57

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1310	76.6	1-4	40
End	1440	75.3	0-2	40
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Southern mixed chaparral, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	1	Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)	7	Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	15	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	1
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatainae (Blues)		Monarch (<i>Danaus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	1
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	1	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)	3	unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		unidentified butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	1	New Species (write-in)	
Wright's Metalmark (<i>Calephelis wrighti</i>)		Harford's Sulphur (<i>Colias harfordii</i>)	1
Column Subtotal		28	Column Subtotal
			3
		Total	
			31

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Ian Hirschler Date: March 6, 2020

Site Name: Dam Maintenance Program – Barrett Dam Site Visit No: 3

Area(s) Surveyed Barrett Dam Acres Surveyed 19.7 Survey Time: 2.5 Acres per Hour: 7.88

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1230	74.5	3-9	0
End	1500	72.5	5-9	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Southern mixed chaparral, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) <input checked="" type="radio"/> Yes <input type="radio"/> No		New Area or Existing Area (circle) <input checked="" type="radio"/> New <input type="radio"/> Existing <input type="radio"/> Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
<i>Pale Swallowtail (Papilio eurymedon)</i>		Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)	2	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	7	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	1
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	3
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatainae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilZippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	2	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		unidentified butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)		Harford's Sulphur (<i>Colias harfordii</i>)	
Wright's Metalmark (<i>Calephelis wrighti</i>)		New Species (write-in)	
Column Subtotal	11	Column Subtotal	8
		Total	19

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Brenda Bennett Date: March 21, 2020

Site Name: Dam Maintenance Program – Barrett Dam Site Visit No: 4 (make-up)

Area(s) Surveyed Barrett Dam Acres Surveyed 19.7 Survey Time: 2.17 Acres per Hour: 9.08

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1320	66	2-4	40
End	1530	66	1-4	40
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Southern mixed chaparral, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) <u>Yes</u> No		New Area or Existing Area (circle) <u>New</u> Existing Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Brushfoots)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	2	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Limenitidinae (Admirals and Relatives)	
Sleepy Orange (<i>Abaeis nicippe</i>)		California Sister (<i>Adelpha californica</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)	1	Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	1	Subfamily Satyrinae (Satyrs)	
Orange Sulphur (<i>Colias eurytheme</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		Subfamily Danainae (Monarchs)	
Cabbage White (<i>Pieris rapae</i>)		Monarch (<i>Danaus plexippus plexippus</i>)	
Becker's White (<i>Pontia beckerii</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Family Hesperidae (Skippers)	
Spring White (<i>P. sisymbrii</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	2
unidentified white		Mournful Duskywing (<i>E. tristis tristis</i>)	
unidentified sulphur		Fiery Skipper (<i>Hylephila phyleus</i>)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Danainae (Monarchs)	
Subfamily Theclinae (Hairstreaks)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		unidentified skipper	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Other	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		unidentified butterfly	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Harford's Sulphur (<i>Colias harfordii</i>)	
Subfamily Polyommatae (Blues)		New Species (write-in)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)			
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)			
Bernardino Blue (<i>Euphilotes bernardino</i>)			
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)			
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)			
Acmon Blue (<i>Icaricia acmon</i>)	3		
Marine Blue (<i>Leptotes marina</i>)			
unidentified blue			
Family Riodinidae (Metalmarks)			
Behr's Metalmark (<i>Apodemia virgulti</i>)			
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		7	Column Subtotal
			21
			Total
			28

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Chris Thomson Date: March 30, 2020

Site Name: Dam Maintenance Program – Barrett Dam Site Visit No: 5 (make-up)

Area(s) Surveyed Barrett Dam Acres Surveyed 19.7 Survey Time: 2.33 Acres per Hour: 8.45

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1125	63.7	1-4	0
End	1345	67.2	2-6	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Southern mixed chaparral, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Butterflies)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	1	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)	1	California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Limenitidinae (Admirals and Relatives)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	7	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	1
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	17
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Satyrinae (Satyrs)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Danainae (Monarchs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Polyommatae (Blues)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		unidentified butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	1	Sonoran Blue (<i>Philotes sonorensis</i>)	1
Wright's Metalmark (<i>Calephelis wrighti</i>)		Southern Dogface (<i>Zerene cesonia cesonia</i>)	2
Column Subtotal		10	Column Subtotal
			22
			Total
			32

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Ryan Meszaros Date: April 2, 2020

Site Name: Dam Maintenance Program – Barrett Dam Site Visit No: 6 (make-up)

Area(s) Surveyed Barrett Dam Acres Surveyed 19.7 Survey Time: 2.5 Acres per Hour: 7.88

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1100	68.1	1-4	5
End	1330	69.0	5-9	5
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Southern mixed chaparral, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
<i>Pale Swallowtail (Papilio eurymedon)</i>		Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)	2	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)	1	California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	9	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	1
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	12
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatainae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		unidentified butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	1	Harford's Sulphur (<i>Colias harfordii</i>)	1
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		13	Column Subtotal
			14
			Total
			27

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Ryan Meszaros Date: April 4, 2020

Site Name: Dam Maintenance Program – Barrett Dam Site Visit No: 7

Area(s) Surveyed Barrett Dam Acres Surveyed 19.7 Survey Time: 2.5 Acres per Hour: 7.88

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1030	64.2	1-4	0
End	1300	69.8	1-3	5
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Southern mixed chaparral, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Swallowtails)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	2	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Limenitidinae (Admirals and Relatives)	
Sleepy Orange (<i>Abaeis nicippe</i>)		California Sister (<i>Adelpha californica</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	9	Subfamily Satyrinae (Satyrs)	
Orange Sulphur (<i>Colias eurytheme</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		Subfamily Danainae (Monarchs)	
Cabbage White (<i>Pieris rapae</i>)		Monarch (<i>Danaus plexippus plexippus</i>)	
Becker's White (<i>Pontia beckerii</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Family Hesperidae (Skippers)	
Spring White (<i>P. sisymbrii</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
unidentified white		Mournful Duskywing (<i>E. tristis tristis</i>)	
unidentified sulphur		Fiery Skipper (<i>Hylephila phyleus</i>)	
Family Lycaenidae (Gossamer-wing Butterflies)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Subfamily Theclinae (Hairstreaks)		unidentified skipper	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Other	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		unidentified butterfly	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		Harford's Sulphur (<i>Colias harfordii</i>)	1
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Clemence's Blue (<i>Icaricia monticola</i>)	1
Subfamily Polyommatae (Blues)			
Western Pygmy-Blue (<i>Brephidium exilis</i>)			
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)			
Bernardino Blue (<i>Euphilotes bernardino</i>)			
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)			
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)			
Acmon Blue (<i>Icaricia acmon</i>)			
Marine Blue (<i>Leptotes marina</i>)			
unidentified blue			
Family Riodinidae (Metalmarks)			
Behr's Metalmark (<i>Apodemia virgulti</i>)	1		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	12	Column Subtotal	15
			Total
			27

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Ryan Meszaros Date: April 14, 2020

Site Name: Dam Maintenance Program – Barrett Dam Site Visit No: 8

Area(s) Surveyed Barrett Dam Acres Surveyed 19.7 Survey Time: 2.5 Acres per Hour: 7.88

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	0930	65.5	1-2	0
End	1200	73.8	5-8	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Southern mixed chaparral, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)	1	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	4	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	7
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	1
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatainae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)	1	Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		unidentified butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	1	Harford's Sulphur (<i>Colias harfordii</i>)	
Wright's Metalmark (<i>Calephelis wrighti</i>)		Clemence's Blue (<i>Icaricia monticola</i>)	
Column Subtotal		7	Column Subtotal
			8
		Total	
			15

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Ian Hirschler Date: April 16, 2020

Site Name: Dam Maintenance Program – Barrett Dam Site Visit No: 9

Area(s) Surveyed Barrett Dam Acres Surveyed 19.7 Survey Time: 2.5 Acres per Hour: 7.88

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1300	71.6	3-7	0
End	1530	70.3	5-11	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Southern mixed chaparral, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Butterflies)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	1	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Chrysothrixinae (Checkerspot and Sulphur)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	2	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	4
unidentified white		American (Virginia) Lady (<i>V. virginiensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatainae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	1	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)	1	White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		unidentified butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)		Harford's Sulphur (<i>Colias harfordii</i>)	
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	5	Column Subtotal	7
		Total	12

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Chris Thomson Date: April 23, 2020

Site Name: Dam Maintenance Program – Barrett Dam Site Visit No: 10

Area(s) Surveyed Barrett Dam Acres Surveyed 19.7 Survey Time: 2.5 Acres per Hour: 7.88

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1155	80.4	2-4	0
End	1425	83.3	3-8	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Southern mixed chaparral, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Brushfoots)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	1	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Limenitidinae (Admirals and Relatives)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	6	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	3
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Satyrinae (Satyrs)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Danainae (Monarchs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Polyommatae (Blues)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue	1	Other	
Family Riodinidae (Metalmarks)		unidentified butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)		Harford's Sulphur (<i>Colias harfordii</i>)	
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	8	Column Subtotal	5
		Total	13

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Ian Hirschler Date: April 29, 2020

Site Name: Dam Maintenance Program – Barrett Dam Site Visit No: 11

Area(s) Surveyed Barrett Dam Acres Surveyed 19.7 Survey Time: 2.5 Acres per Hour: 7.88

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1155	80.4	2-4	0
End	1425	83.3	3-8	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Southern mixed chaparral, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Butterflies)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	1	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)	1	California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Pierinae (Whites and Sulphurs)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	4	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	3
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)	1	White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)	1	unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		unidentified butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)		Harford's Sulphur (<i>Colias harfordii</i>)	
Wright's Metalmark (<i>Calephelis wrighti</i>)		Dainty Sulphur (<i>Nathalis iole</i>)	
Column Subtotal	8	Column Subtotal	7
		Total	
		15	

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Chris Thomson Date: May 6, 2020

Site Name: Dam Maintenance Program – Barrett Dam Site Visit No: 12

Area(s) Surveyed Barrett Dam Acres Surveyed 19.7 Survey Time: 3.00 Acres per Hour: 6.57

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1000	74.1	1-3	0
End	1300	83.6	2-5	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Southern mixed chaparral, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	X
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Brushfoots)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	2	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)	2	California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Limenitidinae (Admirals and Relatives)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	12	Common Buckeye (<i>Junonia coenia grisea</i>)	1
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)	2	Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	1
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Satyrinae (Satyrs)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	1
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Danainae (Monarchs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Polyommatae (Blues)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)	2	White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		unidentified butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	1	Southern Dogface (<i>Zerene cesonia cesonia</i>)	
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	21	Column Subtotal	8
		Total	29

El Capitan Dam

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Ryan Meszaros Date: February 18, 2020

Site Name: Dam Maintenance Program – El Capitan Dam Site Visit No: 1

Area(s) Surveyed El Capitan Dam Acres Surveyed 49.3 Survey Time: 6 Acres per Hour: 8.22

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1000	60.2	1-4	35
End	1600	61.7	0-3	10
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub (including disturbed), coastal sage-chaparral scrub, southern mixed chaparral, non-native grassland, non-native vegetation, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) <input checked="" type="radio"/> Yes <input type="radio"/> No		New Area or Existing Area (circle) <input checked="" type="radio"/> New <input type="radio"/> Existing <input type="radio"/> Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
<i>Pale Swallowtail (Papilio eurymedon)</i>		Subfamily Nymphalinae (True Brushfoots)	
<i>Western Tiger Swallowtail (P. rutulus rutulus)</i>		<i>Leanira Checkerspot (Chlosyne leanira)</i>	
<i>Anise Swallowtail (P. zelicaon)</i>	2	<i>California Patch (C. californica)</i>	
Family Pieridae (Whites and Sulphurs)		<i>Gabb's Checkerspot (C. gabbii gabbii)</i>	
<i>Sleepy Orange (Abaeis nicippe)</i>		<i>Chalcedon Checkerspot (Euphydryas chalcedona)</i>	
<i>Desert Orangetip (Anthocharis cethura)</i>		<i>Quino Checkerspot (E. editha quino)</i>	
<i>Pacific Sara Orangetip (A. sara sara)</i>	36	<i>Common Buckeye (Junonia coenia grisea)</i>	14
<i>Orange Sulphur (Colias eurytheme)</i>		<i>Mourning Cloak (Nymphalis antiopa antiopa)</i>	2
<i>Cloudless Sulphur (Phoebis sennae)</i>		<i>California Tortoiseshell (N. californica californica)</i>	
<i>Cabbage White (Pieris rapae)</i>		<i>Mylitta Crescent (Phyciodes mylitta)</i>	
<i>Becker's White (Pontia beckerii)</i>		<i>West Coast Lady (Vanessa annabella)</i>	
<i>Checkered (Common) White (P. protodice)</i>		<i>Red Admiral (V. atalanta rubria)</i>	
<i>Spring White (P. sisymbrii)</i>		<i>Painted Lady (V. cardui)</i>	1
unidentified white		<i>American (Virginia) Lady (V. virginensis)</i>	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		<i>California Sister (Adelpha californica)</i>	
<i>Great Purple Hairstreak (Atlides halesus corcorani)</i>		<i>Lorquin's Admiral (Limenitis lorquini)</i>	
<i>Western Brown Elfin (Callophrys augustinus iroides)</i>		Subfamily Satyrinae (Satyrs)	
<i>Bramble (Perplexing) Hairstreak (C. dumetorum perplexa)</i>		<i>California Common Ringlet (Coenonympha tullia californica)</i>	
<i>Gray Hairstreak (Strymon melinus pudica)</i>	1	Subfamily Danainae (Monarchs)	
Subfamily Polyommatae (Blues)		<i>Monarch (Danaus plexippus plexippus)</i>	
<i>Western Pygmy-Blue (Brephidium exilis)</i>		<i>Queen (Danaus gilippus thersippus)</i>	
<i>Western Tailed Blue (Cupido amyntula amyntula)</i>		Family Hesperidae (Skippers)	
<i>Bernardino Blue (Euphilotes bernardino)</i>		<i>Funereal Duskywing (Erynnis funeralis)</i>	
<i>Southern California Silvery Blue (Glaucopsyche lygdamus australis)</i>	9	<i>Mournful Duskywing (E. tristis tristis)</i>	
<i>Ceraunus (Edward's) Blue (Hemiargus ceraunus gyas)</i>		<i>Fiery Skipper (Hylephila phyleus)</i>	
<i>Acon Blue (Icaricia acmon)</i>	11	<i>White Checkered-Skipper (Pyrgus albescens)</i>	
<i>Marine Blue (Leptotes marina)</i>		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		unidentified butterfly	
<i>Behr's Metalmark (Apodemia virgulti)</i>	2	New Species (write-in)	
<i>Wright's Metalmark (Calephelis wrighti)</i>		New Species (write-in)	
Column Subtotal		61	Column Subtotal
			17
			Total
			78

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Ian Hirschler Date: February 24, 2020

Site Name: Dam Maintenance Program – El Capitan Dam Site Visit No: 2

Area(s) Surveyed El Capitan Dam Acres Surveyed 49.3 Survey Time: 4.67 Acres per Hour: 10.56

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	0935	60.0	1-3	5
End	1415	73.2	2-4	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub (including disturbed), coastal sage-chaparral scrub, southern mixed chaparral, non-native grassland, non-native vegetation, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New Existing Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
<i>Pale Swallowtail (Papilio eurymedon)</i>		Subfamily Nymphalinae (True Brushfoots)	
<i>Western Tiger Swallowtail (P. rutulus rutulus)</i>		<i>Leanira Checkerspot (Chlosyne leanira)</i>	
<i>Anise Swallowtail (P. zelicaon)</i>	9	<i>California Patch (C. californica)</i>	
Family Pieridae (Whites and Sulphurs)		<i>Gabb's Checkerspot (C. gabbii gabbii)</i>	
<i>Sleepy Orange (Abaeis nicippe)</i>		<i>Chalcedon Checkerspot (Euphydryas chalcedona)</i>	
<i>Desert Orangetip (Anthocharis cethura)</i>		<i>Quino Checkerspot (E. editha quino)</i>	
<i>Pacific Sara Orangetip (A. sara sara)</i>	25	<i>Common Buckeye (Junonia coenia grisea)</i>	4
<i>Orange Sulphur (Colias eurytheme)</i>		<i>Mourning Cloak (Nymphalis antiopa antiopa)</i>	1
<i>Cloudless Sulphur (Phoebis sennae)</i>		<i>California Tortoiseshell (N. californica californica)</i>	
<i>Cabbage White (Pieris rapae)</i>		<i>Mylitta Crescent (Phyciodes mylitta)</i>	
<i>Becker's White (Pontia beckerii)</i>		<i>West Coast Lady (Vanessa annabella)</i>	
<i>Checkered (Common) White (P. protodice)</i>		<i>Red Admiral (V. atalanta rubria)</i>	2
<i>Spring White (P. sisymbrii)</i>		<i>Painted Lady (V. cardui)</i>	2
unidentified white		<i>American (Virginia) Lady (V. virginensis)</i>	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		<i>California Sister (Adelpha californica)</i>	
<i>Great Purple Hairstreak (Atlides halesus corcorani)</i>		<i>Lorquin's Admiral (Limenitis lorquini)</i>	
<i>Western Brown Elfin (Callophrys augustinus iroides)</i>	2	Subfamily Satyrinae (Satyrs)	
<i>Bramble (Perplexing) Hairstreak (C. dumetorum perplexa)</i>		<i>California Common Ringlet (Coenonympha tullia californica)</i>	
<i>Gray Hairstreak (Strymon melinus pudica)</i>		Subfamily Danainae (Monarchs)	
Subfamily Polyommatae (Blues)		<i>Monarch (Danaus plexippus plexippus)</i>	
<i>Western Pygmy-Blue (Brephidium exilis)</i>		<i>Queen (Danaus gilippus thersippus)</i>	
<i>Western Tailed Blue (Cupido amyntula amyntula)</i>		Family Hesperidae (Skippers)	
<i>Bernardino Blue (Euphilotes bernardino)</i>		<i>Funereal Duskywing (Erynnis funeralis)</i>	
<i>Southern California Silvery Blue (Glaucopsyche lygdamus australis)</i>	12	<i>Mournful Duskywing (E. tristis tristis)</i>	
<i>Ceraunus (Edward's) Blue (Hemiargus ceraunus gyas)</i>		<i>Fiery Skipper (Hylephila phyleus)</i>	
<i>Acon Blue (Icaricia acmon)</i>	2	<i>White Checkered-Skipper (Pyrgus albescens)</i>	
<i>Marine Blue (Leptotes marina)</i>		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		unidentified butterfly	
<i>Behr's Metalmark (Apodemia virgulti)</i>	2	New Species (write-in)	
<i>Wright's Metalmark (Calephelis wrighti)</i>		New Species (write-in)	
Column Subtotal		52	Column Subtotal
			11
			Total
			63

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Ian Hirschler, Ryan Meszaros Date: March 5, 2020

Site Name: Dam Maintenance Program – El Capitan Dam Site Visit No: 3

Area(s) Surveyed El Capitan Dam Acres Surveyed 49.3 Survey Time: 3.67 Acres per Hour: 6.72

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	0935	60.0	1-3	5
End	1415	73.2	2-4	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub (including disturbed), coastal sage-chaparral scrub, southern mixed chaparral, non-native grassland, non-native vegetation, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) <input checked="" type="radio"/> Yes <input type="radio"/> No		New Area or Existing Area (circle) <input checked="" type="radio"/> New <input type="radio"/> Existing <input type="radio"/> Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
<i>Pale Swallowtail (Papilio eurymedon)</i>		Subfamily Nymphalinae (True Brushfoots)	
<i>Western Tiger Swallowtail (P. rutulus rutulus)</i>	8	<i>Leanira Checkerspot (Chlosyne leanira)</i>	
<i>Anise Swallowtail (P. zelicaon)</i>	2	<i>California Patch (C. californica)</i>	
Family Pieridae (Whites and Sulphurs)		<i>Gabb's Checkerspot (C. gabbii gabbii)</i>	
<i>Sleepy Orange (Abaeis nicippe)</i>		<i>Chalcedon Checkerspot (Euphydryas chalcedona)</i>	
<i>Desert Orangetip (Anthocharis cethura)</i>	3	<i>Quino Checkerspot (E. editha quino)</i>	
<i>Pacific Sara Orangetip (A. sara sara)</i>	38	<i>Common Buckeye (Junonia coenia grisea)</i>	14
<i>Orange Sulphur (Colias eurytheme)</i>		<i>Mourning Cloak (Nymphalis antiopa antiopa)</i>	1
<i>Cloudless Sulphur (Phoebis sennae)</i>		<i>California Tortoiseshell (N. californica californica)</i>	
<i>Cabbage White (Pieris rapae)</i>		<i>Mylitta Crescent (Phyciodes mylitta)</i>	
<i>Becker's White (Pontia beckerii)</i>		<i>West Coast Lady (Vanessa annabella)</i>	
<i>Checkered (Common) White (P. protodice)</i>		<i>Red Admiral (V. atalanta rubria)</i>	1
<i>Spring White (P. sisymbrii)</i>		<i>Painted Lady (V. cardui)</i>	3
unidentified white		<i>American (Virginia) Lady (V. virginensis)</i>	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		<i>California Sister (Adelpha californica)</i>	
<i>Great Purple Hairstreak (Atlides halesus corcorani)</i>		<i>Lorquin's Admiral (Limenitis lorquini)</i>	1
<i>Western Brown Elfin (Callophrys augustinus iroides)</i>	2	Subfamily Satyrinae (Satyrs)	
<i>Bramble (Perplexing) Hairstreak (C. dumetorum perplexa)</i>		<i>California Common Ringlet (Coenonympha tullia californica)</i>	
<i>Gray Hairstreak (Strymon melinus pudica)</i>		Subfamily Danainae (Monarchs)	
Subfamily Polyommatainae (Blues)		<i>Monarch (Danaus plexippus plexippus)</i>	
<i>Western Pygmy-Blue (Brephidium exilis)</i>		<i>Queen (Danaus gilippus thersippus)</i>	
<i>Western Tailed Blue (Cupido amyntula amyntula)</i>		Family Hesperidae (Skippers)	
<i>Bernardino Blue (Euphilotes bernardino)</i>		<i>Funereal Duskywing (Erynnis funeralis)</i>	
<i>Southern California Silvery Blue (Glaucopsyche lygdamus australis)</i>	126	<i>Mournful Duskywing (E. tristis tristis)</i>	
<i>Ceraunus (Edward's) Blue (Hemiargus ceraunus gyas)</i>		<i>Fiery Skipper (Hylephila phyleus)</i>	
<i>Acon Blue (Icaricia acmon)</i>	4	<i>White Checkered-Skipper (Pyrgus albescens)</i>	
<i>Marine Blue (Leptotes marina)</i>	2	unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		unidentified butterfly	
<i>Behr's Metalmark (Apodemia virgulti)</i>	6	<i>Propertius Duskywing (Erynnis propertius)</i>	
<i>Wright's Metalmark (Calephelis wrighti)</i>		<i>Clemence's Blue (Icaricia monticola)</i>	
Column Subtotal		81	Column Subtotal
			27
		Total	
			108

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Chris Thomson, Ian Hirschler, Ryan Meszaros Date: March 21, 2020

Site Name: Dam Maintenance Program – El Capitan Dam Site Visit No: 4 (make-up)

Area(s) Surveyed El Capitan Dam Acres Surveyed 49.3 Survey Time: 2.0 Acres per Hour: 8.22

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1115	61.3	2-6	40
End	1315	66.2	1-4	30
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub (including disturbed), coastal sage-chaparral scrub, southern mixed chaparral, non-native grassland, non-native vegetation, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
<i>Pale Swallowtail (Papilio eurymedon)</i>		Subfamily Nymphalinae (True Brushfoots)	
<i>Western Tiger Swallowtail (P. rutulus rutulus)</i>	2	<i>Leanira Checkerspot (Chlosyne leanira)</i>	
<i>Anise Swallowtail (P. zelicaon)</i>		<i>California Patch (C. californica)</i>	
Family Pieridae (Whites and Sulphurs)		<i>Gabb's Checkerspot (C. gabbii gabbii)</i>	
<i>Sleepy Orange (Abaeis nicippe)</i>		<i>Chalcedon Checkerspot (Euphydryas chalcedona)</i>	
<i>Desert Orangetip (Anthocharis cethura)</i>		<i>Quino Checkerspot (E. editha quino)</i>	
<i>Pacific Sara Orangetip (A. sara sara)</i>	11	<i>Common Buckeye (Junonia coenia grisea)</i>	2
<i>Orange Sulphur (Colias eurytheme)</i>		<i>Mourning Cloak (Nymphalis antiopa antiopa)</i>	
<i>Cloudless Sulphur (Phoebis sennae)</i>		<i>California Tortoiseshell (N. californica californica)</i>	
<i>Cabbage White (Pieris rapae)</i>		<i>Mylitta Crescent (Phyciodes mylitta)</i>	
<i>Becker's White (Pontia beckerii)</i>		<i>West Coast Lady (Vanessa annabella)</i>	
<i>Checkered (Common) White (P. protodice)</i>		<i>Red Admiral (V. atalanta rubria)</i>	
<i>Spring White (P. sisymbrii)</i>		<i>Painted Lady (V. cardui)</i>	
unidentified white		<i>American (Virginia) Lady (V. virginensis)</i>	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		<i>California Sister (Adelpha californica)</i>	
<i>Great Purple Hairstreak (Atlides halesus corcorani)</i>		<i>Lorquin's Admiral (Limenitis lorquini)</i>	
<i>Western Brown Elfin (Callophrys augustinus iroides)</i>		Subfamily Satyrinae (Satyrs)	
<i>Bramble (Perplexing) Hairstreak (C. dumetorum perplexa)</i>		<i>California Common Ringlet (Coenonympha tullia californica)</i>	
<i>Gray Hairstreak (Strymon melinus pudica)</i>		Subfamily Danainae (Monarchs)	
Subfamily Polyommatainae (Blues)		<i>Monarch (Danaus plexippus plexippus)</i>	
<i>Western Pygmy-Blue (Brephidium exilis)</i>		<i>Queen (Danaus gilippus thersippus)</i>	
<i>Western Tailed Blue (Cupido amyntula amyntula)</i>		Family Hesperidae (Skippers)	
<i>Bernardino Blue (Euphilotes bernardino)</i>		<i>Funereal Duskywing (Erynnis funeralis)</i>	2
<i>Southern California Silvery Blue (Glaucopsyche lygdamus australis)</i>	15	<i>Mournful Duskywing (E. tristis tristis)</i>	
<i>Ceraunus (Edward's) Blue (Hemiargus ceraunus gyas)</i>		<i>Fiery Skipper (Hylephila phyleus)</i>	
<i>Acmon Blue (Icaricia acmon)</i>	5	<i>White Checkered-Skipper (Pyrgus albescens)</i>	
<i>Marine Blue (Leptotes marina)</i>		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		unidentified butterfly	
<i>Behr's Metalmark (Apodemia virgulti)</i>		<i>Propertius Duskywing (Erynnis propertius)</i>	1
<i>Wright's Metalmark (Calephelis wrighti)</i>		<i>Clemence's Blue (Icaricia monticola)</i>	1
Column Subtotal		33	Column Subtotal
			6
			Total
			39

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Ian Hirschler Date: March 30, 2020

Site Name: Dam Maintenance Program – El Capitan Dam Site Visit No: 5 (make-up)

Area(s) Surveyed El Capitan Dam Acres Surveyed 49.3 Survey Time: 5.0 Acres per Hour: 9.86

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1020	61.1	1-4	0
End	1520	73.1	4-9	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub (including disturbed), coastal sage-chaparral scrub, southern mixed chaparral, non-native grassland, non-native vegetation, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
<i>Pale Swallowtail (Papilio eurymedon)</i>		Subfamily Nymphalinae (True Brushfoots)	
<i>Western Tiger Swallowtail (P. rutulus rutulus)</i>	6	<i>Leanira Checkerspot (Chlosyne leanira)</i>	
<i>Anise Swallowtail (P. zelicaon)</i>		<i>California Patch (C. californica)</i>	
Family Pieridae (Whites and Sulphurs)		<i>Gabb's Checkerspot (C. gabbii gabbii)</i>	
<i>Sleepy Orange (Abaeis nicippe)</i>		<i>Chalcedon Checkerspot (Euphydryas chalcedona)</i>	
<i>Desert Orangetip (Anthocharis cethura)</i>		<i>Quino Checkerspot (E. editha quino)</i>	
<i>Pacific Sara Orangetip (A. sara sara)</i>	6	<i>Common Buckeye (Junonia coenia grisea)</i>	7
<i>Orange Sulphur (Colias eurytheme)</i>		<i>Mourning Cloak (Nymphalis antiopa antiopa)</i>	
<i>Cloudless Sulphur (Phoebis sennae)</i>		<i>California Tortoiseshell (N. californica californica)</i>	
<i>Cabbage White (Pieris rapae)</i>		<i>Mylitta Crescent (Phyciodes mylitta)</i>	
<i>Becker's White (Pontia beckerii)</i>		<i>West Coast Lady (Vanessa annabella)</i>	
<i>Checkered (Common) White (P. protodice)</i>		<i>Red Admiral (V. atalanta rubria)</i>	
<i>Spring White (P. sisymbrii)</i>		<i>Painted Lady (V. cardui)</i>	15
unidentified white		<i>American (Virginia) Lady (V. virginensis)</i>	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		<i>California Sister (Adelpha californica)</i>	
<i>Great Purple Hairstreak (Atlides halesus corcorani)</i>		<i>Lorquin's Admiral (Limenitis lorquini)</i>	
<i>Western Brown Elfin (Callophrys augustinus iroides)</i>		Subfamily Satyrinae (Satyrs)	
<i>Bramble (Perplexing) Hairstreak (C. dumetorum perplexa)</i>		<i>California Common Ringlet (Coenonympha tullia californica)</i>	
<i>Gray Hairstreak (Strymon melinus pudica)</i>		Subfamily Danainae (Monarchs)	
Subfamily Polyommatainae (Blues)		<i>Monarch (Danaus plexippus plexippus)</i>	
<i>Western Pygmy-Blue (Brephidium exilis)</i>		<i>Queen (Danaus gilippus thersippus)</i>	
<i>Western Tailed Blue (Cupido amyntula amyntula)</i>		Family Hesperidae (Skippers)	
<i>Bernardino Blue (Euphilotes bernardino)</i>		<i>Funereal Duskywing (Erynnis funeralis)</i>	
<i>Southern California Silvery Blue (Glaucopsyche lygdamus australis)</i>	5	<i>Mournful Duskywing (E. tristis tristis)</i>	
<i>Ceraunus (Edward's) Blue (Hemiargus ceraunus gyas)</i>		<i>Fiery Skipper (Hylephila phyleus)</i>	
<i>Acon Blue (Icaricia acmon)</i>		<i>White Checkered-Skipper (Pyrgus albescens)</i>	
<i>Marine Blue (Leptotes marina)</i>		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		unidentified butterfly	
<i>Behr's Metalmark (Apodemia virgulti)</i>	2		
<i>Wright's Metalmark (Calephelis wrighti)</i>			
Column Subtotal		19	24
		Total	
		43	

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Chris Thomson Date: April 1, 2020

Site Name: Dam Maintenance Program – El Capitan Dam Site Visit No: 6 (make-up)

Area(s) Surveyed El Capitan Dam Acres Surveyed 49.3 Survey Time: 5.92 Acres per Hour: 8.33

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	0955	64.5	2-5	25
End	1550	66.1	1-4	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub (including disturbed), coastal sage-chaparral scrub, southern mixed chaparral, non-native grassland, non-native vegetation, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	3	Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)	2	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	15	Common Buckeye (<i>Junonia coenia grisea</i>)	3
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	27
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	1
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatainae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	4
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	6	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acon Blue (<i>Icaricia acmon</i>)	3	White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		unidentified butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)		Southern Dogface (<i>Zerene cesonia cesonia</i>)	1
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		29	Column Subtotal
			36
			Total
			65

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Chris Thomson Date: April 4, 2020

Site Name: Dam Maintenance Program – El Capitan Dam Site Visit No: 7

Area(s) Surveyed El Capitan Dam Acres Surveyed 49.3 Survey Time: 5.00 Acres per Hour: 9.86

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1105	64.2	1-4	15
End	1605	66.1	2-6	20
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub (including disturbed), coastal sage-chaparral scrub, southern mixed chaparral, non-native grassland, non-native vegetation, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	2	Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)	2	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	4	Common Buckeye (<i>Junonia coenia grisea</i>)	14
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	62
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatainae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)	4	Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	6
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	4	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		unidentified butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	1	Southern Dogface (<i>Zerene cesonia cesonia</i>)	2
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		17	Column Subtotal
			84
		Total	
			101

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Chris Thomson Date: April 15, 2020

Site Name: Dam Maintenance Program – El Capitan Dam Site Visit No: 8 (make-up)

Area(s) Surveyed El Capitan Dam Acres Surveyed 49.3 Survey Time: 6.00 Acres per Hour: 8.22

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1030	69.3	1-3	0
End	1630	68.4	3-9	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub (including disturbed), coastal sage-chaparral scrub, southern mixed chaparral, non-native grassland, non-native vegetation, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.	
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)		
Pale Swallowtail (<i>Papilio eurymedon</i>)	2	Subfamily Nymphalinae (True Brushfoots)		
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)	1	Leanira Checkerspot (<i>Chlosyne leanira</i>)		
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)		
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)		
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)		
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)		
Pacific Sara Orangetip (<i>A. sara sara</i>)	24	Common Buckeye (<i>Junonia coenia grisea</i>)	3	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	1	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)		
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)		
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)		
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)		
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	17	
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)		
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)		
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)		
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)		
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)		
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)		
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)		
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)		
Subfamily Polyommatainae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)		
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)		
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)	5	Family Hesperidae (Skippers)		
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	1	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)		
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)		
Acon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)		
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper		
unidentified blue		Other		
Family Riodinidae (Metalmarks)		unidentified butterfly		
Behr's Metalmark (<i>Apodemia virgulti</i>)	2	Echo Azure (<i>Celastrina echo echo</i>)	3	
Wright's Metalmark (<i>Calephelis wrighti</i>)		Southern Dogface (<i>Zerene cesonia cesonia</i>)	1	
Column Subtotal		34	Column Subtotal	
			26	
			Total	
			60	

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Chris Thomson, Brenda Bennett Date: April 17, 2020

Site Name: Dam Maintenance Program – El Capitan Dam Site Visit No: 9

Area(s) Surveyed El Capitan Dam Acres Surveyed 49.3 Survey Time: 3.00 Acres per Hour: 8.22

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1100	63	4-6	25
End	1400	73	3-7	40
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub (including disturbed), coastal sage-chaparral scrub, southern mixed chaparral, non-native grassland, non-native vegetation, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	1	Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	5	Common Buckeye (<i>Junonia coenia grisea</i>)	1
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	1
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatainae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)	5	Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	4
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	2	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		unidentified butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)			
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		15	6
		Total	
			21

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Melanie Rocks Date: April 22, 2020

Site Name: Dam Maintenance Program – El Capitan Dam Site Visit No: 10

Area(s) Surveyed El Capitan Dam Acres Surveyed 49.3 Survey Time: 6.17 Acres per Hour: 7.99

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	0920	64	0-2	0
End	1530	81	3-6	5
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub (including disturbed), coastal sage-chaparral scrub, southern mixed chaparral, non-native grassland, non-native vegetation, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) <input checked="" type="radio"/> Yes <input type="radio"/> No		New Area or Existing Area (circle) <input checked="" type="radio"/> New <input type="radio"/> Existing <input type="radio"/> Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
<i>Pale Swallowtail (Papilio eurymedon)</i>		Subfamily Nymphalinae (True Brushfoots)	
<i>Western Tiger Swallowtail (P. rutulus rutulus)</i>	1	<i>Leanira Checkerspot (Chlosyne leanira)</i>	
<i>Anise Swallowtail (P. zelicaon)</i>		<i>California Patch (C. californica)</i>	
Family Pieridae (Whites and Sulphurs)		<i>Gabb's Checkerspot (C. gabbii gabbii)</i>	
<i>Sleepy Orange (Abaeis nicippe)</i>		<i>Chalcedon Checkerspot (Euphydryas chalcedona)</i>	
<i>Desert Orangetip (Anthocharis cethura)</i>		<i>Quino Checkerspot (E. editha quino)</i>	
<i>Pacific Sara Orangetip (A. sara sara)</i>	13	<i>Common Buckeye (Junonia coenia grisea)</i>	3
<i>Orange Sulphur (Colias eurytheme)</i>		<i>Mourning Cloak (Nymphalis antiopa antiopa)</i>	
<i>Cloudless Sulphur (Phoebis sennae)</i>		<i>California Tortoiseshell (N. californica californica)</i>	
<i>Cabbage White (Pieris rapae)</i>		<i>Mylitta Crescent (Phyciodes mylitta)</i>	
<i>Becker's White (Pontia beckerii)</i>		<i>West Coast Lady (Vanessa annabella)</i>	1
<i>Checkered (Common) White (P. protodice)</i>	1	<i>Red Admiral (V. atalanta rubria)</i>	
<i>Spring White (P. sisymbrii)</i>		<i>Painted Lady (V. cardui)</i>	
unidentified white		<i>American (Virginia) Lady (V. virginensis)</i>	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	2
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		<i>California Sister (Adelpha californica)</i>	
<i>Great Purple Hairstreak (Atlides halesus corcorani)</i>		<i>Lorquin's Admiral (Limenitis lorquini)</i>	
<i>Western Brown Elfin (Callophrys augustinus iroides)</i>		Subfamily Satyrinae (Satyrs)	
<i>Bramble (Perplexing) Hairstreak (C. dumetorum perplexa)</i>		<i>California Common Ringlet (Coenonympha tullia californica)</i>	
<i>Gray Hairstreak (Strymon melinus pudica)</i>		Subfamily Danainae (Monarchs)	
Subfamily Polyommatae (Blues)		<i>Monarch (Danaus plexippus plexippus)</i>	
<i>Western Pygmy-Blue (Brephidium exilis)</i>		<i>Queen (Danaus gilippus thersippus)</i>	
<i>Western Tailed Blue (Cupido amyntula amyntula)</i>		Family Hesperidae (Skippers)	
<i>Bernardino Blue (Euphilotes bernardino)</i>		<i>Funereal Duskywing (Erynnis funeralis)</i>	
<i>Southern California Silvery Blue (Glaucopsyche lygdamus australis)</i>	3	<i>Mournful Duskywing (E. tristis tristis)</i>	
<i>Ceraunus (Edward's) Blue (Hemiargus ceraunus gyas)</i>		<i>Fiery Skipper (Hylephila phyleus)</i>	
<i>Acon Blue (Icaricia acmon)</i>	2	<i>White Checkered-Skipper (Pyrgus albescens)</i>	
<i>Marine Blue (Leptotes marina)</i>		unidentified skipper	
unidentified blue	5	Other	
Family Riodinidae (Metalmarks)		<i>unidentified butterfly</i>	
<i>Behr's Metalmark (Apodemia virgulti)</i>	5		
<i>Wright's Metalmark (Calephelis wrighti)</i>			
Column Subtotal		30	Column Subtotal
			6
		Total	
			36

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Ian Hirschler Date: April 30, 2020

Site Name: Dam Maintenance Program – El Capitan Dam Site Visit No: 11

Area(s) Surveyed El Capitan Dam Acres Surveyed 49.3 Survey Time: 6 Acres per Hour: 8.22

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	0945	70.1	1-4	100
End	1545	81.4	4-9	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub (including disturbed), coastal sage-chaparral scrub, southern mixed chaparral, non-native grassland, non-native vegetation, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New Existing Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.	
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)		
<i>Pale Swallowtail (Papilio eurymedon)</i>		Subfamily Nymphalinae (True Brushfoots)		
<i>Western Tiger Swallowtail (P. rutulus rutulus)</i>	3	<i>Leanira Checkerspot (Chlosyne leanira)</i>		
<i>Anise Swallowtail (P. zelicaon)</i>		<i>California Patch (C. californica)</i>		
Family Pieridae (Whites and Sulphurs)		<i>Gabb's Checkerspot (C. gabbii gabbii)</i>		
<i>Sleepy Orange (Abaeis nicippe)</i>		<i>Chalcedon Checkerspot (Euphydryas chalcedona)</i>		
<i>Desert Orangetip (Anthocharis cethura)</i>		<i>Quino Checkerspot (E. editha quino)</i>		
<i>Pacific Sara Orangetip (A. sara sara)</i>	30	<i>Common Buckeye (Junonia coenia grisea)</i>	3	
<i>Orange Sulphur (Colias eurytheme)</i>		<i>Mourning Cloak (Nymphalis antiopa antiopa)</i>		
<i>Cloudless Sulphur (Phoebis sennae)</i>		<i>California Tortoiseshell (N. californica californica)</i>		
<i>Cabbage White (Pieris rapae)</i>		<i>Mylitta Crescent (Phyciodes mylitta)</i>		
<i>Becker's White (Pontia beckerii)</i>		<i>West Coast Lady (Vanessa annabella)</i>		
<i>Checkered (Common) White (P. protodice)</i>	8	<i>Red Admiral (V. atalanta rubria)</i>	1	
<i>Spring White (P. sisymbrii)</i>		<i>Painted Lady (V. cardui)</i>		
unidentified white		<i>American (Virginia) Lady (V. virginensis)</i>		
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)		
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)		
Subfamily Theclinae (Hairstreaks)		<i>California Sister (Adelpha californica)</i>	1	
<i>Great Purple Hairstreak (Atlides halesus corcorani)</i>		<i>Lorquin's Admiral (Limenitis lorquini)</i>		
<i>Western Brown Elfin (Callophrys augustinus iroides)</i>		Subfamily Satyrinae (Satyrs)		
<i>Bramble (Perplexing) Hairstreak (C. dumetorum perplexa)</i>		<i>California Common Ringlet (Coenonympha tullia californica)</i>		
<i>Gray Hairstreak (Strymon melinus pudica)</i>		Subfamily Danainae (Monarchs)		
Subfamily Polyommatainae (Blues)		<i>Monarch (Danaus plexippus plexippus)</i>		
<i>Western Pygmy-Blue (Brephidium exilis)</i>		<i>Queen (Danaus gilippus thersippus)</i>		
<i>Western Tailed Blue (Cupido amyntula amyntula)</i>		Family Hesperidae (Skippers)		
<i>Bernardino Blue (Euphilotes bernardino)</i>		<i>Funereal Duskywing (Erynnis funeralis)</i>	3	
<i>Southern California Silvery Blue (Glaucopsyche lygdamus australis)</i>	5	<i>Mournful Duskywing (E. tristis tristis)</i>		
<i>Ceraunus (Edward's) Blue (Hemiargus ceraunus gyas)</i>		<i>Fiery Skipper (Hylephila phyleus)</i>		
<i>Acon Blue (Icaricia acmon)</i>		<i>White Checkered-Skipper (Pyrgus albescens)</i>		
<i>Marine Blue (Leptotes marina)</i>		unidentified skipper		
unidentified blue		Other		
Family Riodinidae (Metalmarks)		<i>Echo Azure (Celastrina echo echo)</i>	3	
<i>Behr's Metalmark (Apodemia virgulti)</i>	3	<i>Harford's Sulphur (Colias harfordii)</i>	2	
<i>Wright's Metalmark (Calephelis wrighti)</i>		<i>Clemence's Blue (Icaricia monticola)</i>	5	
		<i>Propertius Duskywing (Erynnis propertius)</i>	1	
Column Subtotal		49	Column Subtotal	
			19	
			Total	
			68	

Morena Dam

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Brenda Bennett, Ian Hirschler, Ryan Meszaros Date: February 20, 2020

Site Name: Dam Maintenance Program – Morena Dam Site Visit No: 1

Area(s) Surveyed Morena Dam Acres Surveyed 9.60 Survey Time: 2.0 Acres per Hour: 1.60

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1000	63.1	4-8	30
End	1200	68.6	2-6	40
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Northern mixed chaparral, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)		onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
<i>Pale Swallowtail (Papilio eurymedon)</i>		Subfamily Nymphalinae (True Brushfoots)	
<i>Western Tiger Swallowtail (P. rutulus rutulus)</i>		<i>Leanira Checkerspot (Chlosyne leanira)</i>	
<i>Anise Swallowtail (P. zelicaon)</i>		<i>California Patch (C. californica)</i>	
Family Pieridae (Whites and Sulphurs)		<i>Gabb's Checkerspot (C. gabbii gabbii)</i>	
<i>Sleepy Orange (Abaeis nicippe)</i>		<i>Chalcedon Checkerspot (Euphydryas chalcedona)</i>	
<i>Desert Orangetip (Anthocharis cethura)</i>		<i>Quino Checkerspot (E. editha quino)</i>	
<i>Pacific Sara Orangetip (A. sara sara)</i>	32	<i>Common Buckeye (Junonia coenia grisea)</i>	1
<i>Orange Sulphur (Colias eurytheme)</i>		<i>Mourning Cloak (Nymphalis antiopa antiopa)</i>	
<i>Cloudless Sulphur (Phoebis sennae)</i>		<i>California Tortoiseshell (N. californica californica)</i>	
<i>Cabbage White (Pieris rapae)</i>		<i>Mylitta Crescent (Phyciodes mylitta)</i>	
<i>Becker's White (Pontia beckerii)</i>		<i>West Coast Lady (Vanessa annabella)</i>	
<i>Checkered (Common) White (P. protodice)</i>		<i>Red Admiral (V. atalanta rubria)</i>	
<i>Spring White (P. sisymbrii)</i>		<i>Painted Lady (V. cardui)</i>	1
unidentified white		<i>American (Virginia) Lady (V. virginiensis)</i>	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		<i>California Sister (Adelpha californica)</i>	
<i>Great Purple Hairstreak (Atlides halesus corcorani)</i>		<i>Lorquin's Admiral (Limenitis lorquini)</i>	
<i>Western Brown Elfin (Callophrys augustinus iroides)</i>		Subfamily Satyrinae (Satyrs)	
<i>Bramble (Perplexing) Hairstreak (C. dumetorum perplexa)</i>		<i>California Common Ringlet (Coenonympha tullia californica)</i>	
<i>Gray Hairstreak (Strymon melinus pudica)</i>		Subfamily Danainae (Monarchs)	
Subfamily Polyommatainae (Blues)		<i>Monarch (Danaus plexippus plexippus)</i>	
<i>Western Pygmy-Blue (Brepidium exilis)</i>		<i>Queen (Danaus gilippus thersippus)</i>	
<i>Western Tailed Blue (Cupido amyntula amyntula)</i>		Family Hesperidae (Skippers)	
<i>Bernardino Blue (Euphilotes bernardino)</i>		<i>Funereal Duskywing (Erynnis funeralis)</i>	1
<i>Southern California Silvery Blue (Glaucopsyche lygdamus australis)</i>	1	<i>Mournful Duskywing (E. tristis tristis)</i>	
<i>Ceraunus (Edward's) Blue (Hemiargus ceraunus gyas)</i>		<i>Fiery Skipper (Hylephila phyleus)</i>	
<i>Acmon Blue (Icaricia acmon)</i>	5	<i>White Checkered-Skipper (Pyrgus albescens)</i>	
<i>Marine Blue (Leptotes marina)</i>		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		unidentified butterfly	
<i>Behr's Metalmark (Apodemia virgulti)</i>	2	<i>Sonoran Blue (Philotes sonorensis)</i>	19
<i>Wright's Metalmark (Calephelis wrighti)</i>			
Column Subtotal		40	Column Subtotal
			22
			Total
			62

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Brenda Bennett, Ian Hirschler Date: February 28, 2020

Site Name: Dam Maintenance Program – Morena Dam Site Visit No: 2

Area(s) Surveyed Morena Dam Acres Surveyed 9.60 Survey Time: 1.75 Acres per Hour: 2.74

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1000	66	8-12	30
End	1145	69	1-4	20
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Northern mixed chaparral, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)		onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)	X	goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) <u>Yes</u> No		New Area or Existing Area (circle) <u>New</u> Existing Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
<i>Pale Swallowtail (Papilio eurymedon)</i>		Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)	19	Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	30	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	1
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	2
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	3
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	1
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)	8	California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatainae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	1
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	3	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Harford's Sulphur (<i>Colias harfordii</i>)	2
Behr's Metalmark (<i>Apodemia virgulti</i>)	1	Sonoran Blue (<i>Philotes sonorensis</i>)	2
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	51	Column Subtotal	12
			Total
			63

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Ian Hirschler Date: March 6, 2020

Site Name: Dam Maintenance Program – Morena Dam Site Visit No: 3

Area(s) Surveyed Morena Dam Acres Surveyed 9.60 Survey Time: 1.75 Acres per Hour: 5.49

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	0940	60.5	0-2	0
End	1125	67.5	3-8	5
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Northern mixed chaparral, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)		onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	8	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	4
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	3
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatainae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	1	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Clemence's Blue (<i>Icaricia monticola</i>)	
Behr's Metalmark (<i>Apodemia virgulti</i>)	2		3
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		11	12
		Total	
			23

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Chris Thomson Date: March 30, 2020

Site Name: Dam Maintenance Program – Morena Dam Site Visit No: 4 (make up)

Area(s) Surveyed Morena Dam Acres Surveyed 9.60 Survey Time: 1.83 Acres per Hour: 5.25

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1505	67.6	3-8	5
End	1655	64.0	5-9	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
 Northern mixed chaparral, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)		onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)	X	goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) <u>Yes</u> No		New Area or Existing Area (circle) New <u>Existing</u> Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
<i>Pale Swallowtail (Papilio eurymedon)</i>		Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	11	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)	1	Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	12
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	3
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	1	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Unidentified butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)			
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	13	Column Subtotal	15
		Total	28

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Ryan Meszaros Date: April 2, 2020

Site Name: Dam Maintenance Program – Morena Dam Site Visit No: 5 (make up)

Area(s) Surveyed Morena Dam Acres Surveyed 9.60 Survey Time: 1.5 Acres per Hour: 6.40

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1500	73.6	5-9	0
End	1630	74.8	8-12	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Northern mixed chaparral, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)		onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Brushfoots)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Limenitidinae (Admirals and Relatives)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	1	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	8
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Danainae (Monarchs)	
Subfamily Theclinae (Hairstreaks)		Family Hesperidae (Skippers)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		Family Hesperidae (Skippers)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	3
Subfamily Polyommatae (Blues)		Family Hesperidae (Skippers)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		unidentified skipper	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Other	
Acmon Blue (<i>Icaricia acmon</i>)		Clemence's Blue (<i>Icaricia monticola</i>)	1
Marine Blue (<i>Leptotes marina</i>)		Propertius Duskywing (<i>Erynnis propertius</i>)	1
unidentified blue			
Family Riodinidae (Metalmarks)			
Behr's Metalmark (<i>Apodemia virgulti</i>)			
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	1	Column Subtotal	10
			Total
			11

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Ryan Meszaros Date: April 4, 2020

Site Name: Dam Maintenance Program – Morena Dam Site Visit No: 6 (make up)

Area(s) Surveyed Morena Dam Acres Surveyed 9.60 Survey Time: 1.5 Acres per Hour: 6.40

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1425	68.5	5-9	10
End	1555	69.9	6-10	20
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Northern mixed chaparral, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)		onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
<i>Pale Swallowtail (Papilio eurymedon)</i>		Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	6	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	7
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatainae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	1
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Clemence's Blue (<i>Icaricia monticola</i>)	1
Behr's Metalmark (<i>Apodemia virgulti</i>)			
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	6	Column Subtotal	9
			Total
			15

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Ryan Meszaros Date: April 14, 2020

Site Name: Dam Maintenance Program – Morena Dam Site Visit No: 7 (make up)

Area(s) Surveyed Morena Dam Acres Surveyed 9.60 Survey Time: 1.75 Acres per Hour: 5.49

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1345	71.6	2-9	0
End	1530	79.9	1-3	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Northern mixed chaparral, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)		onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Brushfoots)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Limenitidinae (Admirals and Relatives)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	1	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	15
unidentified white		American (Virginia) Lady (<i>V. virginiensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Danainae (Monarchs)	
Subfamily Theclinae (Hairstreaks)		Family Hesperidae (Skippers)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		California Sister (<i>Adelpha californica</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)	1	Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		Subfamily Satyrinae (Satyrs)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Subfamily Polyommatae (Blues)		Subfamily Danainae (Monarchs)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Family Hesperidae (Skippers)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Marine Blue (<i>Leptotes marina</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
unidentified blue		unidentified skipper	
Family Riodinidae (Metalmarks)		Other	
		Clemence's Blue (<i>Icaricia monticola</i>)	2
Behr's Metalmark (<i>Apodemia virgulti</i>)			
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	1	Column Subtotal	17
			Total
			19

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Ian Hirschler **Date:** April 16, 2020
Site Name: Dam Maintenance Program – Morena Dam **Site Visit No:** 8 (make-up)
Area(s) Surveyed Morena Dam **Acres Surveyed** 9.60 **Survey Time:** 1.5 **Acres per Hour:** 6.40
Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1000	63.4	2-6	0
End	1130	68.1	3-9	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
 Northern mixed chaparral, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)		onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Brushfoots)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Pierinae (Whites and Sulphurs)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	2	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	1
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	3
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		Subfamily Limenitidinae (Admirals and Relatives)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		California Sister (<i>Adelpha californica</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		Subfamily Satyrinae (Satyrs)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Subfamily Polyommatae (Blues)		Subfamily Danainae (Monarchs)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Family Hesperidae (Skippers)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Marine Blue (<i>Leptotes marina</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
unidentified blue		unidentified skipper	
Family Riodinidae (Metalmarks)		Other	
Behr's Metalmark (<i>Apodemia virgulti</i>)		Harford's Sulphur (<i>Colias harfordii</i>)	
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		2	Column Subtotal
			7
			Total
			9

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Chris Thomson **Date:** April 21, 2020
Site Name: Dam Maintenance Program – Morena Dam **Site Visit No:** 9 (make-up)
Area(s) Surveyed Morena Dam **Acres Surveyed** 9.60 **Survey Time:** 1.75 **Acres per Hour:** 5.49
Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1400	60.4	4-9	15
End	1545	60.8	5-10	20
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
 Northern mixed chaparral, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)		onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)	X	goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Butterflies)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	1	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Chrysochlorinae (Checkerspot and Sulphur)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	6	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	11
unidentified white		American (Virginia) Lady (<i>V. virginiensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)	1	Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Harford's Sulphur (<i>Colias harfordii</i>)	
Behr's Metalmark (<i>Apodemia virgulti</i>)			1
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	8	Column Subtotal	13
		Total	21

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Chris Thomson Date: April 23, 2020

Site Name: Dam Maintenance Program – Morena Dam Site Visit No: 10

Area(s) Surveyed Morena Dam Acres Surveyed 9.60 Survey Time: 1.75 Acres per Hour: 5.49

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1545	82.1	3-7	0
End	1730	79.8	5-8	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Northern mixed chaparral, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)		onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)	X	goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Brushfoots)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	1	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Limenitidinae (Admirals and Relatives)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	9	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	2
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Satyrinae (Satyrs)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Danainae (Monarchs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Polyommatae (Blues)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)	1	White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)			
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	11	Column Subtotal	5
		Total	16

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Ian Hirschler Date: April 29, 2020

Site Name: Dam Maintenance Program – Morena Dam Site Visit No: 11

Area(s) Surveyed Morena Dam Acres Surveyed 9.60 Survey Time: 1.5 Acres per Hour: 6.40

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1015	80.2	1-4	5
End	1145	83.3	3-7	15
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Northern mixed chaparral, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)		onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Butterflies)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	1	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	1
Family Pieridae (Whites and Sulphurs)		Subfamily Chlosyninae (Checkerspot and Relatives)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	2	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)	1	Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)	2	Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	
unidentified white		American (Virginia) Lady (<i>V. virginiensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Harford's Sulphur (<i>Colias harfordii</i>)	
Behr's Metalmark (<i>Apodemia virgulti</i>)			3
Wright's Metalmark (<i>Calephelis wrighti</i>)	1		
Column Subtotal	7	Column Subtotal	7
			Total
			14

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Chris Thomson Date: May 6, 2020

Site Name: Dam Maintenance Program – Morena Dam Site Visit No: 12

Area(s) Surveyed Morena Dam Acres Surveyed 9.60 Survey Time: 1.75 Acres per Hour: 5.49

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1410	86.8	3-8	0
End	1555	88.4	3-8	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Northern mixed chaparral, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)		onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)	X	goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Butterflies)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	1	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)	2	California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Limenitidinae (Admirals and Relatives)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	1	Common Buckeye (<i>Junonia coenia grisea</i>)	5
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	3
unidentified white		American (Virginia) Lady (<i>V. virginiensis</i>)	1
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Satyrinae (Satyrs)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Danainae (Monarchs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Polyommatae (Blues)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)	4	White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)	3	unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Unidentified butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	6		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	17	Column Subtotal	15
		Total	32

San Vicente Dam

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Ian Hirschler Date: February 18, 2020

Site Name: Dam Maintenance Program – San Vicente Dam Site Visit No: 1

Area(s) Surveyed San Vicente Dam Acres Surveyed 40.0 Survey Time: 4.5 Acres per Hour: 8.89

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1030	64.0	1-2	35
End	1500	74.7	1-5	10
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub, chamise chaparral, non-native vegetation disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Swallowtails)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	2	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Limenitidinae (Admirals and Relatives)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	11	Common Buckeye (<i>Junonia coenia grisea</i>)	5
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	3
unidentified white		American (Virginia) Lady (<i>V. virginiensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Satyrinae (Satyrs)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Danainae (Monarchs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)	1	California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Polyommatae (Blues)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	6	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		unidentified butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	2		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	22	Column Subtotal	12
			Total
			34

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Brenda Bennett Date: February 24, 2020

Site Name: Dam Maintenance Program – San Vicente Dam Site Visit No: 2

Area(s) Surveyed San Vicente Dam Acres Surveyed 40.0 Survey Time: 4.5 Acres per Hour: 8.89

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1030	64.5	1-3	0
End	1500	68.7	2-5	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, chamise chaparral, non-native vegetation disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	21	Common Buckeye (<i>Junonia coenia grisea</i>)	1
Orange Sulphur (<i>Colias eurytheme</i>)	1	Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	7
unidentified white		American (Virginia) Lady (<i>V. virginiensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)	15	California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatainae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	15	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)	1	White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		unidentified butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	5		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	58	Column Subtotal	14
		Total	72

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Ian Hirschler, Ryan Mezsaros Date: March 4, 2020

Site Name: Dam Maintenance Program – San Vicente Dam Site Visit No: 3

Area(s) Surveyed San Vicente Dam Acres Surveyed 40.0 Survey Time: 3.75 Acres per Hour: 5.33

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	0925	63.9	1-3	0
End	1310	77.2	4-8	5
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, chamise chaparral, non-native vegetation disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) <input checked="" type="radio"/> Yes <input type="radio"/> No		New Area or Existing Area (circle) <input checked="" type="radio"/> New <input type="radio"/> Existing <input type="radio"/> Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)	1	Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	20	Common Buckeye (<i>Junonia coenia grisea</i>)	3
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	1
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	2
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	9
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)	3	Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)	20	California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatainae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	30	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)	2	White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		unidentified butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	13		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	79	Column Subtotal	28
			Total
			107

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Ian Hirschler, Chris Thomson Date: March 9, 2020

Site Name: Dam Maintenance Program – San Vicente Dam Site Visit No: 4

Area(s) Surveyed San Vicente Dam Acres Surveyed 40.0 Survey Time: 3.00 Acres per Hour: 6.67

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1045	62.0	1-3	10
End	1345	67.4	2-5	10
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, chamise chaparral, non-native vegetation disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Brushfoots)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	1	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Limenitidinae (Admirals and Relatives)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)	1	Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	5	Common Buckeye (<i>Junonia coenia grisea</i>)	5
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	1
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	3
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Satyrinae (Satyrs)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Danainae (Monarchs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)	5	California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Polyommatae (Blues)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	6	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)	1	unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		unidentified butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	3		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	22	Column Subtotal	13
		Total	35

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Ian Hirschler, Chris Thomson, Ryan Mezsaros Date: March 21, 2020

Site Name: Dam Maintenance Program – San Vicente Dam Site Visit No: 5

Area(s) Surveyed San Vicente Dam Acres Surveyed 40.0 Survey Time: 2.00 Acres per Hour: 6.67

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1350	64.0	0-2	40
End	1550	70.2	1-4	50
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, chamise chaparral, non-native vegetation disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
<i>Pale Swallowtail (Papilio eurymedon)</i>		Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)	5	Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)		Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	1
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	18
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatainae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	4	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Echo Azure (<i>Celastrina echo echo</i>)	
Behr's Metalmark (<i>Apodemia virgulti</i>)	1	Northern White-Skipper (<i>Heliopetes ericetorum</i>)	
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		10	Column Subtotal
			24
		Total	
			34

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Ian Hirschler, Ryan Mezsaros Date: March 27, 2020

Site Name: Dam Maintenance Program – San Vicente Dam Site Visit No: 6

Area(s) Surveyed San Vicente Dam Acres Surveyed 40.0 Survey Time: 3.00 Acres per Hour: 6.67

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1245	68.8	2-6	20
End	1545	69.8	3-9	5
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub, chamise chaparral, non-native vegetation disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Swallowtails)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Pierinae (Whites and Sulphurs)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	9	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	2
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	4
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	45
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		Subfamily Lycaeninae (Admirals and Relatives)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		California Sister (<i>Adelpha californica</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		Subfamily Satyrinae (Satyrs)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Subfamily Polyommatae (Blues)		Subfamily Danainae (Monarchs)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Family Hesperidae (Skippers)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	3	Funereal Duskywing (<i>Erynnis funeralis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Marine Blue (<i>Leptotes marina</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
unidentified blue		unidentified skipper	
Family Riodinidae (Metalmarks)		Other	
Behr's Metalmark (<i>Apodemia virgulti</i>)		Unidentified Butterfly	
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		12	Column Subtotal
			63
			Total
			75

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Chris Thomson Date: March 31, 2020

Site Name: Dam Maintenance Program – San Vicente Dam Site Visit No: 7

Area(s) Surveyed San Vicente Dam Acres Surveyed 40.0 Survey Time: 6.00 Acres per Hour: 6.67

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1150	70.1	0-2	90 (hazy)
End	1750	70.4	1-4	100 (hazy)
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub, chamise chaparral, non-native vegetation disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
<i>Pale Swallowtail (Papilio eurymedon)</i>		Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	1
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	14	Common Buckeye (<i>Junonia coenia grisea</i>)	2
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	22
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatainae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	12
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	1	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	2		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	17	Column Subtotal	37
			Total
			54

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Ryan Mezsaros **Date:** April 15, 2020
Site Name: Dam Maintenance Program – San Vicente Dam **Site Visit No:** 8 (make-up)
Area(s) Surveyed San Vicente Dam **Acres Surveyed** 40.0 **Survey Time:** 5.00 **Acres per Hour:** 8.00
Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	0830	64.9	1-5	0
End	1330	79.7	1-3	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub, chamise chaparral, non-native vegetation disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	X
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Swallowtails)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	2
Family Pieridae (Whites and Sulphurs)		Subfamily Chrysochlorinae (Checkerspot and Sulphur)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	25	Common Buckeye (<i>Junonia coenia grisea</i>)	5
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	2
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	13
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		Subfamily Satyrinae (Satyrs)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		California Sister (<i>Adelpha californica</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		Subfamily Danainae (Monarchs)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Monarch (<i>Danaus plexippus plexippus</i>)	
Subfamily Polyommatae (Blues)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Family Hesperidae (Skippers)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	7
Bernardino Blue (<i>Euphilotes bernardino</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	2	Fiery Skipper (<i>Hylephila phyleus</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		unidentified skipper	
Marine Blue (<i>Leptotes marina</i>)		Other	
unidentified blue		Echo Azure (<i>Celastrina echo echo</i>)	1
Family Riodinidae (Metalmarks)			
Behr's Metalmark (<i>Apodemia virgulti</i>)	1		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	28	Column Subtotal	30
			Total
			58

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Ryan Mezsaros **Date:** April 23, 2020
Site Name: Dam Maintenance Program – San Vicente Dam **Site Visit No:** 9 (make-up)
Area(s) Surveyed San Vicente Dam **Acres Surveyed** 40.0 **Survey Time:** 5.00 **Acres per Hour:** 8.00
Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	0900	72	0-2	0
End	1400	84	0-2	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub, chamise chaparral, non-native vegetation disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	X
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Brushfoots)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	2	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Limenitidinae (Admirals and Relatives)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	24	Common Buckeye (<i>Junonia coenia grisea</i>)	2
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)	1	California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)	2	Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	9
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Satyrinae (Satyrs)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Danainae (Monarchs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Polyommatae (Blues)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Echo Azure (<i>Celastrina echo echo</i>)	
Behr's Metalmark (<i>Apodemia virgulti</i>)	1		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	30	Column Subtotal	17
			Total
			47

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Chris Thomson Date: April 25, 2020

Site Name: Dam Maintenance Program – San Vicente Dam Site Visit No: 10

Area(s) Surveyed San Vicente Dam Acres Surveyed 40.0 Survey Time: 6.00 Acres per Hour: 6.67

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	0830	68.1	1-3	0
End	1430	91.7	2-4	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, chamise chaparral, non-native vegetation disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	X
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	X
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	X
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	1
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	16	Common Buckeye (<i>Junonia coenia grisea</i>)	2
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)	4	Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	9
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	1
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)	1	Funereal Duskywing (<i>Erynnis funeralis</i>)	3
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)	4	White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)	2	unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Unidentified butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	2		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		29	Column Subtotal
			16
			Total
			45

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Chris Thomson Date: May 1, 2020

Site Name: Dam Maintenance Program – San Vicente Dam Site Visit No: 11

Area(s) Surveyed San Vicente Dam Acres Surveyed 40.0 Survey Time: 6.00 Acres per Hour: 6.67

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	0925	63.5	0-3	40
End	1525	79.8	1-3	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, chamise chaparral, non-native vegetation disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	X
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	X
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	X
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Brushfoots)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	1	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)	1	California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)	1	Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	1
Family Pieridae (Whites and Sulphurs)		Subfamily Limenitidinae (Admirals and Relatives)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	29	Common Buckeye (<i>Junonia coenia grisea</i>)	1
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	4
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)	3	Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	1
unidentified white		American (Virginia) Lady (<i>V. virginiensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Danainae (Monarchs)	
Subfamily Theclinae (Hairstreaks)		Subfamily Satyrinae (Satyrs)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		California Sister (<i>Adelpha californica</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		Subfamily Danainae (Monarchs)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)	1	Monarch (<i>Danaus plexippus plexippus</i>)	
Subfamily Polyommatae (Blues)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Family Hesperidae (Skippers)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	4
Bernardino Blue (<i>Euphilotes bernardino</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		unidentified skipper	
Marine Blue (<i>Leptotes marina</i>)	3	Other	
unidentified blue		Unidentified butterfly	
Family Riodinidae (Metalmarks)			
Behr's Metalmark (<i>Apodemia virgulti</i>)	8		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	47	Column Subtotal	11
			Total
			58

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Chris Thomson Date: May 8, 2020

Site Name: Dam Maintenance Program – San Vicente Dam Site Visit No: 12

Area(s) Surveyed San Vicente Dam Acres Surveyed 40.0 Survey Time: 6.00 Acres per Hour: 6.67

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	0805	62.9	1-5	20
End	1405	80.2	3-7	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub, chamise chaparral, non-native vegetation disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	X
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	X
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	X
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Brushfoots)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	1	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)	2	California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Limenitidinae (Admirals and Relatives)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	22	Common Buckeye (<i>Junonia coenia grisea</i>)	4
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	2
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)	3	Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	
unidentified white		American (Virginia) Lady (<i>V. virginiensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Satyrinae (Satyrs)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Danainae (Monarchs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)	2	California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)	1	Monarch (<i>Danaus plexippus plexippus</i>)	1
Subfamily Polyommatae (Blues)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Family Hesperidae (Skippers)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	6
Bernardino Blue (<i>Euphilotes bernardino</i>)	11	Mournful Duskywing (<i>E. tristis tristis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		unidentified skipper	
Marine Blue (<i>Leptotes marina</i>)	7	Other	
unidentified blue		Unidentified butterfly	
Family Riodinidae (Metalmarks)			
Behr's Metalmark (<i>Apodemia virgulti</i>)	7		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	56	Column Subtotal	13
			Total
			69

Savage Dam

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Ian Hirschler, Ryan Meszaros Date: February 12, 2020

Site Name: Dam Maintenance Program – Savage Dam Site Visit No: 0 (week early)

Area(s) Surveyed Savage Dam Acres Surveyed 24.40 Survey Time: 2.67 Acres per Hour: 4.57

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1020	60.0	1-4	0
End	1300	66.4	1-3	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, non-native grassland, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	15	Common Buckeye (<i>Junonia coenia grisea</i>)	8
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	
unidentified white		American (Virginia) Lady (<i>V. virginiensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Echo Azure (<i>Celastrina echo echo</i>)	
Behr's Metalmark (<i>Apodemia virgulti</i>)			16
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	15	Column Subtotal	24
		Total	39

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Ian Hirschler, Ryan Meszaros Date: February 17, 2020

Site Name: Dam Maintenance Program – Savage Dam Site Visit No: 1

Area(s) Surveyed Savage Dam Acres Surveyed 24.40 Survey Time: 2.25 Acres per Hour: 5.42

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1015	60.4	0-1	0
End	1230	66.3	0-2	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, non-native grassland, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	27	Common Buckeye (<i>Junonia coenia grisea</i>)	7
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	1
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatainae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	44	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Echo Azure (<i>Celastrina echo echo</i>)	
Behr's Metalmark (<i>Apodemia virgulti</i>)	1		3
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	72	Column Subtotal	11
			Total
			83

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Brenda Bennett, Ryan Meszaros Date: February 25, 2020

Site Name: Dam Maintenance Program – Savage Dam Site Visit No: 2

Area(s) Surveyed Savage Dam Acres Surveyed 24.40 Survey Time: 2.25 Acres per Hour: 5.42

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1230	77.2	0-2	0
End	1610	76.4	0-2	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, non-native grassland, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	X
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	X
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Brushfoots)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)	1	California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	1
Family Pieridae (Whites and Sulphurs)		Subfamily Pierinae (Whites and Sulphurs)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	3
Pacific Sara Orangetip (<i>A. sara sara</i>)	20	Common Buckeye (<i>Junonia coenia grisea</i>)	1
Orange Sulphur (<i>Colias eurytheme</i>)	1	Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	1
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)	1	Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	1
unidentified white		American (Virginia) Lady (<i>V. virginiensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		Subfamily Limenitidinae (Admirals and Relatives)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		California Sister (<i>Adelpha californica</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)	2	Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		Subfamily Satyrinae (Satyrs)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Subfamily Polyommatainae (Blues)		Subfamily Danainae (Monarchs)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Family Hesperidae (Skippers)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	60	Funereal Duskywing (<i>Erynnis funeralis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Marine Blue (<i>Leptotes marina</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
unidentified blue		unidentified skipper	
Family Riodinidae (Metalmarks)		Other	
Behr's Metalmark (<i>Apodemia virgulti</i>)		Unidentified Butterfly	
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		88	Column Subtotal
			8
		Total	
			96

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Jim Rocks Date: March 3, 2020

Site Name: Dam Maintenance Program – Savage Dam Site Visit No: 3

Area(s) Surveyed Savage Dam Acres Surveyed 24.40 Survey Time: 4.00 Acres per Hour: 6.37

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	0940	63	0-1	0
End	1330	77	1-3	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub, non-native grassland, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	X
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	X
Host Plant Mapping Updated (circle) <input checked="" type="radio"/> Yes <input type="radio"/> No		New Area or Existing Area (circle) <input checked="" type="radio"/> New <input type="radio"/> Existing <input type="radio"/> Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Brushfoots)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)	1	California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Limenitidinae (Admirals and Relatives)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	4
Pacific Sara Orangetip (<i>A. sara sara</i>)	12	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	5
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Danainae (Monarchs)	
Subfamily Theclinae (Hairstreaks)		Family Hesperidae (Skippers)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		California Sister (<i>Adelpha californica</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)	1	Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		Subfamily Satyrinae (Satyrs)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	1
Subfamily Polyommatae (Blues)		Subfamily Danainae (Monarchs)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Monarch (<i>Danaus plexippus plexippus</i>)	1
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Family Hesperidae (Skippers)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	15	Funereal Duskywing (<i>Erynnis funeralis</i>)	3
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Marine Blue (<i>Leptotes marina</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
unidentified blue		unidentified skipper	
Family Riodinidae (Metalmarks)		Other	
Behr's Metalmark (<i>Apodemia virgulti</i>)	5	Unidentified Butterfly	
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	34	Column Subtotal	14
			Total
			48

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Brenda Bennett, Chris Thomson Date: March 8, 2020

Site Name: Dam Maintenance Program – Savage Dam Site Visit No: 4

Area(s) Surveyed Savage Dam Acres Surveyed 24.40 Survey Time: 2.33 Acres per Hour: 5.24

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1300	63	1-4	30
End	1520	62.5	2-6	30
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub, non-native grassland, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	X
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	X
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Swallowtails)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Limenitidinae (Admirals and Relatives)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	9	Common Buckeye (<i>Junonia coenia grisea</i>)	3
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	1
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	7
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Satyrinae (Satyrs)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Danainae (Monarchs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)	1	California Common Ringlet (<i>Coenonympha tullia californica</i>)	1
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Polyommatae (Blues)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)	1	Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	3
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	30	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)	3	White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	6		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	50	Column Subtotal	15
			Total
			65

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Ian Hirschler Date: March 23, 2020
 Site Name: Dam Maintenance Program – Savage Dam Site Visit No: 5 (make-up)
 Area(s) Surveyed Savage Dam Acres Surveyed 24.40 Survey Time: 3.00 Acres per Hour: 8.13
 Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1315	67.4	1-4	40
End	1615	64.4	1-4	40
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub, non-native grassland, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	2	Common Buckeye (<i>Junonia coenia grisea</i>)	3
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	6
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	1
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatainae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	1
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	7	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	3		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	12	Column Subtotal	11
			Total
			23

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Chris Thomson Date: March 27, 2020

Site Name: Dam Maintenance Program – Savage Dam Site Visit No: 6

Area(s) Surveyed Savage Dam Acres Surveyed 24.40 Survey Time: 3.00 Acres per Hour: 8.13

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1215	61.2	1-4	40
End	1515	63.1	2-6	25
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, non-native grassland, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	X
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	X
Host Plant Mapping Updated (circle) <input checked="" type="radio"/> Yes <input type="radio"/> No		New Area or Existing Area (circle) <input type="radio"/> New <input checked="" type="radio"/> Existing <input type="radio"/> Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
<i>Pale Swallowtail (Papilio eurymedon)</i>		Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)		Common Buckeye (<i>Junonia coenia grisea</i>)	16
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	22
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	2
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatainae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	2
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	8	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	4		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	12	Column Subtotal	42
			Total
			54

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Brenda Bennett Date: April 4, 2020

Site Name: Dam Maintenance Program – Savage Dam Site Visit No: 7

Area(s) Surveyed Savage Dam Acres Surveyed 24.40 Survey Time: 2.75 Acres per Hour: 8.87

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1215	65.6	2-4	40
End	1500	68.2	3-5	20
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, non-native grassland, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	X
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	X
Host Plant Mapping Updated (circle) <input checked="" type="radio"/> Yes <input type="radio"/> No		New Area or Existing Area (circle) <input type="radio"/> New <input checked="" type="radio"/> Existing <input type="radio"/> Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Brushfoots)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)	1	California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Limenitidinae (Admirals and Relatives)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	4	Common Buckeye (<i>Junonia coenia grisea</i>)	8
Orange Sulphur (<i>Colias eurytheme</i>)	1	Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	7
unidentified white		American (Virginia) Lady (<i>V. virginiensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Danainae (Monarchs)	
Subfamily Theclinae (Hairstreaks)		Subfamily Satyrinae (Satyrs)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		California Sister (<i>Adelpha californica</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		Subfamily Danainae (Monarchs)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Monarch (<i>Danaus plexippus plexippus</i>)	1
Subfamily Polyommatae (Blues)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Family Hesperidae (Skippers)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	2
Bernardino Blue (<i>Euphilotes bernardino</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	3	Fiery Skipper (<i>Hylephila phyleus</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		unidentified skipper	
Marine Blue (<i>Leptotes marina</i>)		Other	
unidentified blue		Unidentified Butterfly	
Family Riodinidae (Metalmarks)			
Behr's Metalmark (<i>Apodemia virgulti</i>)	2		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	11	Column Subtotal	18
		Total	29

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Chris Thomson **Date:** April 14, 2020
Site Name: Dam Maintenance Program – Savage Dam **Site Visit No:** 8 (make-up)
Area(s) Surveyed Savage Dam **Acres Surveyed** 24.40 **Survey Time:** 3.00 **Acres per Hour:** 8.13
Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1330	71.8	2-5	0
End	1630	70.2	4-8	5
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub, non-native grassland, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	X
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	X
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	X
Host Plant Mapping Updated (circle) <input checked="" type="radio"/> Yes <input type="radio"/> No		New Area or Existing Area (circle) <input type="radio"/> New <input checked="" type="radio"/> Existing <input type="radio"/> Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	4	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)	1	Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	31
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	1
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	3		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		8	Column Subtotal
			33
			Total
			41

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Chris Thomson Date: April 16, 2020

Site Name: Dam Maintenance Program – Savage Dam Site Visit No: 9

Area(s) Surveyed Savage Dam Acres Surveyed 24.40 Survey Time: 3.00 Acres per Hour: 8.13

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1045	63.2	1-4	0
End	1345	69.2	3-6	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, non-native grassland, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	X
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	X
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	X
Host Plant Mapping Updated (circle) <input checked="" type="radio"/> Yes <input type="radio"/> No		New Area or Existing Area (circle) <input type="radio"/> New <input checked="" type="radio"/> Existing <input type="radio"/> Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Swallowtails)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Limenitidinae (Admirals and Relatives)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	9	Common Buckeye (<i>Junonia coenia grisea</i>)	4
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)	1	Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	19
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Satyrinae (Satyrs)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Danainae (Monarchs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Monarch (<i>Danaus plexippus plexippus</i>)	1
Subfamily Polyommatae (Blues)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Family Hesperidae (Skippers)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)	2	Funereal Duskywing (<i>Erynnis funeralis</i>)	1
Bernardino Blue (<i>Euphilotes bernardino</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		unidentified skipper	
Marine Blue (<i>Leptotes marina</i>)		Other	
unidentified blue		Unidentified Butterfly	
Family Riodinidae (Metalmarks)		Harford's Sulphur (<i>Colias harfordii</i>)	1
Behr's Metalmark (<i>Apodemia virgulti</i>)	1		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	13	Column Subtotal	26
		Total	39

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Chris Thomson Date: April 22, 2020

Site Name: Dam Maintenance Program – Savage Dam Site Visit No: 10

Area(s) Surveyed Savage Dam Acres Surveyed 24.40 Survey Time: 3.00 Acres per Hour: 8.13

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1305	77.0	2-4	0
End	1605	78.5	3-7	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, non-native grassland, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	X
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	X
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	X
Host Plant Mapping Updated (circle) <input checked="" type="radio"/> Yes <input type="radio"/> No		New Area or Existing Area (circle) <input type="radio"/> New <input checked="" type="radio"/> Existing <input type="radio"/> Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Brushfoots)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)	1	California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Limenitidinae (Admirals and Relatives)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	9	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)	1	Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	12
unidentified white		American (Virginia) Lady (<i>V. virginiensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Satyrinae (Satyrs)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Danainae (Monarchs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	1
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Polyommatae (Blues)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)	1	Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	2
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)		Harford's Sulphur (<i>Colias harfordii</i>)	1
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		12	Column Subtotal
			16
			Total
			28

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Chris Thomson Date: April 27, 2020

Site Name: Dam Maintenance Program – Savage Dam Site Visit No: 11

Area(s) Surveyed Savage Dam Acres Surveyed 24.40 Survey Time: 3.00 Acres per Hour: 8.13

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1400	74.7	1-4	0
End	1700	81.5	1-3	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, non-native grassland, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	X
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	X
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	X
Host Plant Mapping Updated (circle) <input checked="" type="radio"/> Yes <input type="radio"/> No		New Area or Existing Area (circle) <input type="radio"/> New <input checked="" type="radio"/> Existing <input type="radio"/> Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Swallowtails)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Pierinae (Whites and Sulphurs)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	8	Common Buckeye (<i>Junonia coenia grisea</i>)	13
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	1
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	3
unidentified white		American (Virginia) Lady (<i>V. virginiensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		Subfamily Lycaeninae (Admirals and Relatives)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		California Sister (<i>Adelpha californica</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		Subfamily Satyrinae (Satyrs)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Subfamily Polyommatae (Blues)		Subfamily Danainae (Monarchs)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Family Hesperidae (Skippers)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	1	Funereal Duskywing (<i>Erynnis funeralis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Marine Blue (<i>Leptotes marina</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
unidentified blue		unidentified skipper	
Family Riodinidae (Metalmarks)		Other	
Harford's Sulphur (<i>Colias harfordii</i>)		Harford's Sulphur (<i>Colias harfordii</i>)	
Behr's Metalmark (<i>Apodemia virgulti</i>)	5	Comstock's Fritillary (<i>Speyeria callippe comstocki</i>)	
Wright's Metalmark (<i>Calephelis wrighti</i>)		Southern Dogface (<i>Zerene cesonia cesonia</i>)	
Column Subtotal	14	Column Subtotal	29
		Total	43

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Ian Hirschler Date: May 7, 2020

Site Name: Dam Maintenance Program – Savage Dam Site Visit No: 12

Area(s) Surveyed Savage Dam Acres Surveyed 24.40 Survey Time: 3.00 Acres per Hour: 8.13

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	0900	75.2	1-3	0
End	1200	80.3	3-6	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub, non-native grassland, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="checkbox"/> Existing <input type="checkbox"/> Both <input type="checkbox"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
<i>Pale Swallowtail (Papilio eurymedon)</i>		Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	2
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	7	Common Buckeye (<i>Junonia coenia grisea</i>)	15
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	1
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)	2	Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	1
unidentified white		American (Virginia) Lady (<i>V. virginiensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatainae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	1
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	1	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		Other	
unidentified blue		Clemence's Blue (<i>Icaricia monticola</i>)	3
Family Riodinidae (Metalmarks)		Comstock's Fritillary (<i>Speyeria callippe comstocki</i>)	3
Behr's Metalmark (<i>Apodemia virgulti</i>)	2	Comstock's Fritillary (<i>Speyeria callippe comstocki</i>)	4
Wright's Metalmark (<i>Calephelis wrighti</i>)		Southern Dogface (<i>Zerene cesonia cesonia</i>)	1
Column Subtotal		12	
Column Subtotal			31
Total			43

Sutherland Dam

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Garrett Huffman Date: February 19, 2020

Site Name: Dam Maintenance Program – Sutherland Dam Site Visit No: 1

Area(s) Surveyed Sutherland Dam Acres Surveyed 29.50 Survey Time: 2.25 Acres per Hour: 7.38

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	0930	61	1-3	10
End	1330	71	2-5	10
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, chamise chaparral, non-native grassland, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)		onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)	X	goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Swallowtails)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Pierinae (Whites and Sulphurs)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	27	Common Buckeye (<i>Junonia coenia grisea</i>)	7
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	1
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		Subfamily Lycaeninae (Admirals and Relatives)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		California Sister (<i>Adelpha californica</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		Subfamily Satyrinae (Satyrs)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Subfamily Polyommatae (Blues)		Subfamily Danainae (Monarchs)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Family Hesperidae (Skippers)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	44	Funereal Duskywing (<i>Erynnis funeralis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Marine Blue (<i>Leptotes marina</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
unidentified blue		unidentified skipper	
Family Riodinidae (Metalmarks)		Other	
		Echo Azure (<i>Celastrina echo echo</i>)	
Behr's Metalmark (<i>Apodemia virgulti</i>)	1		3
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	72	Column Subtotal	11
			Total
			83

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Garrett Huffman Date: February 26, 2020

Site Name: Dam Maintenance Program – Sutherland Dam Site Visit No: 2

Area(s) Surveyed Sutherland Dam Acres Surveyed 29.50 Survey Time: 2.25 Acres per Hour: 7.38

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1030	65	2-4	30
End	1430	73	3-6	10
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, chamise chaparral, non-native grassland, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)		onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)	X	goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
<i>Pale Swallowtail (Papilio eurymedon)</i>		Subfamily Nymphalinae (True Brushfoots)	
<i>Western Tiger Swallowtail (P. rutulus rutulus)</i>		<i>Leanira Checkerspot (Chlosyne leanira)</i>	
<i>Anise Swallowtail (P. zelicaon)</i>		<i>California Patch (C. californica)</i>	
Family Pieridae (Whites and Sulphurs)		<i>Gabb's Checkerspot (C. gabbii gabbii)</i>	
<i>Sleepy Orange (Abaeis nicippe)</i>		<i>Chalcedon Checkerspot (Euphydryas chalcedona)</i>	
<i>Desert Orangetip (Anthocharis cethura)</i>		<i>Quino Checkerspot (E. editha quino)</i>	
<i>Pacific Sara Orangetip (A. sara sara)</i>	9	<i>Common Buckeye (Junonia coenia grisea)</i>	3
<i>Orange Sulphur (Colias eurytheme)</i>		<i>Mourning Cloak (Nymphalis antiopa antiopa)</i>	1
<i>Cloudless Sulphur (Phoebis sennae)</i>		<i>California Tortoiseshell (N. californica californica)</i>	
<i>Cabbage White (Pieris rapae)</i>		<i>Mylitta Crescent (Phyciodes mylitta)</i>	
<i>Becker's White (Pontia beckerii)</i>		<i>West Coast Lady (Vanessa annabella)</i>	
<i>Checkered (Common) White (P. protodice)</i>		<i>Red Admiral (V. atalanta rubria)</i>	
<i>Spring White (P. sisymbrii)</i>		<i>Painted Lady (V. cardui)</i>	3
unidentified white		<i>American (Virginia) Lady (V. virginiensis)</i>	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		<i>California Sister (Adelpha californica)</i>	
<i>Great Purple Hairstreak (Atlides halesus corcorani)</i>		<i>Lorquin's Admiral (Limenitis lorquini)</i>	
<i>Western Brown Elfin (Callophrys augustinus iroides)</i>	2	Subfamily Satyrinae (Satyrs)	
<i>Bramble (Perplexing) Hairstreak (C. dumetorum perplexa)</i>	4	<i>California Common Ringlet (Coenonympha tullia californica)</i>	
<i>Gray Hairstreak (Strymon melinus pudica)</i>		Subfamily Danainae (Monarchs)	
Subfamily Polyommatainae (Blues)		<i>Monarch (Danaus plexippus plexippus)</i>	
<i>Western Pygmy-Blue (Brevithidium exilis)</i>		<i>Queen (Danaus gilippus thersippus)</i>	
<i>Western Tailed Blue (Cupido amyntula amyntula)</i>		Family Hesperidae (Skippers)	
<i>Bernardino Blue (Euphilotes bernardino)</i>		<i>Funereal Duskywing (Erynnis funeralis)</i>	
<i>Southern California Silvery Blue (Glaucopsyche lygdamus australis)</i>	5	<i>Mournful Duskywing (E. tristis tristis)</i>	
<i>Ceraunus (Edward's) Blue (Hemiargus ceraunus gyas)</i>		<i>Fiery Skipper (Hylephila phyleus)</i>	
<i>Acmon Blue (Icaricia acmon)</i>		<i>White Checkered-Skipper (Pyrgus albescens)</i>	
<i>Marine Blue (Leptotes marina)</i>		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		<i>Harford's Sulphur (Colias harfordii)</i>	
<i>Behr's Metalmark (Apodemia virgulti)</i>	3		
<i>Wright's Metalmark (Calephelis wrighti)</i>			
Column Subtotal	23	Column Subtotal	11
			Total
			34

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Garrett Huffman Date: March 4, 2020

Site Name: Dam Maintenance Program – Sutherland Dam Site Visit No: 3

Area(s) Surveyed Sutherland Dam Acres Surveyed 29.50 Survey Time: 2.25 Acres per Hour: 7.38

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1030	61	0-3	0
End	1430	71	2-5	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, chamise chaparral, non-native grassland, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)		onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)	X	goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Swallowtails)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Limenitidinae (Admirals and Relatives)	
Sleepy Orange (<i>Abaeis nicippe</i>)		California Sister (<i>Adelpha californica</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	7	Subfamily Satyrinae (Satyrs)	
Orange Sulphur (<i>Colias eurytheme</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		Subfamily Danainae (Monarchs)	
Cabbage White (<i>Pieris rapae</i>)		Monarch (<i>Danaus plexippus plexippus</i>)	
Becker's White (<i>Pontia beckerii</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Family Hesperidae (Skippers)	
Spring White (<i>P. sisymbrii</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
unidentified white		Mournful Duskywing (<i>E. tristis tristis</i>)	
unidentified sulphur		Fiery Skipper (<i>Hylephila phyleus</i>)	
Family Lycaenidae (Gossamer-wing Butterflies)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Subfamily Theclinae (Hairstreaks)		unidentified skipper	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Other	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Clemence's Blue (<i>Icaricia monticola</i>)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)	3		
Gray Hairstreak (<i>Strymon melinus pudica</i>)			
Subfamily Polyommatainae (Blues)			
Western Pygmy-Blue (<i>Brephidium exilis</i>)			
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)			
Bernardino Blue (<i>Euphilotes bernardino</i>)			
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	2		
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)			
Acmon Blue (<i>Icaricia acmon</i>)			
Marine Blue (<i>Leptotes marina</i>)			
unidentified blue			
Family Riodinidae (Metalmarks)			
Behr's Metalmark (<i>Apodemia virgulti</i>)			
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	12	Column Subtotal	10
		Total	22

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Garrett Huffman **Date:** March 27, 2020
Site Name: Dam Maintenance Program – Sutherland Dam **Site Visit No:** 4 (make-up)
Area(s) Surveyed Sutherland Dam **Acres Surveyed** 29.50 **Survey Time:** 2.25 **Acres per Hour:** 7.38
Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1230	60	2-4	30
End	1630	65	2-4	30
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub, coastal sage-chaparral scrub, chamise chaparral, non-native grassland, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)	X	goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) <input checked="" type="radio"/> Yes <input type="radio"/> No		New Area or Existing Area (circle) <input checked="" type="radio"/> New <input type="radio"/> Existing <input type="radio"/> Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Swallowtails)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Pierinae (Whites and Sulphurs)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	5	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	6
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		Subfamily Lycaeninae (Admirals and Relatives)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		California Sister (<i>Adelpha californica</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)	4	Subfamily Satyrinae (Satyrs)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Subfamily Polyommatae (Blues)		Subfamily Danainae (Monarchs)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Family Hesperidae (Skippers)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	3	Funereal Duskywing (<i>Erynnis funeralis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Acmon Blue (<i>Icaricia acmon</i>)	1	Fiery Skipper (<i>Hylephila phyleus</i>)	
Marine Blue (<i>Leptotes marina</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
unidentified blue		unidentified skipper	
Family Riodinidae (Metalmarks)		Other	
Behr's Metalmark (<i>Apodemia virgulti</i>)		Unidentified Butterfly	
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		16	Column Subtotal
			7
		Total	
			23

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Garrett Huffman **Date:** March 29, 2020
Site Name: Dam Maintenance Program – Sutherland Dam **Site Visit No:** 5 (make-up)
Area(s) Surveyed Sutherland Dam **Acres Surveyed** 29.50 **Survey Time:** 2.25 **Acres per Hour:** 7.38
Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1330	62	2-5	0
End	1730	67	2-6	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub, coastal sage-chaparral scrub, chamise chaparral, non-native grassland, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)	X	goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Swallowtails)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)	1	California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Pierinae (Whites and Sulphurs)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	6	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	1
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	1
Checkered (Common) White (<i>P. protodice</i>)	2	Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	3
unidentified white		American (Virginia) Lady (<i>V. virginiensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		Subfamily Lycaeninae (Admirals and Relatives)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		California Sister (<i>Adelpha californica</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)	2	Subfamily Satyrinae (Satyrs)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)	1	California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Subfamily Polyommatae (Blues)		Subfamily Danainae (Monarchs)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Family Hesperidae (Skippers)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	3	Funereal Duskywing (<i>Erynnis funeralis</i>)	2
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Acmon Blue (<i>Icaricia acmon</i>)	2	Fiery Skipper (<i>Hylephila phyleus</i>)	
Marine Blue (<i>Leptotes marina</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
unidentified blue		unidentified skipper	
Family Riodinidae (Metalmarks)		Other	
Behr's Metalmark (<i>Apodemia virgulti</i>)	4	Unidentified Butterfly	
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		21	Column Subtotal
			7
			Total
			28

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Garrett Huffman Date: April 1, 2020
 Site Name: Dam Maintenance Program – Sutherland Dam Site Visit No: 6 (make-up)
 Area(s) Surveyed Sutherland Dam Acres Surveyed 29.50 Survey Time: 2.25 Acres per Hour: 7.38
 Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1100	65	2-5	10
End	1500	72	3-6	10
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub, coastal sage-chaparral scrub, chamise chaparral, non-native grassland, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)	X	goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Swallowtails)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	2	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Pierinae (Whites and Sulphurs)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	5	Common Buckeye (<i>Junonia coenia grisea</i>)	3
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	1
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	1
Checkered (Common) White (<i>P. protodice</i>)	2	Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	12
unidentified white		American (Virginia) Lady (<i>V. virginiensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		Subfamily Theclinae (Hairstreaks)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		California Sister (<i>Adelpha californica</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Subfamily Lycaeninae (Lycaenids)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)	4	California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)	1	Subfamily Danainae (Monarchs)	
Subfamily Polyommatae (Blues)		Subfamily Danainae (Monarchs)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Family Hesperidae (Skippers)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	3	Funereal Duskywing (<i>Erynnis funeralis</i>)	2
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Acmon Blue (<i>Icaricia acmon</i>)	5	Fiery Skipper (<i>Hylephila phyleus</i>)	
Marine Blue (<i>Leptotes marina</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
unidentified blue		unidentified skipper	
Family Riodinidae (Metalmarks)		Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	6		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	28	Column Subtotal	19
			Total
			47

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Garrett Huffman Date: April 3, 2020
 Site Name: Dam Maintenance Program – Sutherland Dam Site Visit No: 7
 Area(s) Surveyed Sutherland Dam Acres Surveyed 29.50 Survey Time: 2.25 Acres per Hour: 7.38
 Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1000	60	2-7	45
End	1400	65	3-6	45
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub, coastal sage-chaparral scrub, chamise chaparral, non-native grassland, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)	X	goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
<i>Pale Swallowtail (Papilio eurymedon)</i>		Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	2	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)	1	California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	3
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)	1	California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatainae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	1
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)	1	White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	2		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		7	Column Subtotal
			4
			Total
			11

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Garrett Huffman Date: April 14, 2020

Site Name: Dam Maintenance Program – Sutherland Dam Site Visit No: 8 (make-up)

Area(s) Surveyed Sutherland Dam Acres Surveyed 29.50 Survey Time: 2.25 Acres per Hour: 7.38

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1000	65	3-10	0
End	1400	72	3-6	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, chamise chaparral, non-native grassland, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)	X	goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	X
Host Plant Mapping Updated (circle) <input checked="" type="radio"/> Yes <input type="radio"/> No		New Area or Existing Area (circle) <input type="radio"/> New <input type="radio"/> Existing <input checked="" type="radio"/> Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	5	Common Buckeye (<i>Junonia coenia grisea</i>)	2
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)	1	Red Admiral (<i>V. atalanta rubria</i>)	2
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	5
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	6	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	5		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	17	Column Subtotal	12
		Total	29

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Garrett Huffman Date: April 16, 2020

Site Name: Dam Maintenance Program – Sutherland Dam Site Visit No: 9

Area(s) Surveyed Sutherland Dam Acres Surveyed 29.50 Survey Time: 2.25 Acres per Hour: 7.38

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1100	68	2-5	0
End	1500	74	2-5	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, chamise chaparral, non-native grassland, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)	X	goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	X
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="checkbox"/> Existing <input type="checkbox"/> Both <input type="checkbox"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Brushfoots)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)	1	California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Pierinae (Whites and Sulphurs)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	8	Common Buckeye (<i>Junonia coenia grisea</i>)	3
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)	1	California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)	2	Red Admiral (<i>V. atalanta rubria</i>)	3
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	7
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		Subfamily Limenitidinae (Admirals and Relatives)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		California Sister (<i>Adelpha californica</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		Subfamily Satyrinae (Satyrs)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Subfamily Polyommatae (Blues)		Subfamily Danainae (Monarchs)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Family Hesperidae (Skippers)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	8	Funereal Duskywing (<i>Erynnis funeralis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Marine Blue (<i>Leptotes marina</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
unidentified blue		unidentified skipper	
Family Riodinidae (Metalmarks)		Other	
Behr's Metalmark (<i>Apodemia virgulti</i>)		Unidentified Butterfly	
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		27	Column Subtotal
			16
			Total
			43

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Garrett Huffman Date: April 22, 2020

Site Name: Dam Maintenance Program – Sutherland Dam Site Visit No: 10

Area(s) Surveyed Sutherland Dam Acres Surveyed 29.50 Survey Time: 2.25 Acres per Hour: 7.38

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1000	72	2-4	0
End	1400	82	2-5	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, chamise chaparral, non-native grassland, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)	X	goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	X
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Brushfoots)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)	1	California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Limenitidinae (Admirals and Relatives)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	7	Common Buckeye (<i>Junonia coenia grisea</i>)	2
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)	4	Red Admiral (<i>V. atalanta rubria</i>)	2
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	5
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Satyrinae (Satyrs)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Danainae (Monarchs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Polyommatae (Blues)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	5	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)	3	White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	5		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	25	Column Subtotal	13
		Total	38

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Garrett Huffman Date: April 29, 2020

Site Name: Dam Maintenance Program – Sutherland Dam Site Visit No: 11

Area(s) Surveyed Sutherland Dam Acres Surveyed 29.50 Survey Time: 2.25 Acres per Hour: 7.38

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1000	73	2-6	0
End	1400	80	2-6	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub, coastal sage-chaparral scrub, chamise chaparral, non-native grassland, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)	X	goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	X
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Brushfoots)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)	1	California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Limenitidinae (Admirals and Relatives)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	6	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)	2	Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	3
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Satyrinae (Satyrs)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Danainae (Monarchs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Polyommatae (Blues)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	7	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)	3	White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)	2	unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Clemence's Blue (<i>Icaricia monticola</i>)	
Behr's Metalmark (<i>Apodemia virgulti</i>)	3		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		24	Column Subtotal
			8
		Total	
			32

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Garrett Huffman Date: May 6, 2020

Site Name: Dam Maintenance Program – Sutherland Dam Site Visit No: 12

Area(s) Surveyed Sutherland Dam Acres Surveyed 29.50 Survey Time: 2.25 Acres per Hour: 7.38

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1130	90	2-4	1
End	1530	93	2-4	1
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, chamise chaparral, non-native grassland, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)	X	goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	X
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="checkbox"/> Existing <input type="checkbox"/> Both <input type="checkbox"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Brushfoots)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)	1	California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Limenitidinae (Admirals and Relatives)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	12	Common Buckeye (<i>Junonia coenia grisea</i>)	2
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)	4	Red Admiral (<i>V. atalanta rubria</i>)	2
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	6
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Satyrinae (Satyrs)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	1
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Danainae (Monarchs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Polyommatae (Blues)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	8	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)	3	White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)	1	unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Echo Azure (<i>Celastrina echo echo</i>)	
Behr's Metalmark (<i>Apodemia virgulti</i>)	6		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	35	Column Subtotal	19
		Total	54

Upper Otay Dam

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Ian Hirschler, Ryan Meszaros Date: February 12, 2020

Site Name: Dam Maintenance Program – Upper Otay Dam Site Visit No: 0 (week early)

Area(s) Surveyed Upper Otay Dam Acres Surveyed 23.80 Survey Time: 1.75 Acres per Hour: 6.80

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1335	64.6	1-4	2
End	1520	65.0	5-7	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, non-native grassland, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	X
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	3	Common Buckeye (<i>Junonia coenia grisea</i>)	1
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	1
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatainae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	1	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Echo Azure (<i>Celastrina echo echo</i>)	
Behr's Metalmark (<i>Apodemia virgulti</i>)			4
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	4	Column Subtotal	6
		Total	10

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Ian Hirschler, Ryan Meszaros Date: February 17, 2020

Site Name: Dam Maintenance Program – Upper Otay Dam Site Visit No: 1

Area(s) Surveyed Upper Otay Dam Acres Surveyed 23.80 Survey Time: 1.5 Acres per Hour: 7.93

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1300	67.2	2-5	0
End	1430	74.1	1-3	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, non-native grassland, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	X
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Swallowtails)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Limenitidinae (Admirals and Relatives)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	11	Common Buckeye (<i>Junonia coenia grisea</i>)	8
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	1
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Satyrinae (Satyrs)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Danainae (Monarchs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Polyommatae (Blues)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	16	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	5		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	32	Column Subtotal	9
		Total	41

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Ian Hirschler Date: February 26, 2020

Site Name: Dam Maintenance Program – Upper Otay Dam Site Visit No: 2

Area(s) Surveyed Upper Otay Dam Acres Surveyed 23.80 Survey Time: 2.58 Acres per Hour: 9.22

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	0900	71.4	4-6	0
End	1135	79.5	1-3	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, non-native grassland, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
<i>Pale Swallowtail (Papilio eurymedon)</i>		Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	7	Common Buckeye (<i>Junonia coenia grisea</i>)	3
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	6
unidentified white		American (Virginia) Lady (<i>V. virginiensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	1
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatainae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	6	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	1
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	3		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	16	Column Subtotal	11
			Total
			27

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Jim Rocks Date: March 3, 2020

Site Name: Dam Maintenance Program – Upper Otay Dam Site Visit No: 3

Area(s) Surveyed Upper Otay Dam Acres Surveyed 23.80 Survey Time: 2.50 Acres per Hour: 9.52

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1345	72.0	1-4	0
End	1615	71.0	1-4	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, non-native grassland, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	X
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) <input checked="" type="radio"/> Yes <input type="radio"/> No		New Area or Existing Area (circle) <input checked="" type="radio"/> New <input type="radio"/> Existing <input type="radio"/> Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Swallowtails)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Pierinae (Whites and Sulphurs)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	4	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	10
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		Subfamily Limenitidinae (Admirals and Relatives)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		California Sister (<i>Adelpha californica</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		Subfamily Satyrinae (Satyrs)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Subfamily Polyommatainae (Blues)		Subfamily Danainae (Monarchs)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Family Hesperidae (Skippers)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	7	Funereal Duskywing (<i>Erynnis funeralis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Marine Blue (<i>Leptotes marina</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
unidentified blue		unidentified skipper	
Family Riodinidae (Metalmarks)		Other	
Behr's Metalmark (<i>Apodemia virgulti</i>)		Unidentified Butterfly	
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		14	Column Subtotal
			12
			Total
			26

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Ian Hirschler Date: March 8, 2020

Site Name: Dam Maintenance Program – Upper Otay Dam Site Visit No: 4

Area(s) Surveyed Upper Otay Dam Acres Surveyed 23.80 Survey Time: 2.50 Acres per Hour: 9.52

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1245	70.5	3-7	40
End	1515	68.4	3-7	30
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, non-native grassland, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
<i>Pale Swallowtail (Papilio eurymedon)</i>		Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	11	Common Buckeye (<i>Junonia coenia grisea</i>)	6
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	3
unidentified white		American (Virginia) Lady (<i>V. virginiensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	1
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatainae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	1
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	10	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	1
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	4		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	25	Column Subtotal	12
			Total
			37

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Melanie Rocks Date: March 21, 2020

Site Name: Dam Maintenance Program – Upper Otay Dam Site Visit No: 5

Area(s) Surveyed Upper Otay Dam Acres Surveyed 23.80 Survey Time: 4.75 Acres per Hour: 5.01

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1145	62	0-2	40
End	1630	64	2-6	5
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, non-native grassland, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	X
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) <input checked="" type="radio"/> Yes <input type="radio"/> No		New Area or Existing Area (circle) <input checked="" type="radio"/> New <input type="radio"/> Existing <input type="radio"/> Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
<i>Pale Swallowtail (Papilio eurymedon)</i>		Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	1	Common Buckeye (<i>Junonia coenia grisea</i>)	2
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	2
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur	2	unidentified lady (<i>Vanessa</i> sp.)	10
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatainae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	1	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue	1	Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	5		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	10	Column Subtotal	14
			Total
			24

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Ian Hirschler Date: March 24, 2020

Site Name: Dam Maintenance Program – Upper Otay Dam Site Visit No: 6

Area(s) Surveyed Upper Otay Dam Acres Surveyed 23.80 Survey Time: 2.5 Acres per Hour: 9.52

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1245	70.0	2-4	40
End	1515	71.4	2-6	50
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, non-native grassland, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Swallowtails)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Limenitidinae (Admirals and Relatives)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)		Common Buckeye (<i>Junonia coenia grisea</i>)	5
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	4
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Satyrinae (Satyrs)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Danainae (Monarchs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Polyommatae (Blues)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	2		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		2	Column Subtotal
			9
			Total
			11

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Chris Thomson Date: April 2, 2020

Site Name: Dam Maintenance Program – Upper Otay Dam Site Visit No: 7

Area(s) Surveyed Upper Otay Dam Acres Surveyed 23.80 Survey Time: 3.0 Acres per Hour: 7.93

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1205	63.2	0-3	20
End	1505	64.1	4-9	50
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub, non-native grassland, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	X
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Swallowtails)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Limenitidinae (Admirals and Relatives)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	2	Common Buckeye (<i>Junonia coenia grisea</i>)	8
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	8
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Satyrinae (Satyrs)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Danainae (Monarchs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	2
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Polyommatae (Blues)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	3
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	2	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue	1	Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	6		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	11	Column Subtotal	21
			Total
			32

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Chris Thomson **Date:** April 14, 2020
Site Name: Dam Maintenance Program – Upper Otay Dam **Site Visit No:** 8 (make-up)
Area(s) Surveyed Upper Otay Dam **Acres Surveyed** 23.80 **Survey Time:** 3.0 **Acres per Hour:** 7.93
Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1015	61.4	1-4	5
End	1315	72.1	1-4	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub, non-native grassland, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	X
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	X
Host Plant Mapping Updated (circle) <u>Yes</u> No		New Area or Existing Area (circle) New <u>Existing</u> Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Swallowtails)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Pierinae (Whites and Sulphurs)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	1	Common Buckeye (<i>Junonia coenia grisea</i>)	12
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	28
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		Subfamily Lycaeninae (Admirals and Relatives)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		California Sister (<i>Adelpha californica</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		Subfamily Satyrinae (Satyrs)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	1
Subfamily Polyommatae (Blues)		Subfamily Danainae (Monarchs)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Family Hesperidae (Skippers)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	2	Funereal Duskywing (<i>Erynnis funeralis</i>)	1
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Marine Blue (<i>Leptotes marina</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
unidentified blue		unidentified skipper	
Family Riodinidae (Metalmarks)		Other	
Behr's Metalmark (<i>Apodemia virgulti</i>)	1	Unidentified Butterfly	
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		4	Column Subtotal
			42
			Total
			46

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Chris Thomson Date: April 16, 2020

Site Name: Dam Maintenance Program – Upper Otay Dam Site Visit No: 9

Area(s) Surveyed Upper Otay Dam Acres Surveyed 23.80 Survey Time: 3.0 Acres per Hour: 7.93

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1400	69.0	2-6	0
End	1700	68.6	3-6	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, non-native grassland, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	X
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	X
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	4	Common Buckeye (<i>Junonia coenia grisea</i>)	6
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	23
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	3		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	7	Column Subtotal	31
			Total
			38

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Chris Thomson Date: April 22, 2020

Site Name: Dam Maintenance Program – Upper Otay Dam Site Visit No: 10

Area(s) Surveyed Upper Otay Dam Acres Surveyed 23.80 Survey Time: 3.0 Acres per Hour: 7.93

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	0950	63.7	2-5	0
End	1250	76.6	2-5	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, non-native grassland, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	X
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	X
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	7	Common Buckeye (<i>Junonia coenia grisea</i>)	6
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	13
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatainae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Echo Azure (<i>Celastrina echo echo</i>)	
Behr's Metalmark (<i>Apodemia virgulti</i>)	3		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		10	Column Subtotal
			24
			Total
			34

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Chris Thomson Date: April 27, 2020

Site Name: Dam Maintenance Program – Upper Otay Dam Site Visit No: 11

Area(s) Surveyed Upper Otay Dam Acres Surveyed 23.80 Survey Time: 3.0 Acres per Hour: 7.93

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1045	81.7	1-3	0
End	1345	82.1	2-5	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, non-native grassland, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	X
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	X
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	3	Common Buckeye (<i>Junonia coenia grisea</i>)	7
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	1
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)	1	Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	4
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatainae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)	8	Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)	2	White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Harford's Sulphur (<i>Colias harfordii</i>)	
Behr's Metalmark (<i>Apodemia virgulti</i>)	5		2
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		19	14
		Total	
			33

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Ian Hirschler Date: May 7, 2020

Site Name: Dam Maintenance Program – Upper Otay Dam Site Visit No: 12

Area(s) Surveyed Upper Otay Dam Acres Surveyed 23.80 Survey Time: 2.5 Acres per Hour: 9.52

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1230	82.6	3-6	10
End	1500	83.8	1-4	0
Start				
End				

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, non-native grassland, disturbed habitat

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	3	Common Buckeye (<i>Junonia coenia grisea</i>)	35
Orange Sulphur (<i>Colias eurytheme</i>)	1	Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)	1	Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)	2	Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatainae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)	3	unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	5		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		15	Column Subtotal
			35
			Total
			50

Dulzura Conduit

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Benjamin Rosenbaum Date: February 17, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 1

Area(s) Surveyed A, Trails 3 and 5 Acres Surveyed 17.51 Survey Time: 3.08 Acres per Hour: 5.69

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1010	65	1-2	0
End	1235	73	3-6	0
Start	1320	76	3-6	0
End	1400	76	3-6	0

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)		onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
<i>Pale Swallowtail (Papilio eurymedon)</i>		Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	46	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur	1	unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)	1	Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatainae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilZippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	1
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)	3	White Checkered-Skipper (<i>Pyrgus albescens</i>)	1
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue	9	Other	
Family Riodinidae (Metalmarks)		unidentified butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	10		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		70	Column Subtotal
			2
			Total
			72

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Amy Mattson Date: February 17, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 1

Area(s) Surveyed B Acres Surveyed 18.97 Survey Time: 2.08 Acres per Hour: 9.12

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1040	71	0-1	0
End	1245	74	0-4	0

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)		onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) <input checked="" type="radio"/> Yes <input type="radio"/> No		New Area or Existing Area (circle) <input checked="" type="radio"/> New <input type="radio"/> Existing <input type="radio"/> Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	53	Common Buckeye (<i>Junonia coenia grisea</i>)	3
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	2
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gil2ippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)	1	Funereal Duskywing (<i>Erynnis funeralis</i>)	1
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	1	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue	6	Other	
Family Riodinidae (Metalmarks)		unidentified butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	1		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	62	Column Subtotal	6
			Total
			68

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Amy Mattson Date: February 18, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 1

Area(s) Surveyed C-1, C-2, Trail 4 Acres Surveyed 10.91 Survey Time: 1.73 Acres per Hour: 6.31

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1012	61	1-3	1
End	1132	71	0-2	35
Start	1232	65	0-1	25
End	1256	72	3-5	49

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)		onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="checkbox"/> Existing <input type="checkbox"/> Both <input type="checkbox"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
<i>Pale Swallowtail (Papilio eurymedon)</i>		Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	21	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur	1	unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)	2	California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatainae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilZippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	2	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		unidentified butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	11		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		37	0
		Total	
			37

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Laura Moreton Date: February 18, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 1

Area(s) Surveyed D-1, Trails 6 and 7 Acres Surveyed 12.22 Survey Time: 1.67 Acres per Hour: 7.32

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1005	61	0	3
End	1130	71	0-1	30
Start	1148	71	0-1	25
End	1203	72	0-1	25

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) <input checked="" type="radio"/> Yes <input type="radio"/> No		New Area or Existing Area (circle) <input checked="" type="radio"/> New <input type="radio"/> Existing <input type="radio"/> Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Swallowtails)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	1	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Chlosyninae (Checkerspot Relatives)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	34	Common Buckeye (<i>Junonia coenia grisea</i>)	2
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	2
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)	5	California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatainae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilZippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	1	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)	2	White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue	3	Other	
Family Riodinidae (Metalmarks)		unidentified butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	8		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		54	4
		Total	
		58	

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Laura Moreton Date: February 19, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 1

Area(s) Surveyed D-2, E Acres Surveyed 8.90 Survey Time: 1.42 Acres per Hour: 6.27

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	0945	70	0-1	0
End	1035	72	0-1	0
Start	1155	76	1-3	0
End	1230	70	1-3	0

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) <input checked="" type="radio"/> Yes <input type="radio"/> No		New Area or Existing Area (circle) <input checked="" type="radio"/> New <input type="radio"/> Existing <input type="radio"/> Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
<i>Pale Swallowtail (Papilio eurymedon)</i>		Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	43	Common Buckeye (<i>Junonia coenia grisea</i>)	1
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)	1	Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	3
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommantinae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilZippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)	3	White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		unidentified butterfly	3
Behr's Metalmark (<i>Apodemia virgulti</i>)	5		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		52	7
		Total	
		59	

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Amy Mattson Date: February 19, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 1

Area(s) Surveyed F2, F1, F3 Acres Surveyed 8.43 Survey Time: 1.62 Acres per Hour: 5.20

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1007	69	0-2	0
End	1058	69	2-3	0
Start	1144	71	1-2	0
End	1230	72	2-4	0

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) <input checked="" type="radio"/> Yes <input type="radio"/> No		New Area or Existing Area (circle) <input checked="" type="radio"/> New <input type="radio"/> Existing <input type="radio"/> Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
<i>Pale Swallowtail (Papilio eurymedon)</i>		Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	10	Common Buckeye (<i>Junonia coenia grisea</i>)	1
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	5
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)	1	California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilZippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue	1	Other	
Family Riodinidae (Metalmarks)		unidentified butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)			
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		12	Column Subtotal
			6
			Total
			18

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Benjamin Rosenbaum Date: February 24, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 2

Area(s) Surveyed A Acres Surveyed 15.65 Survey Time: 2.17 Acres per Hour: 7.21

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1125	70	1-2	0
End	1335	76	1-2	0

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) <input checked="" type="radio"/> Yes <input type="radio"/> No		New Area or Existing Area (circle) <input checked="" type="radio"/> New <input type="radio"/> Existing <input type="radio"/> Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	60	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	1
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	
unidentified white		American (Virginia) Lady (<i>V. virginiensis</i>)	
unidentified sulphur	2	unidentified lady (<i>Vanessa</i> sp.)	1
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)	1	California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gil2ippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	1
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue	11	Other	
Family Riodinidae (Metalmarks)		unidentified butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	9		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	83	Column Subtotal	3
			Total
			86

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Laura Moreton Date: February 24, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 2

Area(s) Surveyed B, Trails 3 and 4 Acres Surveyed 15.72 Survey Time: 1.92 Acres per Hour: 8.20

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1210	68	1-2	1
End	1340	76	1-2	0
Start	1348	76	1-2	0
End	1358	76	1-2	0
Start	1410	73	1-2	0
End	1425	73	1-2	0

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) <input checked="" type="radio"/> Yes <input type="radio"/> No		New Area or Existing Area (circle) <input checked="" type="radio"/> New <input type="radio"/> Existing <input type="radio"/> Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
<i>Pale Swallowtail (Papilio eurymedon)</i>		Subfamily Nymphalinae (True Brushfoots)	
<i>Western Tiger Swallowtail (P. rutulus rutulus)</i>		<i>Leanira Checkerspot (Chlosyne leanira)</i>	
<i>Anise Swallowtail (P. zelicaon)</i>		<i>California Patch (C. californica)</i>	
Family Pieridae (Whites and Sulphurs)		<i>Gabb's Checkerspot (C. gabbii gabbii)</i>	
<i>Sleepy Orange (Abaeis nicippe)</i>		<i>Chalcedon Checkerspot (Euphydryas chalcedona)</i>	
<i>Desert Orangetip (Anthocharis cethura)</i>		<i>Quino Checkerspot (E. editha quino)</i>	
<i>Pacific Sara Orangetip (A. sara sara)</i>		<i>Common Buckeye (Junonia coenia grisea)</i>	
<i>Orange Sulphur (Colias eurytheme)</i>		<i>Mourning Cloak (Nymphalis antiopa antiopa)</i>	
<i>Cloudless Sulphur (Phoebis sennae)</i>		<i>California Tortoiseshell (N. californica californica)</i>	
<i>Cabbage White (Pieris rapae)</i>		<i>Mylitta Crescent (Phyciodes mylitta)</i>	
<i>Becker's White (Pontia beckerii)</i>		<i>West Coast Lady (Vanessa annabella)</i>	
<i>Checkered (Common) White (P. protodice)</i>		<i>Red Admiral (V. atalanta rubria)</i>	
<i>Spring White (P. sisymbrii)</i>		<i>Painted Lady (V. cardui)</i>	
unidentified white		<i>American (Virginia) Lady (V. virginensis)</i>	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		<i>California Sister (Adelpha californica)</i>	
<i>Great Purple Hairstreak (Atlides halesus corcorani)</i>		<i>Lorquin's Admiral (Limenitis lorquini)</i>	
<i>Western Brown Elfin (Callophrys augustinus iroides)</i>		Subfamily Satyrinae (Satyrs)	
<i>Bramble (Perplexing) Hairstreak (C. dumetorum perplexa)</i>		<i>California Common Ringlet (Coenonympha tullia californica)</i>	
<i>Gray Hairstreak (Strymon melinus pudica)</i>		Subfamily Danainae (Monarchs)	
Subfamily Polyommattinae (Blues)		<i>Monarch (Danaus plexippus plexippus)</i>	
<i>Western Pygmy-Blue (Brephidium exilis)</i>		<i>Queen (Danaus gilippus thersippus)</i>	
<i>Western Tailed Blue (Cupido amyntula amyntula)</i>		Family Hesperidae (Skippers)	
<i>Bernardino Blue (Euphilotes bernardino)</i>		<i>Funereal Duskywing (Erynnis funeralis)</i>	
<i>Southern California Silvery Blue (Glaucopsyche lygdamus australis)</i>		<i>Mournful Duskywing (E. tristis tristis)</i>	
<i>Ceraunus (Edward's) Blue (Hemiargus ceraunus gyas)</i>		<i>Fiery Skipper (Hylephila phyleus)</i>	
<i>Acmon Blue (Icaricia acmon)</i>		<i>White Checkered-Skipper (Pyrgus albescens)</i>	
<i>Marine Blue (Leptotes marina)</i>		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		unidentified butterfly	
<i>Behr's Metalmark (Apodemia virgulti)</i>			
<i>Wright's Metalmark (Calephelis wrighti)</i>			
Column Subtotal		55	Column Subtotal
			8
		Total	
			63

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Benjamin Rosenbaum Date: February 27, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 2

Area(s) Surveyed C-1, C-2, Trail 5 Acres Surveyed 10.18 Survey Time: 1.83 Acres per Hour: 5.56

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1000	78	2-7	50
End	1100	76	5-10	60
Start	1125	76	5-10	60
End	1145	76	5-10	60
Start	1225	81	2-5	60
End	1250	81	2-10	60

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)		onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="checkbox"/> Existing <input type="checkbox"/> Both <input type="checkbox"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	1	Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	13	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	1
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommattinae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilZippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue	4	Other	
Family Riodinidae (Metalmarks)		unidentified butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	24		
Wright's Metalmark (<i>Calephelis wrighti</i>)	1		
Column Subtotal		43	1
			Total
			44

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Laura Moreton Date: February 27, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 2

Area(s) Surveyed D-1, Trails 5 (NE), 6, and 7 Acres Surveyed 15.42 Survey Time: 2.25 Acres per Hour: 6.85

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	0945	77	2-7	70
End	1115	76	5-10	60
Start	1135	78	5-10	60
End	1200	78	3-8	65
Start	1235	81	3-8	90
End	1255	81	0-1	80

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) <input checked="" type="radio"/> Yes <input type="radio"/> No		New Area or Existing Area (circle) <input checked="" type="radio"/> New <input type="radio"/> Existing <input type="radio"/> Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	3	Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	37	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)	1	Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	1
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)	8	California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommattinae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	2
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)	3	White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue	8	Other	
Family Riodinidae (Metalmarks)		unidentified butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	17		
Wright's Metalmark (<i>Calephelis wrighti</i>)	1		
Column Subtotal		78	3
Total		81	

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Brian Lohstroh Date: February 28, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 2

Area(s) Surveyed D2, E Acres Surveyed 8.90 Survey Time: 2.33 Acres per Hour: 3.82

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1025	75	2-8	30
End	1245	81	2-6	30

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	X
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="checkbox"/> Existing <input type="checkbox"/> Both <input type="checkbox"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	1	Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	4
Pacific Sara Orangetip (<i>A. sara sara</i>)	17	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	4
unidentified white		American (Virginia) Lady (<i>V. virginiensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gil2ippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	3
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	5	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Harford's Sulphur (<i>Colias harfordii</i>)	1
Behr's Metalmark (<i>Apodemia virgulti</i>)	16	Clemence's Blue (<i>Icaricia monticola</i>)	1
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	39	Column Subtotal	13
			Total
			52

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Benjamin Rosenbaum Date: February 28, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 2

Area(s) Surveyed F-1, F-2, F-3 Acres Surveyed 8.43 Survey Time: 1.6 Acres per Hour: 5.27

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1030	79	2-11	40
End	1206	82	1-3	50

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	X
Host Plant Mapping Updated (circle) <input checked="" type="radio"/> Yes <input type="radio"/> No		New Area or Existing Area (circle) <input type="radio"/> New <input checked="" type="radio"/> Existing <input type="radio"/> Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
<i>Pale Swallowtail (Papilio eurymedon)</i>		Subfamily Nymphalinae (True Brushfoots)	
<i>Western Tiger Swallowtail (P. rutulus rutulus)</i>		<i>Leanira Checkerspot (Chlosyne leanira)</i>	
<i>Anise Swallowtail (P. zelicaon)</i>		<i>California Patch (C. californica)</i>	
Family Pieridae (Whites and Sulphurs)		<i>Gabb's Checkerspot (C. gabbii gabbii)</i>	
<i>Sleepy Orange (Abaeis nicippe)</i>		<i>Chalcedon Checkerspot (Euphydryas chalcedona)</i>	
<i>Desert Orangetip (Anthocharis cethura)</i>		<i>Quino Checkerspot (E. editha quino)</i>	
<i>Pacific Sara Orangetip (A. sara sara)</i>	14	<i>Common Buckeye (Junonia coenia grisea)</i>	
<i>Orange Sulphur (Colias eurytheme)</i>		<i>Mourning Cloak (Nymphalis antiopa antiopa)</i>	
<i>Cloudless Sulphur (Phoebis sennae)</i>		<i>California Tortoiseshell (N. californica californica)</i>	
<i>Cabbage White (Pieris rapae)</i>		<i>Mylitta Crescent (Phyciodes mylitta)</i>	
<i>Becker's White (Pontia beckerii)</i>		<i>West Coast Lady (Vanessa annabella)</i>	
<i>Checkered (Common) White (P. protodice)</i>		<i>Red Admiral (V. atalanta rubria)</i>	
<i>Spring White (P. sisymbrii)</i>		<i>Painted Lady (V. cardui)</i>	
unidentified white		<i>American (Virginia) Lady (V. virginiensis)</i>	
unidentified sulphur	1	unidentified lady (<i>Vanessa</i> sp.)	2
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		<i>California Sister (Adelpha californica)</i>	
<i>Great Purple Hairstreak (Atlides halesus corcorani)</i>		<i>Lorquin's Admiral (Limenitis lorquini)</i>	
<i>Western Brown Elfin (Callophrys augustinus iroides)</i>		Subfamily Satyrinae (Satyrs)	
<i>Bramble (Perplexing) Hairstreak (C. dumetorum perplexa)</i>	3	<i>California Common Ringlet (Coenonympha tullia californica)</i>	
<i>Gray Hairstreak (Strymon melinus pudica)</i>		Subfamily Danainae (Monarchs)	
Subfamily Polyommatae (Blues)		<i>Monarch (Danaus plexippus plexippus)</i>	
<i>Western Pygmy-Blue (Brephidium exilis)</i>		<i>Queen (Danaus gil2ippus thersippus)</i>	
<i>Western Tailed Blue (Cupido amyntula amyntula)</i>		Family Hesperidae (Skippers)	
<i>Bernardino Blue (Euphilotes bernardino)</i>		<i>Funereal Duskywing (Erynnis funeralis)</i>	2
<i>Southern California Silvery Blue (Glaucopsyche lygdamus australis)</i>		<i>Mournful Duskywing (E. tristis tristis)</i>	
<i>Ceraunus (Edward's) Blue (Hemiargus ceraunus gyas)</i>		<i>Fiery Skipper (Hylephila phyleus)</i>	
<i>Acmon Blue (Icaricia acmon)</i>		<i>White Checkered-Skipper (Pyrgus albescens)</i>	
<i>Marine Blue (Leptotes marina)</i>		unidentified skipper	
unidentified blue	1	Other	
Family Riodinidae (Metalmarks)		<i>Unidentified Butterfly</i>	
<i>Behr's Metalmark (Apodemia virgulti)</i>	2		
<i>Wright's Metalmark (Calephelis wrighti)</i>			
Column Subtotal	21	Column Subtotal	4
			Total
			25

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Laura Moreton Date: March 3, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 3

Area(s) Surveyed A-1, A-2, A-3, Trail 4, Trail 5 (east) Acres Surveyed 20.1 Survey Time: 3.17 Acres per Hour: 6.34

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1035	75	0-1	0
End	1300	79	1-2	0
Start	1340	77	2-5	0
End	1405	78	2-5	0
Start	1435	77	1-3	0
End	1455	77	3-5	0

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) <u>Yes</u> No		New Area or Existing Area (circle) <u>New</u> Existing Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	5	Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	1
Pacific Sara Orangetip (<i>A. sara sara</i>)	51	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur	2	unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)	7	California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommattinae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilZippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	4
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)	6	White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue	19	Other	
Family Riodinidae (Metalmarks)		Harford's sulphur (<i>Colias harfordii</i>)	2
Behr's Metalmark (<i>Apodemia virgulti</i>)	10	Sonoran blue (<i>Philotes sonorensis</i>)	3
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		100	Column Subtotal
			10
		Total	
			110

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Sally Trnka Date: March 3, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 3

Area(s) Surveyed B-1 and B-2, Trail 3 and 5 (west) Acres Surveyed 17.67 Survey Time: 2.57 Acres per Hour: 6.88

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1120	71	0-5	0
End	1300	79	1-2	0
Start	1335	79	2-8	0
End	1403	78	5-12	0
Start	1430	78	2-8	0
End	1456	76	2-8	0

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) <input checked="" type="radio"/> Yes <input type="radio"/> No		New Area or Existing Area (circle) <input type="radio"/> New <input type="radio"/> Existing <input checked="" type="radio"/> Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	1	Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)	1	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	1
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	24	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	1
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	
unidentified white		American (Virginia) Lady (<i>V. virginiensis</i>)	
unidentified sulphur	2	unidentified lady (<i>Vanessa</i> sp.)	3
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)	1	Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommattinae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)	1	Queen (<i>Danaus gilZippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	2
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue	7	Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	10		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		47	7
Total		54	

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Benjamin Rosenbaum Date: March 4, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 3

Area(s) Surveyed C-1, C-2, Trail 6 Acres Surveyed 9.20 Survey Time: 1.67 Acres per Hour: 5.51

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	0940	65	1-2	0
End	1100	70	0-3	10
Start	1130	70	0-3	10
End	1150	70	2-7	20

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)		onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="checkbox"/> Existing <input type="checkbox"/> Both <input type="checkbox"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Swallowtails)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	2	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	3
Sleepy Orange (<i>Abaeis nicippe</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Common Buckeye (<i>Junonia coenia grisea</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	14	Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Cabbage White (<i>Pieris rapae</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Becker's White (<i>Pontia beckerii</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Painted Lady (<i>V. cardui</i>)	
Spring White (<i>P. sisymbrii</i>)		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified white		unidentified lady (<i>Vanessa</i> sp.)	7
unidentified sulphur			
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommattinae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilZippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	1
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	1
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue	2	Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	16		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		34	12
		Total	
		46	

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Laura Moreton Date: March 4, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 3

Area(s) Surveyed D-1, Trail 7 Acres Surveyed 10.0 Survey Time: 1.83 Acres per Hour: 5.46

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	0930	65	1-2	0
End	1120	70	0-3	0

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) <input checked="" type="radio"/> Yes <input type="radio"/> No		New Area or Existing Area (circle) <input checked="" type="radio"/> New <input type="radio"/> Existing <input type="radio"/> Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	2	Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	24	Common Buckeye (<i>Junonia coenia grisea</i>)	1
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)	3	Painted Lady (<i>V. cardui</i>)	1
unidentified white		American (Virginia) Lady (<i>V. virginiensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	10
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)	3	California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gil2ippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	3
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	1	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)	5	White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	41		
Wright's Metalmark (<i>Calephelis wrighti</i>)	1		
Column Subtotal	80	Column Subtotal	15
			Total
			95

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Brian Lohstroh Date: March 6, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 3

Area(s) Surveyed D2, F1, F2, F3 Acres Surveyed 11.81 Survey Time: 3.17 Acres per Hour: 3.73

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	0900	65	0-2	0
End	1210	73	1-8	0

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	X
Host Plant Mapping Updated (circle) <input checked="" type="radio"/> Yes <input type="radio"/> No		New Area or Existing Area (circle) <input checked="" type="radio"/> New <input type="radio"/> Existing <input type="radio"/> Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	1	Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	1
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	15	Common Buckeye (<i>Junonia coenia grisea</i>)	1
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	6
unidentified white		American (Virginia) Lady (<i>V. virginiensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)	4	California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gil2ippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	5
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	1	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)	2	White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	11		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	34	Column Subtotal	13
			Total
			47

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Erica Harris Date: March 6, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 3

Area(s) Surveyed E Acres Surveyed 5.52 Survey Time: 1.83 Acres per Hour: 3.00

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1015	73	2-4	0
End	1205	73	1-3	0

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) <input checked="" type="radio"/> Yes <input type="radio"/> No		New Area or Existing Area (circle) <input checked="" type="radio"/> New <input type="radio"/> Existing <input type="radio"/> Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	1	Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	6
Pacific Sara Orangetip (<i>A. sara sara</i>)	23	Common Buckeye (<i>Junonia coenia grisea</i>)	1
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	6
unidentified white		American (Virginia) Lady (<i>V. virginiensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)	6	California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gil2ippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	2
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)	1	White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue	2	Other	
Family Riodinidae (Metalmarks)		Unidentified Checkerspot	1
Behr's Metalmark (<i>Apodemia virgulti</i>)	13		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		46	Column Subtotal
			16
			Total
			62

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Benjamin Rosenbaum Date: March 21, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 4 (make-up)

Area(s) Surveyed A-1, A-2, A-3 Acres Surveyed 15.65 Survey Time: 2.42 Acres per Hour: 6.47

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1100	62	1-3	15
End	1325	66	0-2	45

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="checkbox"/> Existing <input type="checkbox"/> Both <input type="checkbox"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	4	Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	16	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	6
unidentified white		American (Virginia) Lady (<i>V. virginiensis</i>)	
unidentified sulphur	1	unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gil2ippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	1
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue	3	Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	3		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	27	Column Subtotal	7
			Total
			34

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Erica Harris Date: March 21, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 4 (make-up)

Area(s) Surveyed B-1, B-2, Trail 4, Trail 5 (west) Acres Surveyed 14.00 Survey Time: 2.75 Acres per Hour: 5.09

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1155	71	2-5	15
End	1440	71	1-3	40

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) <input checked="" type="radio"/> Yes <input type="radio"/> No		New Area or Existing Area (circle) <input checked="" type="radio"/> New <input type="radio"/> Existing <input type="radio"/> Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)	1	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)	5	California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	17	Common Buckeye (<i>Junonia coenia grisea</i>)	1
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	6
unidentified white		American (Virginia) Lady (<i>V. virginiensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	20
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)	4	California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)	2	Queen (<i>Danaus gil2ippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	4
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	9	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)	1	White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue	2	Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	23		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	64	Column Subtotal	31
			Total
			95

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Amy Mattson Date: March 21, 2020
 Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 4 (make-up)
 Area(s) Surveyed C-1, C-2; Trail 3, Trail 6 Acres Surveyed 11.47 Survey Time: 3.02 Acres per Hour: 3.80
 Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1145	65	0-3	20
End	1232	65	0-5	30
Start	1254	65	0-5	25
End	1508	65	0-7	45

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) <input checked="" type="radio"/> Yes <input type="radio"/> No		New Area or Existing Area (circle) <input checked="" type="radio"/> New <input type="radio"/> Existing <input type="radio"/> Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Swallowtails)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Limenitidinae (Admirals and Relatives)	
Sleepy Orange (<i>Abaeis nicippe</i>)		California Sister (<i>Adelpha californica</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	5	Subfamily Satyrinae (Satyrs)	
Orange Sulphur (<i>Colias eurytheme</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		Subfamily Danainae (Monarchs)	
Cabbage White (<i>Pieris rapae</i>)		Monarch (<i>Danaus plexippus plexippus</i>)	
Becker's White (<i>Pontia beckerii</i>)		Queen (<i>Danaus gilZippus thersippus</i>)	
Checkered (Common) White (<i>P. protodice</i>)	3	Family Hesperidae (Skippers)	
Spring White (<i>P. sisymbrii</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	3
unidentified white		Mournful Duskywing (<i>E. tristis tristis</i>)	1
unidentified sulphur		Fiery Skipper (<i>Hylephila phyleus</i>)	
Family Lycaenidae (Gossamer-wing Butterflies)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Subfamily Theclinae (Hairstreaks)		unidentified skipper	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		1	Other
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Unidentified Butterfly	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)	2		
Gray Hairstreak (<i>Strymon melinus pudica</i>)			
Subfamily Polyommatainae (Blues)			
Western Pygmy-Blue (<i>Brephidium exilis</i>)			
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)			
Bernardino Blue (<i>Euphilotes bernardino</i>)			
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	4		
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)			
Acmon Blue (<i>Icaricia acmon</i>)			
Marine Blue (<i>Leptotes marina</i>)			
unidentified blue	1		
Family Riodinidae (Metalmarks)			
Behr's Metalmark (<i>Apodemia virgulti</i>)	28		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		43	17
Total		60	

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Stacy Nigro Date: March 21, 2020
 Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 4 (make-up)
 Area(s) Surveyed D-1, Trail 7 Acres Surveyed 10.00 Survey Time: 2.08 Acres per Hour: 4.81
 Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1130	61	0	20
End	1250	64	2-4	40
Start	1345	64	3-5	20
End	1430	66	3-5	20

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Swallowtails)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Limenitidinae (Admirals and Relatives)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	1
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	9	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	4
unidentified white	1	American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	3
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Danainae (Monarchs)	
Subfamily Theclinae (Hairstreaks)		Subfamily Limenitidinae (Admirals and Relatives)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		California Sister (<i>Adelpha californica</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)	2	Subfamily Satyrinae (Satyrs)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Subfamily Polyommatae (Blues)		Subfamily Danainae (Monarchs)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Queen (<i>Danaus gilZippus thersippus</i>)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Family Hesperidae (Skippers)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	3	Funereal Duskywing (<i>Erynnis funeralis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Marine Blue (<i>Leptotes marina</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
unidentified blue	3	unidentified skipper	
Family Riodinidae (Metalmarks)		Other	
		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	17		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		35	
			Column Subtotal
			10
			Total
			45

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Robert Hogenauer **Date:** March 21, 2020
Site Name: Dam Maintenance Program – Dulzura Conduit **Site Visit No:** 4 (make-up)
Area(s) Surveyed D-2, E, Trail 4 **Acres Surveyed** 10.15 **Survey Time:** 1.82 **Acres per Hour:** 5.58
Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1218	64	3-5	30
End	1342	63	2-4	30
Start	1408	64	1-3	40
End	1433	62	2-4	40

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) <input checked="" type="radio"/> Yes <input type="radio"/> No		New Area or Existing Area (circle) <input checked="" type="radio"/> New <input type="radio"/> Existing <input type="radio"/> Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Swallowtails)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Limenitidinae (Admirals and Relatives)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	7	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	
unidentified white	1	American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	5
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Danainae (Monarchs)	
Subfamily Theclinae (Hairstreaks)		Subfamily Hesperiinae (Skippers)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		California Sister (<i>Adelpha californica</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)	1	Subfamily Satyrinae (Satyrs)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Subfamily Polyommattinae (Blues)		Subfamily Danainae (Monarchs)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Queen (<i>Danaus gilZippus thersippus</i>)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Family Hesperiidae (Skippers)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Marine Blue (<i>Leptotes marina</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
unidentified blue	2	unidentified skipper	
Family Riodinidae (Metalmarks)		Other	
Behr's Metalmark (<i>Apodemia virgulti</i>)	9	Unidentified Butterfly	
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		20	Column Subtotal
			6
		Total	
			26

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Laura Moreton **Date:** March 21, 2020
Site Name: Dam Maintenance Program – Dulzura Conduit **Site Visit No:** 4 (make-up)
Area(s) Surveyed F-1, F-2, F-3, Trail 5 (east) **Acres Surveyed** 13.01 **Survey Time:** 1.75 **Acres per Hour:** 7.43
Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1135	71	0-1	25
End	1245	74	0-1	30
Start	1310	72	0-1	45
End	1455	70	1-3	45

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	X
Host Plant Mapping Updated (circle) <input checked="" type="radio"/> Yes <input type="radio"/> No		New Area or Existing Area (circle) <input checked="" type="radio"/> New <input type="radio"/> Existing <input type="radio"/> Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Swallowtails)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	1	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Limenitidinae (Admirals and Relatives)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	10	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	17
unidentified white	1	American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Danainae (Monarchs)	
Subfamily Theclinae (Hairstreaks)		Monarch (<i>Danaus plexippus plexippus</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Queen (<i>Danaus gilZippus thersippus</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Family Hesperidae (Skippers)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)	2	Funereal Duskywing (<i>Erynnis funeralis</i>)	1
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Subfamily Polyommatainae (Blues)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)	1	unidentified skipper	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Other	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	3	Unidentified Butterfly	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)			
Acmon Blue (<i>Icaricia acmon</i>)	1		
Marine Blue (<i>Leptotes marina</i>)			
unidentified blue			
Family Riodinidae (Metalmarks)			
Behr's Metalmark (<i>Apodemia virgulti</i>)	10		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	29	Column Subtotal	18
		Total	47

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Benjamin Rosenbaum Date: March 28, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 5 (make up)

Area(s) Surveyed A-1, A-2, A-3, Trail 3 Acres Surveyed 17.92 Survey Time: 2.50 Acres per Hour: 7.17

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1045	60	0-2	15
End	1315	65	0-2	20

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) <input checked="" type="radio"/> Yes <input type="radio"/> No		New Area or Existing Area (circle) New <input type="radio"/> Existing <input checked="" type="radio"/> Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	1	Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)	1	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	15	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	4
unidentified white		American (Virginia) Lady (<i>V. virginiensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)	1	California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gil2ippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	2
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)	1	White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue	3	Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	10		
Wright's Metalmark (<i>Calephelis wrighti</i>)	1		
Column Subtotal	33	Column Subtotal	6
			Total
			39

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Erica Harris **Date:** March 28, 2020
Site Name: Dam Maintenance Program – Dulzura Conduit **Site Visit No:** 5 (make up)
Area(s) Surveyed B-1, B-2, Trail 4, Trail 5 (west) **Acres Surveyed** 15.27 **Survey Time:** 2.75 **Acres per Hour:** 5.55
Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1045	60	2-5	15
End	1305	72	1-5	5
Start	1350	67	2-5	5
End	1415	67	2-5	5

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) <input checked="" type="radio"/> Yes <input type="radio"/> No		New Area or Existing Area (circle) <input type="radio"/> New <input type="radio"/> Existing <input checked="" type="radio"/> Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Swallowtails)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	1	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)	1	California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Limenitidinae (Admirals and Relatives)	
Sleepy Orange (<i>Abaeis nicippe</i>)		California Sister (<i>Adelpha californica</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	14	Subfamily Satyrinae (Satyrs)	
Orange Sulphur (<i>Colias eurytheme</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		Subfamily Danainae (Monarchs)	
Cabbage White (<i>Pieris rapae</i>)		Monarch (<i>Danaus plexippus plexippus</i>)	
Becker's White (<i>Pontia beckerii</i>)		Queen (<i>Danaus gilZippus thersippus</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Family Hesperidae (Skippers)	
Spring White (<i>P. sisymbrii</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
unidentified white		Mournful Duskywing (<i>E. tristis tristis</i>)	
unidentified sulphur	1	Fiery Skipper (<i>Hylephila phyleus</i>)	
Family Lycaenidae (Gossamer-wing Butterflies)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Subfamily Theclinae (Hairstreaks)		unidentified skipper	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Other	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Unidentified Butterfly	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)	5		
Gray Hairstreak (<i>Strymon melinus pudica</i>)			
Subfamily Polyommatainae (Blues)			
Western Pygmy-Blue (<i>Brephidium exilis</i>)			
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)			
Bernardino Blue (<i>Euphilotes bernardino</i>)			
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	10		
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)			
Acmon Blue (<i>Icaricia acmon</i>)			
Marine Blue (<i>Leptotes marina</i>)			
unidentified blue			
Family Riodinidae (Metalmarks)			
Behr's Metalmark (<i>Apodemia virgulti</i>)	20		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		52	20
		Total	
		72	

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Garrett Huffman Date: March 28, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 5 (make up)

Area(s) Surveyed C1, C2, Trail 5 (east), Trail 6 Acres Surveyed 13.77 Survey Time: 3.50 Acres per Hour: 3.93

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1100	63	1-3	0
End	1430	69	2-4	0

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	2	Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	17
Desert Orangetip (<i>Anthocharis cethura</i>)	3	Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	15	Common Buckeye (<i>Junonia coenia grisea</i>)	3
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)	1	Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)	2	Red Admiral (<i>V. atalanta rubria</i>)	1
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	7
unidentified white		American (Virginia) Lady (<i>V. virginiensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)	3	California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)	1	Subfamily Danainae (Monarchs)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gil2ippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	4
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	5	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Southern Dogface (<i>Zerene cesonia cesonia</i>)	1
Behr's Metalmark (<i>Apodemia virgulti</i>)	6		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	38	Column Subtotal	33
			Total
			71

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Robert Hogenauer Date: March 28, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 5 (make up)

Area(s) Surveyed D-1, D-2, Trail 7 Acres Surveyed 13.38 Survey Time: 3.17 Acres per Hour: 4.22

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1045	60	4-6	10
End	1320	64	3-5	20
Start	1335	63	3-5	20
End	1410	62	4-6	40

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="checkbox"/> Existing <input type="checkbox"/> Both <input type="checkbox"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Swallowtails)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	1	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Limenitidinae (Admirals and Relatives)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	10
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	30	Common Buckeye (<i>Junonia coenia grisea</i>)	8
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	1
Checkered (Common) White (<i>P. protodice</i>)	2	Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	1
unidentified white		American (Virginia) Lady (<i>V. virginiensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	15
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Danainae (Monarchs)	
Subfamily Theclinae (Hairstreaks)		Subfamily Limenitidinae (Admirals and Relatives)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		California Sister (<i>Adelpha californica</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)	7	Subfamily Satyrinae (Satyrs)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Subfamily Polyommattinae (Blues)		Subfamily Danainae (Monarchs)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Queen (<i>Danaus gilZippus thersippus</i>)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Family Hesperidae (Skippers)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	6	Funereal Duskywing (<i>Erynnis funeralis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Marine Blue (<i>Leptotes marina</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
unidentified blue	2	unidentified skipper	
Family Riodinidae (Metalmarks)		Other	
Behr's Metalmark (<i>Apodemia virgulti</i>)	45	Unidentified Butterfly	
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		93	Column Subtotal
			47
			Total
			140

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Laura Moreton **Date:** March 28, 2020
Site Name: Dam Maintenance Program – Dulzura Conduit **Site Visit No:** 5 (make up)
Area(s) Surveyed E, F-1, F-2, F-3 **Acres Surveyed** 13.95 **Survey Time:** 2.92 **Acres per Hour:** 4.78
Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1155	62	0-1	10
End	1450	64	0-1	35

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)		Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	41
unidentified white		American (Virginia) Lady (<i>V. virginiensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)	1	Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)	3	California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	2
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	1	Mournful Duskywing (<i>E. tristis tristis</i>)	1
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	19		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	24	Column Subtotal	44
			Total
			68

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Benjamin Rosenbaum Date: March 30, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 6 (make up)

Area(s) Surveyed A-1, A-2, A-3, Trail 3 Acres Surveyed 17.92 Survey Time: 3.00 Acres per Hour: 5.97

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1015	62	0-3	0
End	1315	76	0-3	5

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	1	Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)	1	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	19	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	2
unidentified white	1	American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	14
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)	4	California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue	10	Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	9		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	45	Column Subtotal	16
			Total
			61

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Laura Moreton **Date:** March 30, 2020
Site Name: Dam Maintenance Program – Dulzura Conduit **Site Visit No:** 6 (make up)
Area(s) Surveyed B-1, B-2, Trail 5 **Acres Surveyed** 18.60 **Survey Time:** 3.83 **Acres per Hour:** 4.86
Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1105	61	0-1	0
End	1455	61	3-5	1

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	4	Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	31	Common Buckeye (<i>Junonia coenia grisea</i>)	2
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	1
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	1
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)	1	Painted Lady (<i>V. cardui</i>)	33
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur	1	unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)	1	California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatainae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gil2ippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	4
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	1	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue	18	Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	16		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	73	Column Subtotal	41
			Total
			114

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Benjamin Rosenbaum Date: March 31, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 6 (make up)

Area(s) Surveyed C-1, C-2, D-2, F-1, Trail 6 Acres Surveyed 16.35 Survey Time: 2.92 Acres per Hour: 5.60

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1135	70	1-3	60
End	1430	72	1-3	60

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	1	Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	1
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	10	Common Buckeye (<i>Junonia coenia grisea</i>)	1
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	9
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gil2ippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	1
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue	3	Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	22		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		36	Column Subtotal
			12
			Total
			48

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Laura Moreton **Date:** March 31, 2020
Site Name: Dam Maintenance Program – Dulzura Conduit **Site Visit No:** 6 (make up)
Area(s) Surveyed D-1, F-2, F-3, Trail 7 **Acres Surveyed** 14.66 **Survey Time:** 2.17 **Acres per Hour:** 6.76
Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1130	70	0-1	95
End	1255	70	0-1	100
Start	1315	70	0-1	100
End	1320	70	0-1	100
Start	1335	70	2-5	100
End	1415	71	0-2	100

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	2	Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	1
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	7	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	13
unidentified white	1	American (Virginia) Lady (<i>V. virginiensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)	3	California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommattinae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilZippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	2
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	1
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)	1	White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue	2	Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	10		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		26	Column Subtotal
			17
			Total
			43

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Benjamin Rosenbaum Date: April 1, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 7

Area(s) Surveyed A-1, A-2, A-3, Trail 6 Acres Surveyed 17.87 Survey Time: 3.25 Acres per Hour: 5.50

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	0910	60	0-3	45
End	1225	77	0-3	5

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)	1	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	33	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	12
unidentified white		American (Virginia) Lady (<i>V. virginiensis</i>)	
unidentified sulphur	1	unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)	1	California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	2
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue	6	Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	4		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	46	Column Subtotal	14
			Total
			60

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Erica Harris Date: April 1, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 7

Area(s) Surveyed B-1, B-2, Trail 5 Acres Surveyed 18.60 Survey Time: 3.25 Acres per Hour: 5.72

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	0945	66	0-2	20
End	1300	75	2-6	0

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) <input checked="" type="radio"/> Yes <input type="radio"/> No		New Area or Existing Area (circle) <input type="radio"/> New <input type="radio"/> Existing <input checked="" type="radio"/> Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	4	Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)	3	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	1
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	38	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	3
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	18
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)	3	California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	6
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	11	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)	2	White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	21		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	82	Column Subtotal	28
			Total
			110

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Benjamin Rosenbaum Date: April 2, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 7

Area(s) Surveyed C-1, C-2, D-2, F-1, Trail 6 Acres Surveyed 16.35 Survey Time: 3.75 Acres per Hour: 4.36

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1015	64	0-3	45
End	1400	74	4-6	20

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="checkbox"/> Existing <input type="checkbox"/> Both <input type="checkbox"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
<i>Pale Swallowtail (Papilio eurymedon)</i>		Subfamily Nymphalinae (True Brushfoots)	
<i>Western Tiger Swallowtail (P. rutulus rutulus)</i>		<i>Leanira Checkerspot (Chlosyne leanira)</i>	
<i>Anise Swallowtail (P. zelicaon)</i>		<i>California Patch (C. californica)</i>	
Family Pieridae (Whites and Sulphurs)		<i>Gabb's Checkerspot (C. gabbii gabbii)</i>	
<i>Sleepy Orange (Abaeis nicippe)</i>		<i>Chalcedon Checkerspot (Euphydryas chalcedona)</i>	
<i>Desert Orangetip (Anthocharis cethura)</i>		<i>Quino Checkerspot (E. editha quino)</i>	
<i>Pacific Sara Orangetip (A. sara sara)</i>		<i>Common Buckeye (Junonia coenia grisea)</i>	
<i>Orange Sulphur (Colias eurytheme)</i>		<i>Mourning Cloak (Nymphalis antiopa antiopa)</i>	
<i>Cloudless Sulphur (Phoebis sennae)</i>		<i>California Tortoiseshell (N. californica californica)</i>	
<i>Cabbage White (Pieris rapae)</i>		<i>Mylitta Crescent (Phyciodes mylitta)</i>	
<i>Becker's White (Pontia beckerii)</i>		<i>West Coast Lady (Vanessa annabella)</i>	
<i>Checkered (Common) White (P. protodice)</i>		<i>Red Admiral (V. atalanta rubria)</i>	
<i>Spring White (P. sisymbrii)</i>		<i>Painted Lady (V. cardui)</i>	
unidentified white		<i>American (Virginia) Lady (V. virginensis)</i>	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
		21	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		<i>California Sister (Adelpha californica)</i>	
<i>Great Purple Hairstreak (Atlides halesus corcorani)</i>		<i>Lorquin's Admiral (Limenitis lorquini)</i>	
<i>Western Brown Elfin (Callophrys augustinus iroides)</i>		Subfamily Satyrinae (Satyrs)	
<i>Bramble (Perplexing) Hairstreak (C. dumetorum perplexa)</i>		<i>California Common Ringlet (Coenonympha tullia californica)</i>	
<i>Gray Hairstreak (Strymon melinus pudica)</i>		Subfamily Danainae (Monarchs)	
Subfamily Polyommatae (Blues)		<i>Monarch (Danaus plexippus plexippus)</i>	
<i>Western Pygmy-Blue (Brephidium exilis)</i>		<i>Queen (Danaus gil2ippus thersippus)</i>	
<i>Western Tailed Blue (Cupido amyntula amyntula)</i>		Family Hesperidae (Skippers)	
<i>Bernardino Blue (Euphilotes bernardino)</i>		<i>Funereal Duskywing (Erynnis funeralis)</i>	
<i>Southern California Silvery Blue (Glaucopsyche lygdamus australis)</i>		<i>Mournful Duskywing (E. tristis tristis)</i>	
<i>Ceraunus (Edward's) Blue (Hemiargus ceraunus gyas)</i>		<i>Fiery Skipper (Hylephila phyleus)</i>	
<i>Acmon Blue (Icaricia acmon)</i>		<i>White Checkered-Skipper (Pyrgus albescens)</i>	
<i>Marine Blue (Leptotes marina)</i>		unidentified skipper	
unidentified blue		4	
Family Riodinidae (Metalmarks)		Other	
<i>Behr's Metalmark (Apodemia virgulti)</i>		Unidentified Butterfly	
<i>Wright's Metalmark (Calephelis wrighti)</i>			
Column Subtotal		38	
		Column Subtotal	
		34	
		Total	
		72	

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Laura Moreton Date: April 2, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 7

Area(s) Surveyed D-1, F-2, F-3, Trail 7 Acres Surveyed 14.66 Survey Time: 3.08 Acres per Hour: 4.76

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1110	66	3-5	15
End	1330	70	0-1	10
Start	1345	72	0-1	20
End	1350	73	0-1	20
Start	1405	74	1-2	35
End	1445	73	2-4	30

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
<i>Pale Swallowtail (Papilio eurymedon)</i>		Subfamily Nymphalinae (True Brushfoots)	
<i>Western Tiger Swallowtail (P. rutulus rutulus)</i>		<i>Leanira Checkerspot (Chlosyne leanira)</i>	
<i>Anise Swallowtail (P. zelicaon)</i>		<i>California Patch (C. californica)</i>	
Family Pieridae (Whites and Sulphurs)		<i>Gabb's Checkerspot (C. gabbii gabbii)</i>	
<i>Sleepy Orange (Abaeis nicippe)</i>		<i>Chalcedon Checkerspot (Euphydryas chalcedona)</i>	
<i>Desert Orangetip (Anthocharis cethura)</i>		<i>Quino Checkerspot (E. editha quino)</i>	
<i>Pacific Sara Orangetip (A. sara sara)</i>		<i>Common Buckeye (Junonia coenia grisea)</i>	
<i>Orange Sulphur (Colias eurytheme)</i>		<i>Mourning Cloak (Nymphalis antiopa antiopa)</i>	
<i>Cloudless Sulphur (Phoebis sennae)</i>		<i>California Tortoiseshell (N. californica californica)</i>	
<i>Cabbage White (Pieris rapae)</i>		<i>Mylitta Crescent (Phyciodes mylitta)</i>	
<i>Becker's White (Pontia beckerii)</i>		<i>West Coast Lady (Vanessa annabella)</i>	
<i>Checkered (Common) White (P. protodice)</i>		<i>Red Admiral (V. atalanta rubria)</i>	
<i>Spring White (P. sisymbrii)</i>		<i>Painted Lady (V. cardui)</i>	
unidentified white		<i>American (Virginia) Lady (V. virginiensis)</i>	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		<i>California Sister (Adelpha californica)</i>	
<i>Great Purple Hairstreak (Atlides halesus corcorani)</i>		<i>Lorquin's Admiral (Limenitis lorquini)</i>	
<i>Western Brown Elfin (Callophrys augustinus iroides)</i>		Subfamily Satyrinae (Satyrs)	
<i>Bramble (Perplexing) Hairstreak (C. dumetorum perplexa)</i>		<i>California Common Ringlet (Coenonympha tullia californica)</i>	
<i>Gray Hairstreak (Strymon melinus pudica)</i>		Subfamily Danainae (Monarchs)	
Subfamily Polyommattinae (Blues)		<i>Monarch (Danaus plexippus plexippus)</i>	
<i>Western Pygmy-Blue (Brephidium exilis)</i>		<i>Queen (Danaus gilZippus thersippus)</i>	
<i>Western Tailed Blue (Cupido amyntula amyntula)</i>		Family Hesperidae (Skippers)	
<i>Bernardino Blue (Euphilotes bernardino)</i>		<i>Funereal Duskywing (Erynnis funeralis)</i>	
<i>Southern California Silvery Blue (Glaucopsyche lygdamus australis)</i>		<i>Mournful Duskywing (E. tristis tristis)</i>	
<i>Ceraunus (Edward's) Blue (Hemiargus ceraunus gyas)</i>		<i>Fiery Skipper (Hylephila phyleus)</i>	
<i>Acmon Blue (Icaricia acmon)</i>		<i>White Checkered-Skipper (Pyrgus albescens)</i>	
<i>Marine Blue (Leptotes marina)</i>		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
<i>Behr's Metalmark (Apodemia virgulti)</i>			
<i>Wright's Metalmark (Calephelis wrighti)</i>			
Column Subtotal		56	
			Column Subtotal
			34
			Total
			90

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Benjamin Rosenbaum Date: April 14, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 8 (make up)

Area(s) Surveyed A-1, A-2, A-3, Trail 3 Acres Surveyed 17.92 Survey Time: 3.00 Acres per Hour: 5.97

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	0950	64	0-2	0
End	1250	75	4-8	0

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	X
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) <input checked="" type="radio"/> Yes <input type="radio"/> No		New Area or Existing Area (circle) <input type="radio"/> New <input type="radio"/> Existing <input checked="" type="radio"/> Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
<i>Pale Swallowtail (Papilio eurymedon)</i>		Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	29	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	
unidentified white		American (Virginia) Lady (<i>V. virginiensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	5
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gil2ippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	3		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	32	Column Subtotal	5
			Total
			37

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Laura Moreton **Date:** April 14, 2020
Site Name: Dam Maintenance Program – Dulzura Conduit **Site Visit No:** 8 (make up)
Area(s) Surveyed B-1, B-2, Trail 5 **Acres Surveyed** 18.60 **Survey Time:** 2.83 **Acres per Hour:** 6.57
Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1030	61	0-1	0
End	1320	67	3-8	1

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	X
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	1	Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	1
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	41	Common Buckeye (<i>Junonia coenia grisea</i>)	2
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	5
unidentified white		American (Virginia) Lady (<i>V. virginiensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	16
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatainae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gil2ippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	2	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue	2	Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	6		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	52	Column Subtotal	24
			Total
			76

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Erica Harris Date: April 14, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 8 (make up)

Area(s) Surveyed C-2, D-1, D-2, Trail 7 Acres Surveyed 18.23 Survey Time: 3.00 Acres per Hour: 6.08

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1000	67	2-4	0
End	1230	83	1-6	0
Start	1355	79	3-8	0
End	1425	80	2-6	0

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		New Area or Existing Area (circle) New <input type="checkbox"/> Existing <input type="checkbox"/> Both <input type="checkbox"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Swallowtails)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	1	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Limenitidinae (Admirals and Relatives)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	53	Common Buckeye (<i>Junonia coenia grisea</i>)	4
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	2
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)	1	Painted Lady (<i>V. cardui</i>)	1
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur	3	unidentified lady (<i>Vanessa</i> sp.)	18
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Danainae (Monarchs)	
Subfamily Theclinae (Hairstreaks)		Subfamily Limenitidinae (Admirals and Relatives)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		California Sister (<i>Adelpha californica</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		Subfamily Satyrinae (Satyrs)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Subfamily Polyommatae (Blues)		Subfamily Danainae (Monarchs)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)	1	Queen (<i>Danaus gilZippus thersippus</i>)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Family Hesperidae (Skippers)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Marine Blue (<i>Leptotes marina</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
unidentified blue		unidentified skipper	
Family Riodinidae (Metalmarks)		Other	
Behr's Metalmark (<i>Apodemia virgulti</i>)	7	Unidentified Butterfly	
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		66	Column Subtotal
			27
			Total
			93

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Amy Mattson Date: April 14, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 8 (make up)

Area(s) Surveyed F-1, F-2, F-3, C-1, Trail 6 Acres Surveyed 12.78 Survey Time: 3.45 Acres per Hour: 3.70

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	0930	61	0-6	0
End	1105	71	0-8	1
Start	1125	76	2-8	1
End	1230	78	2-8	0
Start	1243	78	0-4	0
End	1330	77	0-8	0

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
<i>Pale Swallowtail (Papilio eurymedon)</i>		Subfamily Nymphalinae (True Brushfoots)	
<i>Western Tiger Swallowtail (P. rutulus rutulus)</i>		<i>Leanira Checkerspot (Chlosyne leanira)</i>	
<i>Anise Swallowtail (P. zelicaon)</i>		<i>California Patch (C. californica)</i>	
Family Pieridae (Whites and Sulphurs)		<i>Gabb's Checkerspot (C. gabbii gabbii)</i>	
<i>Sleepy Orange (Abaeis nicippe)</i>		<i>Chalcedon Checkerspot (Euphydryas chalcedona)</i>	
<i>Desert Orangetip (Anthocharis cethura)</i>		<i>Quino Checkerspot (E. editha quino)</i>	
<i>Pacific Sara Orangetip (A. sara sara)</i>		<i>Common Buckeye (Junonia coenia grisea)</i>	
<i>Orange Sulphur (Colias eurytheme)</i>		<i>Mourning Cloak (Nymphalis antiopa antiopa)</i>	
<i>Cloudless Sulphur (Phoebis sennae)</i>		<i>California Tortoiseshell (N. californica californica)</i>	
<i>Cabbage White (Pieris rapae)</i>		<i>Mylitta Crescent (Phyciodes mylitta)</i>	
<i>Becker's White (Pontia beckerii)</i>		<i>West Coast Lady (Vanessa annabella)</i>	
<i>Checkered (Common) White (P. protodice)</i>		<i>Red Admiral (V. atalanta rubria)</i>	
<i>Spring White (P. sisymbrii)</i>		<i>Painted Lady (V. cardui)</i>	
unidentified white		<i>American (Virginia) Lady (V. virginensis)</i>	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		<i>California Sister (Adelpha californica)</i>	
<i>Great Purple Hairstreak (Atlides halesus corcorani)</i>		<i>Lorquin's Admiral (Limenitis lorquini)</i>	
<i>Western Brown Elfin (Callophrys augustinus iroides)</i>		Subfamily Satyrinae (Satyrs)	
<i>Bramble (Perplexing) Hairstreak (C. dumetorum perplexa)</i>		<i>California Common Ringlet (Coenonympha tullia californica)</i>	
<i>Gray Hairstreak (Strymon melinus pudica)</i>		Subfamily Danainae (Monarchs)	
Subfamily Polyommattinae (Blues)		<i>Monarch (Danaus plexippus plexippus)</i>	
<i>Western Pygmy-Blue (Brephidium exilis)</i>		<i>Queen (Danaus gilZippus thersippus)</i>	
<i>Western Tailed Blue (Cupido amyntula amyntula)</i>		Family Hesperidae (Skippers)	
<i>Bernardino Blue (Euphilotes bernardino)</i>		<i>Funereal Duskywing (Erynnis funeralis)</i>	
<i>Southern California Silvery Blue (Glaucopsyche lygdamus australis)</i>		<i>Mournful Duskywing (E. tristis tristis)</i>	
<i>Ceraunus (Edward's) Blue (Hemiargus ceraunus gyas)</i>		<i>Fiery Skipper (Hylephila phyleus)</i>	
<i>Acmon Blue (Icaricia acmon)</i>		<i>White Checkered-Skipper (Pyrgus albescens)</i>	
<i>Marine Blue (Leptotes marina)</i>		unidentified skipper	
unidentified blue		1	
Family Riodinidae (Metalmarks)		Other	
<i>Behr's Metalmark (Apodemia virgulti)</i>		Unidentified Butterfly	
<i>Wright's Metalmark (Calephelis wrighti)</i>			
Column Subtotal		Column Subtotal	
12		19	
Total		31	

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Benjamin Rosenbaum Date: April 16, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 9

Area(s) Surveyed A-1, A-2, A-3, Trail 3 Acres Surveyed 17.92 Survey Time: 3.42 Acres per Hour: 5.24

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	0930	64	0-2	45
End	1255	73	0-2	5

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	X
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) <input checked="" type="radio"/> Yes <input type="radio"/> No		New Area or Existing Area (circle) New <input type="radio"/> Existing <input checked="" type="radio"/> Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
<i>Pale Swallowtail (Papilio eurymedon)</i>		Subfamily Nymphalinae (True Brushfoots)	
<i>Western Tiger Swallowtail (P. rutulus rutulus)</i>		<i>Leanira Checkerspot (Chlosyne leanira)</i>	
<i>Anise Swallowtail (P. zelicaon)</i>		<i>California Patch (C. californica)</i>	
Family Pieridae (Whites and Sulphurs)		<i>Gabb's Checkerspot (C. gabbii gabbii)</i>	
<i>Sleepy Orange (Abaeis nicippe)</i>		<i>Chalcedon Checkerspot (Euphydryas chalcedona)</i>	
<i>Desert Orangetip (Anthocharis cethura)</i>		<i>Quino Checkerspot (E. editha quino)</i>	
<i>Pacific Sara Orangetip (A. sara sara)</i>		<i>Common Buckeye (Junonia coenia grisea)</i>	
<i>Orange Sulphur (Colias eurytheme)</i>		<i>Mourning Cloak (Nymphalis antiopa antiopa)</i>	
<i>Cloudless Sulphur (Phoebis sennae)</i>		<i>California Tortoiseshell (N. californica californica)</i>	
<i>Cabbage White (Pieris rapae)</i>		<i>Mylitta Crescent (Phyciodes mylitta)</i>	
<i>Becker's White (Pontia beckerii)</i>		<i>West Coast Lady (Vanessa annabella)</i>	
<i>Checkered (Common) White (P. protodice)</i>		<i>Red Admiral (V. atalanta rubria)</i>	
<i>Spring White (P. sisymbrii)</i>		<i>Painted Lady (V. cardui)</i>	
unidentified white		<i>American (Virginia) Lady (V. virginiensis)</i>	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		<i>California Sister (Adelpha californica)</i>	
<i>Great Purple Hairstreak (Atlides halesus corcorani)</i>		<i>Lorquin's Admiral (Limenitis lorquini)</i>	
<i>Western Brown Elfin (Callophrys augustinus iroides)</i>		Subfamily Satyrinae (Satyrs)	
<i>Bramble (Perplexing) Hairstreak (C. dumetorum perplexa)</i>		<i>California Common Ringlet (Coenonympha tullia californica)</i>	
<i>Gray Hairstreak (Strymon melinus pudica)</i>		Subfamily Danainae (Monarchs)	
Subfamily Polyommatae (Blues)		<i>Monarch (Danaus plexippus plexippus)</i>	
<i>Western Pygmy-Blue (Brephidium exilis)</i>		<i>Queen (Danaus gilippus thersippus)</i>	
<i>Western Tailed Blue (Cupido amyntula amyntula)</i>		Family Hesperidae (Skippers)	
<i>Bernardino Blue (Euphilotes bernardino)</i>		<i>Funereal Duskywing (Erynnis funeralis)</i>	
<i>Southern California Silvery Blue (Glaucopsyche lygdamus australis)</i>		1	
<i>Ceraunus (Edward's) Blue (Hemiargus ceraunus gyas)</i>		<i>Mournful Duskywing (E. tristis tristis)</i>	
<i>Acmon Blue (Icaricia acmon)</i>		<i>Fiery Skipper (Hylephila phyleus)</i>	
<i>Marine Blue (Leptotes marina)</i>		<i>White Checkered-Skipper (Pyrgus albescens)</i>	
unidentified blue		unidentified skipper	
Family Riodinidae (Metalmarks)		Other	
<i>Behr's Metalmark (Apodemia virgulti)</i>		Unidentified Butterfly	
<i>Wright's Metalmark (Calephelis wrighti)</i>			
Column Subtotal		Column Subtotal	
48		4	
		Total	
		52	

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Laura Moreton Date: April 16, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 9

Area(s) Surveyed B-1, B-2, Trail 5 Acres Surveyed 18.60 Survey Time: 2.75 Acres per Hour: 6.76

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	0955	68	0-1	0
End	1240	75	0-1	0

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
<i>Pale Swallowtail (Papilio eurymedon)</i>		Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)	1	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	57	Common Buckeye (<i>Junonia coenia grisea</i>)	2
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	1
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	2
unidentified white	3	American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur	3	unidentified lady (<i>Vanessa</i> sp.)	1
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	5
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	5	Mournful Duskywing (<i>E. tristis tristis</i>)	1
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue	3	Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	4		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	76	Column Subtotal	12
			Total
			88

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Erica Harris Date: April 16, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 9

Area(s) Surveyed C-2, D-1, D-2, Trail 7 Acres Surveyed 18.23 Survey Time: 3.25 Acres per Hour: 5.61

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	0930	66	1-3	0
End	1215	76	2-4	0
Start	1325	76	1-3	0
End	1355	76	1-3	0

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="checkbox"/> Existing <input type="checkbox"/> Both <input type="checkbox"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Swallowtails)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	2	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Limenitidinae (Admirals and Relatives)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	2
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	53	Common Buckeye (<i>Junonia coenia grisea</i>)	8
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	1
Checkered (Common) White (<i>P. protodice</i>)	1	Red Admiral (<i>V. atalanta rubria</i>)	1
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	1
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	8
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Danainae (Monarchs)	
Subfamily Theclinae (Hairstreaks)		Monarch (<i>Danaus plexippus plexippus</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Queen (<i>Danaus gilZippus thersippus</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Family Hesperidae (Skippers)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	3
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Subfamily Polyommattinae (Blues)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)	1	unidentified skipper	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Other	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Unidentified Butterfly	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)			
Acmon Blue (<i>Icaricia acmon</i>)			
Marine Blue (<i>Leptotes marina</i>)			
unidentified blue	3		
Family Riodinidae (Metalmarks)			
Behr's Metalmark (<i>Apodemia virgulti</i>)	7		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		67	24
		Total	
			91

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Amy Mattson Date: April 16, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 9

Area(s) Surveyed F-1, F-2, F-3, C-1, Trail 6 Acres Surveyed 12.78 Survey Time: 3.08 Acres per Hour: 4.15

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	0905	67	0-2	0
End	1030	77	0-2	0
Start	1053	77	0-3	0
End	1233	75	0-2	0

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	X
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Swallowtails)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Common Buckeye (<i>Junonia coenia grisea</i>)	5
Pacific Sara Orangetip (<i>A. sara sara</i>)	33	Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Cabbage White (<i>Pieris rapae</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Becker's White (<i>Pontia beckerii</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Checkered (Common) White (<i>P. protodice</i>)	1	Painted Lady (<i>V. cardui</i>)	
Spring White (<i>P. sisymbrii</i>)		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified white		unidentified lady (<i>Vanessa</i> sp.)	8
unidentified sulphur	3	Subfamily Limenitidinae (Admirals and Relatives)	
Family Lycaenidae (Gossamer-wing Butterflies)		California Sister (<i>Adelpha californica</i>)	
Subfamily Theclinae (Hairstreaks)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Subfamily Satyrinae (Satyrs)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		Subfamily Danainae (Monarchs)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Monarch (<i>Danaus plexippus plexippus</i>)	
Subfamily Polyommatae (Blues)		Queen (<i>Danaus gilZippus thersippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Family Hesperidae (Skippers)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		unidentified skipper	
Marine Blue (<i>Leptotes marina</i>)		Other	
unidentified blue		Unidentified Butterfly	
Family Riodinidae (Metalmarks)			
Behr's Metalmark (<i>Apodemia virgulti</i>)	6		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		43	13
		Total	
		56	

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Erica Harris Date: April 21, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 10

Area(s) Surveyed A-1, A-2, A-3, Trail 3 Acres Surveyed 17.92 Survey Time: 2.75 Acres per Hour: 6.52

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1200	70	1-3	40
End	1445	75	2-6	80

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)		onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)	X	buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	1	Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	30	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	1
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	
unidentified white		American (Virginia) Lady (<i>V. virginiensis</i>)	
unidentified sulphur	4	unidentified lady (<i>Vanessa</i> sp.)	2
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gil2ippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)	2	Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	3
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)	2	White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	3		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	42	Column Subtotal	6
			Total
			48

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Laura Moreton Date: April 21, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 10

Area(s) Surveyed B-1, B-2, Trail 5 Acres Surveyed 18.60 Survey Time: 2.58 Acres per Hour: 7.21

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1135	69	1-3	45
End	1410	68	3-5	40

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	2	Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	32	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	
unidentified white	1	American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur	1	unidentified lady (<i>Vanessa</i> sp.)	2
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gil2ippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	3
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue	1	Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	16		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	53	Column Subtotal	5
			Total
			58

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Amy Mattson Date: April 21, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 10

Area(s) Surveyed D-2, F-1, F-2, F-3 Acres Surveyed 11.81 Survey Time: 2.15 Acres per Hour: 5.49

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1055	66	0-4	45
End	1145	69	0-6	45
Start	1215	67	0-4	45
End	1315	65	0-4	49
Start	1356	67	0-6	49
End	1415	69	0-4	49

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	X
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
<i>Pale Swallowtail (Papilio eurymedon)</i>		Subfamily Nymphalinae (True Brushfoots)	
<i>Western Tiger Swallowtail (P. rutulus rutulus)</i>		<i>Leanira Checkerspot (Chlosyne leanira)</i>	
<i>Anise Swallowtail (P. zelicaon)</i>		<i>California Patch (C. californica)</i>	
Family Pieridae (Whites and Sulphurs)		<i>Gabb's Checkerspot (C. gabbii gabbii)</i>	
<i>Sleepy Orange (Abaeis nicippe)</i>		<i>Chalcedon Checkerspot (Euphydryas chalcedona)</i>	
<i>Desert Orangetip (Anthocharis cethura)</i>		<i>Quino Checkerspot (E. editha quino)</i>	
<i>Pacific Sara Orangetip (A. sara sara)</i>		<i>Common Buckeye (Junonia coenia grisea)</i>	
<i>Orange Sulphur (Colias eurytheme)</i>		<i>Mourning Cloak (Nymphalis antiopa antiopa)</i>	
<i>Cloudless Sulphur (Phoebis sennae)</i>		<i>California Tortoiseshell (N. californica californica)</i>	
<i>Cabbage White (Pieris rapae)</i>		<i>Mylitta Crescent (Phyciodes mylitta)</i>	
<i>Becker's White (Pontia beckerii)</i>		<i>West Coast Lady (Vanessa annabella)</i>	
<i>Checkered (Common) White (P. protodice)</i>		<i>Red Admiral (V. atalanta rubria)</i>	
<i>Spring White (P. sisymbrii)</i>		<i>Painted Lady (V. cardui)</i>	
unidentified white		<i>American (Virginia) Lady (V. virginiensis)</i>	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		<i>California Sister (Adelpha californica)</i>	
<i>Great Purple Hairstreak (Atlides halesus corcorani)</i>		<i>Lorquin's Admiral (Limenitis lorquini)</i>	
<i>Western Brown Elfin (Callophrys augustinus iroides)</i>		Subfamily Satyrinae (Satyrs)	
<i>Bramble (Perplexing) Hairstreak (C. dumetorum perplexa)</i>		<i>California Common Ringlet (Coenonympha tullia californica)</i>	
<i>Gray Hairstreak (Strymon melinus pudica)</i>		Subfamily Danainae (Monarchs)	
Subfamily Polyommattinae (Blues)		<i>Monarch (Danaus plexippus plexippus)</i>	
<i>Western Pygmy-Blue (Brephidium exilis)</i>		<i>Queen (Danaus gilippus thersippus)</i>	
<i>Western Tailed Blue (Cupido amyntula amyntula)</i>		Family Hesperidae (Skippers)	
<i>Bernardino Blue (Euphilotes bernardino)</i>		<i>Funereal Duskywing (Erynnis funeralis)</i>	
<i>Southern California Silvery Blue (Glaucopsyche lygdamus australis)</i>		<i>Mournful Duskywing (E. tristis tristis)</i>	
<i>Ceraunus (Edward's) Blue (Hemiargus ceraunus gyas)</i>		<i>Fiery Skipper (Hylephila phyleus)</i>	
<i>Acmon Blue (Icaricia acmon)</i>		<i>White Checkered-Skipper (Pyrgus albescens)</i>	
<i>Marine Blue (Leptotes marina)</i>		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
<i>Behr's Metalmark (Apodemia virgulti)</i>			
<i>Wright's Metalmark (Calephelis wrighti)</i>			
Column Subtotal		21	Column Subtotal
			5
		Total	
			26

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Erica Harris Date: April 23, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 10

Area(s) Surveyed C-1, C-2, D-1. Trail 6, Trail 7 Acres Surveyed 19.20 Survey Time: 3.50 Acres per Hour: 5.49

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	0910	73	0-1	0
End	1150	89	1-3	0
Start	1330	86	2-5	0
End	1420	86	3-6	0

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Swallowtails)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	2	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Limenitidinae (Admirals and Relatives)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	57	Common Buckeye (<i>Junonia coenia grisea</i>)	2
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)	4	Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur	1	unidentified lady (<i>Vanessa</i> sp.)	6
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Satyrinae (Satyrs)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Danainae (Monarchs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	5
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Polyommattinae (Blues)	
Subfamily Polyommattinae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilZippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)	3	Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	3
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	1
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue	2	Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	7		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		76	17
		Total	
			93

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Laura Moreton Date: April 27, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 11

Area(s) Surveyed B-1, B-2, Trail 5 Acres Surveyed 18.60 Survey Time: 3.50 Acres per Hour: 5.31

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	0900	70	0-1	0
End	1230	76	2-4	0

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	X
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)	X	buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New Existing Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Brushfoots)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	4	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)	3	California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Common Buckeye (<i>Junonia coenia grisea</i>)	3
Pacific Sara Orangetip (<i>A. sara sara</i>)	69	Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Cabbage White (<i>Pieris rapae</i>)		West Coast Lady (<i>Vanessa annabella</i>)	1
Becker's White (<i>Pontia beckerii</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Painted Lady (<i>V. cardui</i>)	
Spring White (<i>P. sisymbrii</i>)	1	American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified white	3	unidentified lady (<i>Vanessa</i> sp.)	1
unidentified sulphur	9	Subfamily Limenitidinae (Admirals and Relatives)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Theclinae (Hairstreaks)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gil2ippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	2	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue	2	Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	4		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	97	Column Subtotal	9
			Total
			106

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Amy Mattson Date: April 27, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 11

Area(s) Surveyed D-2, F-1, F-2, F-3 Acres Surveyed 11.81 Survey Time: 3.25 Acres per Hour: 3.63

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	0820	69	0-5	0
End	1055	85	0-6	0
Start	1103	85	0-6	0
End	1143	85	0-4	0

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	X
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Papilioninae (True Swallowtails)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Subfamily Limenitidinae (Admirals and Relatives)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	36	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	1
Checkered (Common) White (<i>P. protodice</i>)	4	Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur	3	unidentified lady (<i>Vanessa</i> sp.)	2
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Danainae (Monarchs)	
Subfamily Theclinae (Hairstreaks)		Subfamily Limenitidinae (Admirals and Relatives)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		California Sister (<i>Adelpha californica</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		Subfamily Satyrinae (Satyrs)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Subfamily Polyommattinae (Blues)		Subfamily Danainae (Monarchs)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Queen (<i>Danaus gilZippus thersippus</i>)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Family Hesperidae (Skippers)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Acmon Blue (<i>Icaricia acmon</i>)	1	Fiery Skipper (<i>Hylephila phyleus</i>)	
Marine Blue (<i>Leptotes marina</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
unidentified blue	2	unidentified skipper	
Family Riodinidae (Metalmarks)		Other	
		Dainty Sulphur (<i>Nathalis iole</i>)	
Behr's Metalmark (<i>Apodemia virgulti</i>)	2		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	48	Column Subtotal	6
		Total	54

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Amy Mattson Date: April 28, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 11

Area(s) Surveyed A-1, A-2, A-3, Trail 3 Acres Surveyed 17.92 Survey Time: 3.33 Acres per Hour: 5.38

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	0820	63	1-5	0
End	1140	94	0-6	0

Vegetation Communities Surveyed (inc. dominant spp.)
 Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	X
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	X
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)	X	buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	X
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	1	Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	36	Common Buckeye (<i>Junonia coenia grisea</i>)	1
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)	2	Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)	1	Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	1
unidentified white	1	American (Virginia) Lady (<i>V. virginiensis</i>)	
unidentified sulphur	5	unidentified lady (<i>Vanessa</i> sp.)	4
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	2
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	1	Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue	4	Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	2		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	53	Column Subtotal	8
			Total
			61

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Erica Harris Date: April 28, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 11

Area(s) Surveyed C-1, C-2, D-1. Trail 6, Trail 7 Acres Surveyed 19.20 Survey Time: 3.0 Acres per Hour: 6.40

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1100	84	2-5	0
End	1400	88	2-4	0

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	X
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="radio"/> No <input checked="" type="radio"/>		New Area or Existing Area (circle) New <input type="radio"/> Existing <input type="radio"/> Both <input type="radio"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
<i>Pale Swallowtail (Papilio eurymedon)</i>		Subfamily Nymphalinae (True Brushfoots)	
<i>Western Tiger Swallowtail (P. rutulus rutulus)</i>		<i>Leanira Checkerspot (Chlosyne leanira)</i>	
<i>Anise Swallowtail (P. zelicaon)</i>		<i>California Patch (C. californica)</i>	
Family Pieridae (Whites and Sulphurs)		<i>Gabb's Checkerspot (C. gabbii gabbii)</i>	
<i>Sleepy Orange (Abaeis nicippe)</i>		<i>Chalcedon Checkerspot (Euphydryas chalcedona)</i>	
<i>Desert Orangetip (Anthocharis cethura)</i>		<i>Quino Checkerspot (E. editha quino)</i>	
<i>Pacific Sara Orangetip (A. sara sara)</i>		<i>Common Buckeye (Junonia coenia grisea)</i>	
<i>Orange Sulphur (Colias eurytheme)</i>		<i>Mourning Cloak (Nymphalis antiopa antiopa)</i>	
<i>Cloudless Sulphur (Phoebis sennae)</i>		<i>California Tortoiseshell (N. californica californica)</i>	
<i>Cabbage White (Pieris rapae)</i>		<i>Mylitta Crescent (Phyciodes mylitta)</i>	
<i>Becker's White (Pontia beckerii)</i>		<i>West Coast Lady (Vanessa annabella)</i>	
<i>Checkered (Common) White (P. protodice)</i>		<i>Red Admiral (V. atalanta rubria)</i>	
<i>Spring White (P. sisymbrii)</i>		<i>Painted Lady (V. cardui)</i>	
unidentified white		<i>American (Virginia) Lady (V. virginiensis)</i>	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		<i>California Sister (Adelpha californica)</i>	
<i>Great Purple Hairstreak (Atlides halesus corcorani)</i>		<i>Lorquin's Admiral (Limenitis lorquini)</i>	
<i>Western Brown Elfin (Callophrys augustinus iroides)</i>		Subfamily Satyrinae (Satyrs)	
<i>Bramble (Perplexing) Hairstreak (C. dumetorum perplexa)</i>		<i>California Common Ringlet (Coenonympha tullia californica)</i>	
<i>Gray Hairstreak (Strymon melinus pudica)</i>		Subfamily Danainae (Monarchs)	
Subfamily Polyommatae (Blues)		<i>Monarch (Danaus plexippus plexippus)</i>	
<i>Western Pygmy-Blue (Brephidium exilis)</i>		<i>Queen (Danaus gil2ippus thersippus)</i>	
<i>Western Tailed Blue (Cupido amyntula amyntula)</i>		Family Hesperidae (Skippers)	
<i>Bernardino Blue (Euphilotes bernardino)</i>		<i>Funereal Duskywing (Erynnis funeralis)</i>	
<i>Southern California Silvery Blue (Glaucopsyche lygdamus australis)</i>		<i>Mournful Duskywing (E. tristis tristis)</i>	
<i>Ceraunus (Edward's) Blue (Hemiargus ceraunus gyas)</i>		<i>Fiery Skipper (Hylephila phyleus)</i>	
<i>Acmon Blue (Icaricia acmon)</i>		<i>White Checkered-Skipper (Pyrgus albescens)</i>	
<i>Marine Blue (Leptotes marina)</i>		unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
<i>Behr's Metalmark (Apodemia virgulti)</i>			
<i>Wright's Metalmark (Calephelis wrighti)</i>			
Column Subtotal		64	Column Subtotal
			11
			Total
			75

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Benjamin Rosenbaum Date: May 5, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 12

Area(s) Surveyed A-1, A-2, A-3, Trail 3 Acres Surveyed 17.92 Survey Time: 3.25 Acres per Hour: 5.51

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	0940	83	0-3	0
End	1255	92	0-3	0

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)	X	onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)	X	buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	X
Host Plant Mapping Updated (circle) <input checked="" type="radio"/> Yes <input type="radio"/> No		New Area or Existing Area (circle) <input type="radio"/> New <input type="radio"/> Existing <input checked="" type="radio"/> Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	1	Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	10	Common Buckeye (<i>Junonia coenia grisea</i>)	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	
unidentified white		American (Virginia) Lady (<i>V. virginensis</i>)	
unidentified sulphur		unidentified lady (<i>Vanessa</i> sp.)	1
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)	1	Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)		unidentified skipper	
unidentified blue	6	Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)			
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	18	Column Subtotal	1
			Total
			19

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Erica Harris Date: May 5, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 12

Area(s) Surveyed C-1, C-2, D-1, D-2, Trail 6, Trail 7 Acres Surveyed 22.58 Survey Time: 3.42 Acres per Hour: 6.60

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	0850	77	0-1	0
End	1105	96	1-4	0
Start	1140	96	1-4	0
End	1220	96	1-3	0
Start	1235	94	2-6	0
End	1305	94	2-6	0

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)		onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)		popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)		buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		New Area or Existing Area (circle) New <input type="checkbox"/> Existing <input type="checkbox"/> Both <input type="checkbox"/>	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	4	Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	1
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	63	Common Buckeye (<i>Junonia coenia grisea</i>)	10
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)	
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Checkered (Common) White (<i>P. protodice</i>)	6	Red Admiral (<i>V. atalanta rubria</i>)	
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	
unidentified white		American (Virginia) Lady (<i>V. virginiensis</i>)	
unidentified sulphur	4	unidentified lady (<i>Vanessa</i> sp.)	2
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)	
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Subfamily Satyrinae (Satyrs)	
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)	4
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)	
Subfamily Polyommattinae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilZippus thersippus</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	3
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Fiery Skipper (<i>Hylephila phyleus</i>)	7
Acmon Blue (<i>Icaricia acmon</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Marine Blue (<i>Leptotes marina</i>)	3	unidentified skipper	
unidentified blue		Other	
Family Riodinidae (Metalmarks)		Unidentified Butterfly	
Behr's Metalmark (<i>Apodemia virgulti</i>)	8		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		88	27
Total		115	

2020 Quino Checkerspot Butterfly Survey Form

Surveyor(s): Garrett Huffman Date: May 6, 2020

Site Name: Dam Maintenance Program – Dulzura Conduit Site Visit No: 12

Area(s) Surveyed B-1; B-2; Trail 5; F1; F2; F3 Acres Surveyed 27.03 Survey Time: 6.00 Acres per Hour: 4.51

Other Surveyors Present: _____

Field Conditions				
	Time (24 hr)	Temperature (°F)	Wind Speed (mph)	Cloud Cover (%)
Start	1000	83	1-3	5
End	1600	94	2-4	5

Vegetation Communities Surveyed (inc. dominant spp.)
Diegan coastal sage scrub, coastal sage-chaparral scrub, southern mixed chaparral, disturbed habitat, developed (conduit)

Host Plants	Obs.	Nectar Plants	Obs.
dwarf plantain (<i>Plantago erecta</i>)		onion (<i>Allium</i> spp.)	
woolly plantain (<i>Plantago patagonica</i>)		fiddleneck (<i>Amsinckia intermedia/A. menziesii</i>)	X
Coulter's snapdragon (<i>Antirrhinum coulterianum</i>)		goldenstar (<i>Bloomeria</i> spp.)	
purple owl's clover (<i>Castilleja exserta</i>)	X	popcorn flower (<i>Cryptantha/Plagiobothrys</i> spp.)	X
Chinese houses (<i>Collinsia</i> spp.)	X	buckwheat (<i>Eriogonum fasciculatum</i>)	X
birds-beak (<i>Cordylanthus rigidus</i>)		goldfields (<i>Lasthenia</i> spp.)	X
		ground pink (<i>Linanthus dianthiflorus</i>)	
Host Plant Mapping Updated (circle) <input checked="" type="radio"/> Yes <input type="radio"/> No		New Area or Existing Area (circle) <input type="radio"/> New <input type="radio"/> Existing <input checked="" type="radio"/> Both	
Species updated (list)			

Butterfly Species	No.	Butterfly Species	No.	
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)		
Pale Swallowtail (<i>Papilio eurymedon</i>)		Subfamily Nymphalinae (True Brushfoots)		
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)		
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)		
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)		
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	1	
Desert Orangetip (<i>Anthocharis cethura</i>)	1	Quino Checkerspot (<i>E. editha quino</i>)		
Pacific Sara Orangetip (<i>A. sara sara</i>)	50	Common Buckeye (<i>Junonia coenia grisea</i>)	8	
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)		
Cloudless Sulphur (<i>Phoebis sennae</i>)		California Tortoiseshell (<i>N. californica californica</i>)		
Cabbage White (<i>Pieris rapae</i>)		Mylitta Crescent (<i>Phyciodes mylitta</i>)		
Becker's White (<i>Pontia beckerii</i>)		West Coast Lady (<i>Vanessa annabella</i>)	1	
Checkered (Common) White (<i>P. protodice</i>)		Red Admiral (<i>V. atalanta rubria</i>)		
Spring White (<i>P. sisymbrii</i>)		Painted Lady (<i>V. cardui</i>)	2	
unidentified white		American (Virginia) Lady (<i>V. virginiensis</i>)		
unidentified sulphur	3	unidentified lady (<i>Vanessa</i> sp.)		
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Limenitidinae (Admirals and Relatives)		
Subfamily Theclinae (Hairstreaks)		California Sister (<i>Adelpha californica</i>)		
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Lorquin's Admiral (<i>Limenitis lorquini</i>)		
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)	1	Subfamily Satyrinae (Satyrs)		
Bramble (Perplexing) Hairstreak (<i>C. dumetorum perplexa</i>)		California Common Ringlet (<i>Coenonympha tullia californica</i>)		
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Danainae (Monarchs)		
Subfamily Polyommatae (Blues)		Monarch (<i>Danaus plexippus plexippus</i>)		
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Queen (<i>Danaus gilippus thersippus</i>)		
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)	2	Family Hesperidae (Skippers)		
Bernardino Blue (<i>Euphilotes bernardino</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	12	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)		
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)	1	Fiery Skipper (<i>Hylephila phyleus</i>)	1	
Acmon Blue (<i>Icaricia acmon</i>)	5	White Checkered-Skipper (<i>Pyrgus albescens</i>)		
Marine Blue (<i>Leptotes marina</i>)	3	unidentified skipper		
unidentified blue		Other		
Family Riodinidae (Metalmarks)		Clemence's Blue (<i>Icaricia monticola</i>)	1	
Behr's Metalmark (<i>Apodemia virgulti</i>)	30	Orange Skipperling (<i>Copaeodes aurantiaca</i>)	1	
Wright's Metalmark (<i>Calephelis wrighti</i>)				
Column Subtotal		96	Column Subtotal	
			27	
			Total	
			123	

Attachment C

Butterfly Checklist

Attachment C Butterfly Checklist

Survey Information			
Site Name: Barrett Dam			
Dates: February 20 to May 6, 2020			
Survey Numbers: 1 to 12			
Surveyors: Brenda Bennett ¹ , Ian Hirschler ¹ , Chris Thomson ¹ , Ryan Meszaros ²			
¹ Rocks Biological Consulting Biologist (USFWS Permit TE-063230-5.4)			
² Huffman Environmental Biologist (USFWS Permit TE-20186A-3.1)			
Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	11	Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)	9	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)	1	California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)	8	Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	91	Common Buckeye (<i>Junonia coenia grisea</i>)	1
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	1
Harford's Sulphur (<i>Colias harfordii</i>)	9	California Tortoiseshell (<i>N. californica californica</i>)	
Dainty Sulphur (<i>Nathalis iole</i>)	1	Mylitta Crescent (<i>Phyciodes mylitta mylitta</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Cabbage White (<i>Pieris rapae</i>)		Red Admiral (<i>V. atalanta rubria</i>)	2
Becker's White (<i>Pontia beckerii</i>)		Painted Lady (<i>V. cardui</i>)	83
Checkered (Common) White (<i>P. protodice</i>)	2	American (Virginia) Lady (<i>V. virginensis</i>)	
Spring White (<i>P. sisymbrii</i>)		unidentified lady (<i>Vanessa</i> sp.)	
Southern Dogface (<i>Zerene cesonia cesonia</i>)	4	Subfamily Limenitidinae (Admirals and Relatives)	
unidentified white		California Sister (<i>Adelpha californica</i>)	2
unidentified sulphur		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Satyrinae (Satyrs)	
Subfamily Theclinae (Hairstreaks)		California Ringlet (<i>Coenonympha tullia californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Subfamily Danainae (Monarchs)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Monarch (<i>Danaus plexippus plexippus</i>)	
Bramble Hairstreak (<i>C. dumetorum perplexa</i>)		Queen (<i>Danaus gilippus thersippus</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Heliconiinae (Heliconians and Fritillaries)	
Subfamily Polyommatae (Blues)		Gulf Fritillary (<i>Agraulis vanillae incarnata</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Comstock's Fritillary (<i>Speyeria callippe comstocki</i>)	
Echo Azure (<i>Celastrina echo echo</i>)		Semiramis Fritillary (<i>Speyeria coronis semiramis</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)	1	Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Subfamily Pyrginae (Spread-wing Skippers)	
Southern California Silvery Blue (<i>Glaucopteryx lydamus australis</i>)	4	Funereal Duskywing (<i>Erynnis funeralis</i>)	14
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Propertius Duskywing (<i>E. propertius</i>)	
Marine Blue (<i>Leptotes marina</i>)	1	Mournful Duskywing (<i>E. tristis tristis</i>)	
Acmon Blue (<i>Icaricia acmon</i>)	11	Northern White-Skipper (<i>Heliopetes ericetorum</i>)	
Clemence's Blue (<i>Icaricia monticola</i>)	1	White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Sonoran Blue (<i>Philotes sonorensis</i>)	1	Subfamily Herperiinae (Grass Skippers)	
unidentified blue	1	Orange Skipperling (<i>Copaeodes aurantiaca</i>)	
Family Riordinidae (Metalmarks)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Behr's Metalmark (<i>Apodemia virgulti</i>)	6	Other	
Wright's Metalmark (<i>Calephelis wrighti</i>)		Unidentified butterfly	
Column Subtotal		162	Column Subtotal
		103	
		Total Butterflies Observed	
		265	

Attachment C (cont.) Butterfly Checklist

Survey Information			
Site Name: El Capitan Dam			
Dates: February 18 to May 7, 2020			
Survey Numbers: 1 to 12			
Surveyors: Brenda Bennett ¹ , Ian Hirschler ¹ , Chris Thomson ¹ , Ryan Meszaros ² , Melanie Rocks ³			
¹ Rocks Biological Consulting Biologist (USFWS Permit TE-063230-5.4)			
² Huffman Environmental Biologist (USFWS Permit TE-20186A-3.1)			
³ Rocks Biological Consulting Biologist (USFWS Permit TE-082908-2)			
Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Theclinae (Hairstreaks)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	9	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)	36	California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)	4	Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)	3	Common Buckeye (<i>Junonia coenia grisea</i>)	71
Pacific Sara Orangetip (<i>A. sara sara</i>)	233	Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	6
Orange Sulphur (<i>Colias eurytheme</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Harford's Sulphur (<i>Colias harfordii</i>)	3	Mylitta Crescent (<i>Phyciodes mylitta mylitta</i>)	
Dainty Sulphur (<i>Nathalis iole</i>)		West Coast Lady (<i>Vanessa annabella</i>)	1
Cloudless Sulphur (<i>Phoebis sennae</i>)		Red Admiral (<i>V. atalanta rubria</i>)	4
Cabbage White (<i>Pieris rapae</i>)		Painted Lady (<i>V. cardui</i>)	115
Becker's White (<i>Pontia beckerii</i>)		American (Virginia) Lady (<i>V. virginensis</i>)	17
Checkered (Common) White (<i>P. protodice</i>)	11	unidentified lady (<i>Vanessa</i> sp.)	2
Spring White (<i>P. sisymbrii</i>)		Subfamily Limenitidinae (Admirals and Relatives)	
Southern Dogface (<i>Zerene cesonia cesonia</i>)	4	California Sister (<i>Adelpha californica</i>)	3
unidentified white		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
unidentified sulphur		Subfamily Satyrinae (Satyrs)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Danainae (Monarchs)	
Subfamily Theclinae (Hairstreaks)		California Ringlet (<i>Coenonympha tullia californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Subfamily Heliconiinae (Heliconians and Fritillaries)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)	4	Gulf Fritillary (<i>Agraulis vanillae incarnata</i>)	1
Bramble Hairstreak (<i>C. dumetorum perplexa</i>)		Comstock's Fritillary (<i>Speyeria callippe comstocki</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)	1	Semiramis Fritillary (<i>Speyeria coronis semiramis</i>)	
Subfamily Polyommatainae (Blues)		Family Hesperidae (Skippers)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Subfamily Pyrginae (Spread-wing Skippers)	
Echo Azure (<i>Celastrina echo echo</i>)	7	Funereal Duskywing (<i>Erynnis funeralis</i>)	25
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)	14	Propertius Duskywing (<i>E. propertius</i>)	3
Bernardino Blue (<i>Euphilotes bernardino</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	77	Northern White-Skipper (<i>Heliopetes ericetorum</i>)	
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	1
Marine Blue (<i>Leptotes marina</i>)	4	Subfamily Herperiinae (Grass Skippers)	
Acmon Blue (<i>Icaricia acmon</i>)	35	Orange Skipperling (<i>Copaeodes aurantiaca</i>)	
Clemence's Blue (<i>Icaricia monticola</i>)	9	Fiery Skipper (<i>Hylephila phyleus</i>)	
Sonoran Blue (<i>Philotes sonorensis</i>)		Other	
unidentified blue	5	Unidentified butterfly	
Family Riodinidae (Metalmarks)			
Behr's Metalmark (<i>Apodemia virgulti</i>)	25		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal		484	Column Subtotal
		249	
		Total Butterflies Observed	
		733	

Attachment C (cont.) Butterfly Checklist

Survey Information			
Site Name: Morena Dam			
Dates: February 20 to May 6, 2020			
Survey Numbers: 1 to 12			
Surveyors: Brenda Bennett ¹ , Ian Hirschler ¹ , Chris Thomson ¹ , Ryan Meszaros ²			
¹ Rocks Biological Consulting Biologist (USFWS Permit TE-063230-5.4)			
² Huffman Environmental Biologist (USFWS Permit TE-20186A-3.1)			
Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	4	Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)	2	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	1
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)	19	Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	99	Common Buckeye (<i>Junonia coenia grisea</i>)	6
Orange Sulphur (<i>Colias eurytheme</i>)	1	Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	1
Harford's Sulphur (<i>Colias harfordii</i>)	6	California Tortoiseshell (<i>N. californica californica</i>)	7
Dainty Sulphur (<i>Nathalis iole</i>)		Mylitta Crescent (<i>Phyciodes mylitta mylitta</i>)	6
Cloudless Sulphur (<i>Phoebis sennae</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Cabbage White (<i>Pieris rapae</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Becker's White (<i>Pontia beckerii</i>)		Painted Lady (<i>V. cardui</i>)	63
Checkered (Common) White (<i>P. protodice</i>)	3	American (Virginia) Lady (<i>V. virginensis</i>)	1
Spring White (<i>P. sisymbrii</i>)		unidentified lady (<i>Vanessa</i> sp.)	
Southern Dogface (<i>Zerene cesonia cesonia</i>)		Subfamily Limenitidinae (Admirals and Relatives)	
unidentified white		California Sister (<i>Adelpha californica</i>)	
unidentified sulphur		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Satyrinae (Satyrs)	
Subfamily Theclinae (Hairstreaks)		California Ringlet (<i>Coenonympha tullia californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Subfamily Danainae (Monarchs)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)	1	Monarch (<i>Danaus plexippus plexippus</i>)	
Bramble Hairstreak (<i>C. dumetorum perplexa</i>)	8	Queen (<i>Danaus gilippus thersippus</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Heliconiinae (Heliconians and Fritillaries)	
Subfamily Polyommatae (Blues)		Gulf Fritillary (<i>Agraulis vanillae incarnata</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Comstock's Fritillary (<i>Speyeria callippe comstocki</i>)	
Echo Azure (<i>Celastrina echo echo</i>)		Semiramis Fritillary (<i>Speyeria coronis semiramis</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)	1	Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Subfamily Pyrginae (Spread-wing Skippers)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	5	Funereal Duskywing (<i>Erynnis funeralis</i>)	24
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Propertius Duskywing (<i>E. propertius</i>)	1
Marine Blue (<i>Leptotes marina</i>)	3	Mournful Duskywing (<i>E. tristis tristis</i>)	
Acmon Blue (<i>Icaricia acmon</i>)	10	Northern White-Skipper (<i>Heliopetes ericetorum</i>)	
Clemence's Blue (<i>Icaricia monticola</i>)	7	White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Sonoran Blue (<i>Philotes sonorensis</i>)	21	Subfamily Herperiinae (Grass Skippers)	
unidentified blue	1	Orange Skipperling (<i>Copaesodes aurantiaca</i>)	
Family Riodinidae (Metalmarks)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Behr's Metalmark (<i>Apodemia virgulti</i>)	11	Other	
Wright's Metalmark (<i>Calephelis wrighti</i>)	1	Unidentified butterfly	
Column Subtotal	203	Column Subtotal	110
		Total Butterflies Observed	313

Attachment C (cont.) Butterfly Checklist

Survey Information			
Site Name: San Vicente Dam			
Dates: February 18 to May 8, 2020			
Survey Numbers: 1 to 12			
Surveyors: Brenda Bennett ¹ , Ian Hirschler ¹ , Chris Thomson ¹ , Ryan Meszaros ²			
¹ Rocks Biological Consulting Biologist (USFWS Permit TE-063230-5.4)			
² Huffman Environmental Biologist (USFWS Permit TE-20186A-3.1)			
Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	7	Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)	3	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)	1	California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	5
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)	7	Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	196	Common Buckeye (<i>Junonia coenia grisea</i>)	30
Orange Sulphur (<i>Colias eurytheme</i>)	1	Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	7
Harford's Sulphur (<i>Colias harfordii</i>)		California Tortoiseshell (<i>N. californica californica</i>)	
Dainty Sulphur (<i>Nathalis iole</i>)		Mylitta Crescent (<i>Phyciodes mylitta mylitta</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)	1	West Coast Lady (<i>Vanessa annabella</i>)	4
Cabbage White (<i>Pieris rapae</i>)		Red Admiral (<i>V. atalanta rubria</i>)	8
Becker's White (<i>Pontia beckerii</i>)		Painted Lady (<i>V. cardui</i>)	139
Checkered (Common) White (<i>P. protodice</i>)	12	American (Virginia) Lady (<i>V. virginensis</i>)	
Spring White (<i>P. sisymbrii</i>)		unidentified lady (<i>Vanessa</i> sp.)	
Southern Dogface (<i>Zerene cesonia cesonia</i>)		Subfamily Limenitidinae (Admirals and Relatives)	
unidentified white		California Sister (<i>Adelpha californica</i>)	1
unidentified sulphur		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Satyrinae (Satyrs)	
Subfamily Theclinae (Hairstreaks)		California Ringlet (<i>Coenonympha tullia californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Subfamily Danainae (Monarchs)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)	3	Monarch (<i>Danaus plexippus plexippus</i>)	1
Bramble Hairstreak (<i>C. dumetorum perplexa</i>)	43	Queen (<i>Danaus gilippus thersippus</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)	2	Subfamily Heliconiinae (Heliconians and Fritillaries)	
Subfamily Polyommatae (Blues)		Gulf Fritillary (<i>Agraulis vanillae incarnata</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Comstock's Fritillary (<i>Speyeria callippe comstocki</i>)	
Echo Azure (<i>Celastrina echo echo</i>)	4	Semiramis Fritillary (<i>Speyeria coronis semiramis</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)	12	Subfamily Pyrginae (Spread-wing Skippers)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	57	Funereal Duskywing (<i>Erynnis funeralis</i>)	77
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Propertius Duskywing (<i>E. propertius</i>)	
Marine Blue (<i>Leptotes marina</i>)	13	Mournful Duskywing (<i>E. tristis tristis</i>)	
Acmon Blue (<i>Icaricia acmon</i>)	7	Northern White-Skipper (<i>Heliopetes ericetorum</i>)	1
Clemence's Blue (<i>Icaricia monticola</i>)		White Checkered-Skipper (<i>Pyrgus albescens</i>)	1
Sonoran Blue (<i>Philotes sonorensis</i>)		Subfamily Herperiinae (Grass Skippers)	
unidentified blue		Orange Skipperling (<i>Copaeodes aurantiaca</i>)	
Family Riodinidae (Metalmarks)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Behr's Metalmark (<i>Apodemia virgulti</i>)	45	Other	
Wright's Metalmark (<i>Calephelis wrighti</i>)		Unidentified butterfly	
Column Subtotal	414	Column Subtotal	274
		Total Butterflies Observed	688

Attachment C (cont.) Butterfly Checklist

Survey Information			
Site Name: Savage Dam			
Dates: February 12 to May 7, 2020			
Survey Numbers: 0 to 12			
Surveyors: Brenda Bennett ¹ , Ian Hirschler ¹ , Chris Thomson ¹ , Jim Rocks ¹ , Ryan Meszaros ²			
¹ Rocks Biological Consulting Biologist (USFWS Permit TE-063230-5.4)			
² Huffman Environmental Biologist (USFWS Permit TE-20186A-3.1)			
Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)	3	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)	1	California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	3
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	7
Pacific Sara Orangetip (<i>A. sara sara</i>)	126	Common Buckeye (<i>Junonia coenia grisea</i>)	78
Orange Sulphur (<i>Colias eurytheme</i>)	2	Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	2
Harford's Sulphur (<i>Colias harfordii</i>)	4	California Tortoiseshell (<i>N. californica californica</i>)	
Dainty Sulphur (<i>Nathalis iole</i>)		Mylitta Crescent (<i>Phyciodes mylitta mylitta</i>)	1
Cloudless Sulphur (<i>Phoebis sennae</i>)		West Coast Lady (<i>Vanessa annabella</i>)	1
Cabbage White (<i>Pieris rapae</i>)	1	Red Admiral (<i>V. atalanta rubria</i>)	
Becker's White (<i>Pontia beckerii</i>)		Painted Lady (<i>V. cardui</i>)	115
Checkered (Common) White (<i>P. protodice</i>)	5	American (Virginia) Lady (<i>V. virginensis</i>)	
Spring White (<i>P. sisymbrii</i>)		unidentified lady (<i>Vanessa</i> sp.)	
Southern Dogface (<i>Zerene cesonia cesonia</i>)	2	Subfamily Limenitidinae (Admirals and Relatives)	
unidentified white		California Sister (<i>Adelpha californica</i>)	
unidentified sulphur		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Satyrinae (Satyrs)	
Subfamily Theclinae (Hairstreaks)		California Ringlet (<i>Coenonympha tullia californica</i>)	6
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Subfamily Danainae (Monarchs)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)	3	Monarch (<i>Danaus plexippus plexippus</i>)	4
Bramble Hairstreak (<i>C. dumetorum perplexa</i>)	1	Queen (<i>Danaus gilippus thersippus</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Subfamily Heliconiinae (Heliconians and Fritillaries)	
Subfamily Polyommatae (Blues)		Gulf Fritillary (<i>Agraulis vanillae incarnata</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)	1	Comstock's Fritillary (<i>Speyeria callippe comstocki</i>)	11
Echo Azure (<i>Celastrina echo echo</i>)	19	Semiramis Fritillary (<i>Speyeria coronis semiramis</i>)	4
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)	3	Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Subfamily Pyrginae (Spread-wing Skippers)	
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)	169	Funereal Duskywing (<i>Erynnis funeralis</i>)	18
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Propertius Duskywing (<i>E. propertius</i>)	
Marine Blue (<i>Leptotes marina</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Acmon Blue (<i>Icaricia acmon</i>)	3	Northern White-Skipper (<i>Heliopetes ericetorum</i>)	
Clemence's Blue (<i>Icaricia monticola</i>)	3	White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Sonoran Blue (<i>Philotes sonorensis</i>)		Subfamily Herperiinae (Grass Skippers)	
unidentified blue		Orange Skipperling (<i>Copaeodes aurantiaca</i>)	
Family Riodinidae (Metalmarks)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Behr's Metalmark (<i>Apodemia virgulti</i>)	35	Other	
Wright's Metalmark (<i>Calephelis wrighti</i>)		Unidentified butterfly	
Column Subtotal	381	Column Subtotal	250
		Total Butterflies Observed	631

Attachment C (cont.) Butterfly Checklist

Survey Information			
Site Name: Sutherland Dam			
Dates: February 19 to May 7, 2020			
Survey Numbers: 1 to 12			
Surveyors: Garrett Huffman ²			
² Huffman Environmental Biologist (USFWS Permit TE-20186A-3.1)			
Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Pale Swallowtail (<i>Papilio eurymedon</i>)	2	Subfamily Nymphalinae (True Brushfoots)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)	5	Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		California Patch (<i>C. californica</i>)	
Family Pieridae (Whites and Sulphurs)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Pacific Sara Orangetip (<i>A. sara sara</i>)	84	Common Buckeye (<i>Junonia coenia grisea</i>)	17
Orange Sulphur (<i>Colias eurytheme</i>)		Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	3
Harford's Sulphur (<i>Colias harfordii</i>)	2	California Tortoiseshell (<i>N. californica californica</i>)	
Dainty Sulphur (<i>Nathalis iole</i>)		Mylitta Crescent (<i>Phyciodes mylitta mylitta</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)	2	West Coast Lady (<i>Vanessa annabella</i>)	2
Cabbage White (<i>Pieris rapae</i>)		Red Admiral (<i>V. atalanta rubria</i>)	10
Becker's White (<i>Pontia beckerii</i>)		Painted Lady (<i>V. cardui</i>)	59
Checkered (Common) White (<i>P. protodice</i>)	17	American (Virginia) Lady (<i>V. virginensis</i>)	
Spring White (<i>P. sisymbrii</i>)		unidentified lady (<i>Vanessa</i> sp.)	
Southern Dogface (<i>Zerene cesonia cesonia</i>)		Subfamily Limenitidinae (Admirals and Relatives)	
unidentified white		California Sister (<i>Adelpha californica</i>)	1
unidentified sulphur		Lorquin's Admiral (<i>Limenitis lorquini</i>)	
Family Lycaenidae (Gossamer-wing Butterflies)		Subfamily Satyrinae (Satyrs)	
Subfamily Theclinae (Hairstreaks)		California Ringlet (<i>Coenonympha tullia californica</i>)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Subfamily Danainae (Monarchs)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)	2	Monarch (<i>Danaus plexippus plexippus</i>)	
Bramble Hairstreak (<i>C. dumetorum perplexa</i>)	22	Queen (<i>Danaus gilippus thersippus</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)	2	Subfamily Heliconiinae (Heliconians and Fritillaries)	
Subfamily Polyommatae (Blues)		Gulf Fritillary (<i>Agraulis vanillae incarnata</i>)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Comstock's Fritillary (<i>Speyeria callippe comstocki</i>)	
Echo Azure (<i>Celastrina echo echo</i>)	3	Semiramis Fritillary (<i>Speyeria coronis semiramis</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Family Hesperidae (Skippers)	
Bernardino Blue (<i>Euphilotes bernardino</i>)		Subfamily Pyrginae (Spread-wing Skippers)	
Southern California Silvery Blue (<i>Glaucopteryx lygdamus australis</i>)	60	Funereal Duskywing (<i>Erynnis funeralis</i>)	31
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Propertius Duskywing (<i>E. propertius</i>)	
Marine Blue (<i>Leptotes marina</i>)	3	Mournful Duskywing (<i>E. tristis tristis</i>)	
Acmon Blue (<i>Icaricia acmon</i>)	18	Northern White-Skipper (<i>Heliopetes ericetorum</i>)	
Clemence's Blue (<i>Icaricia monticola</i>)	5	White Checkered-Skipper (<i>Pyrgus albescens</i>)	
Sonoran Blue (<i>Philotes sonorensis</i>)		Subfamily Herperiinae (Grass Skippers)	
unidentified blue		Orange Skipperling (<i>Copaesodes aurantiaca</i>)	
Family Riodinidae (Metalmarks)		Fiery Skipper (<i>Hylephila phyleus</i>)	
Behr's Metalmark (<i>Apodemia virgulti</i>)	48	Other	
Wright's Metalmark (<i>Calephelis wrighti</i>)		Unidentified butterfly	
Column Subtotal		275	Column Subtotal
			123
		Total Butterflies Observed	
			398

Attachment C (cont.) Butterfly Checklist

Survey Information			
Site Name: Upper Otay Dam			
Dates: February 12 to May 7, 2020			
Survey Numbers: 0 to 12			
Surveyors: Ian Hirschler ¹ , Chris Thomson ¹ , Jim Rocks ¹ , Ryan Meszaros ² , Melanie Rocks ³			
¹ Rocks Biological Consulting Biologist (USFWS Permit TE-063230-5.4)			
² Huffman Environmental Biologist (USFWS Permit TE-20186A-3.1)			
³ Rocks Biological Consulting Biologist (USFWS Permit TE-082908-2)			
Butterfly Species	No.	Butterfly Species	No.
Family Papilionoidea (Parnassians and Swallowtails)		Family Nymphalidae (Brushfooted Butterflies)	
Subfamily Theclinae (Hairstreaks)		Subfamily Nymphalinae (True Brushfoots)	
Pale Swallowtail (<i>Papilio eurymedon</i>)		Leanira Checkerspot (<i>Chlosyne leanira</i>)	
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)		California Patch (<i>C. californica</i>)	
Anise Swallowtail (<i>P. zelicaon</i>)		Gabb's Checkerspot (<i>C. gabbii gabbii</i>)	
Family Pieridae (Whites and Sulphurs)		Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)	
Sleepy Orange (<i>Abaeis nicippe</i>)		Quino Checkerspot (<i>E. editha quino</i>)	
Desert Orangetip (<i>Anthocharis cethura</i>)		Common Buckeye (<i>Junonia coenia grisea</i>)	99
Pacific Sara Orangetip (<i>A. sara sara</i>)	57	Mourning Cloak (<i>Nymphalis antiopa antiopa</i>)	1
Orange Sulphur (<i>Colias eurytheme</i>)	1	California Tortoiseshell (<i>N. californica californica</i>)	
Harford's Sulphur (<i>Colias harfordii</i>)	3	Mylitta Crescent (<i>Phyciodes mylitta mylitta</i>)	
Dainty Sulphur (<i>Nathalis iole</i>)		West Coast Lady (<i>Vanessa annabella</i>)	
Cloudless Sulphur (<i>Phoebis sennae</i>)		Red Admiral (<i>V. atalanta rubria</i>)	
Cabbage White (<i>Pieris rapae</i>)	1	Painted Lady (<i>V. cardui</i>)	103
Becker's White (<i>Pontia beckerii</i>)		American (Virginia) Lady (<i>V. virginensis</i>)	
Checkered (Common) White (<i>P. protodice</i>)	3	unidentified lady (<i>Vanessa</i> sp.)	10
Spring White (<i>P. sisymbrii</i>)		Subfamily Limenitidinae (Admirals and Relatives)	
Southern Dogface (<i>Zerene cesonia cesonia</i>)		California Sister (<i>Adelpha californica</i>)	
unidentified white	2	Lorquin's Admiral (<i>Limenitis lorquini</i>)	
unidentified sulphur		Subfamily Satyrinae (Satyrs)	
Family Lycaenidae (Gossamer-wing Butterflies)		California Ringlet (<i>Coenonympha tullia californica</i>)	
Subfamily Theclinae (Hairstreaks)		4	
Subfamily Danainae (Monarchs)		Subfamily Heliconiinae (Heliconians and Fritillaries)	
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)		Gulf Fritillary (<i>Agraulis vanillae incarnata</i>)	
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)		Comstock's Fritillary (<i>Speyeria callippe comstocki</i>)	
Bramble Hairstreak (<i>C. dumetorum perplexa</i>)		Semiramis Fritillary (<i>Speyeria coronis semiramis</i>)	
Gray Hairstreak (<i>Strymon melinus pudica</i>)		Family Hesperidae (Skippers)	
Subfamily Polyommatae (Blues)		Subfamily Pyrginae (Spread-wing Skippers)	
Western Pygmy-Blue (<i>Brephidium exilis</i>)		Funereal Duskywing (<i>Erynnis funeralis</i>)	12
Echo Azure (<i>Celastrina echo echo</i>)	6	Propertius Duskywing (<i>E. propertius</i>)	
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)		Mournful Duskywing (<i>E. tristis tristis</i>)	
Bernardino Blue (<i>Euphilotes bernardino</i>)	8	Northern White-Skipper (<i>Heliopetes ericetorum</i>)	
Southern California Silvery Blue (<i>Glaucopteryx lygdamus australis</i>)	45	White Checkered-Skipper (<i>Pyrgus albescens</i>)	2
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)		Subfamily Herperiinae (Grass Skippers)	
Marine Blue (<i>Leptotes marina</i>)		Orange Skipperling (<i>Copaeodes aurantiaca</i>)	
Acmon Blue (<i>Icaricia acmon</i>)	5	Fiery Skipper (<i>Hylephila phyleus</i>)	
Clemence's Blue (<i>Icaricia monticola</i>)		Other	
Sonoran Blue (<i>Philotes sonorensis</i>)		Unidentified butterfly	
unidentified blue	2		
Family Riodinidae (Metalmarks)			
Behr's Metalmark (<i>Apodemia virgulti</i>)	45		
Wright's Metalmark (<i>Calephelis wrighti</i>)			
Column Subtotal	178	Column Subtotal	231
		Total Butterflies Observed	409

Attachment C (cont.) Butterfly Checklist

Survey Information						
Site Name: Dulzura Conduit						
Dates: February 17 to May 7, 2020						
Survey Numbers: 1 to 12						
Surveyors: Garrett Huffman ² , Erica Harris ⁴ , Robert Hogenauer ⁴ , Amy Mattson ⁴ , Laura Moreton ⁴ , Stacy Nigro ⁴ , Benjamin Rosenbaum ⁴ , Sally Trnka ⁴ , Brian Lohstroh ⁵						
² Huffman Environmental Biologist (USFWS Permit TE-20186A-3.1)						
⁴ HELIX Biologist (USFWS Permit TE-778195-14)						
⁵ Rocks Biological Consulting Biologist (USFWS Permit TE-063608-6)						
Butterfly Species		No.	Butterfly Species		No.	
Family Papilionoidea (Parnassians and Swallowtails)			Family Nymphalidae (Brushfooted Butterflies)			
Pale Swallowtail (<i>Papilio eurymedon</i>)			Subfamily Nymphalinae (True Brushfoots)			
	63		Leanira Checkerspot (<i>Chlosyne leanira</i>)			
Western Tiger Swallowtail (<i>P. rutulus rutulus</i>)				14		
Anise Swallowtail (<i>P. zelicaon</i>)			California Patch (<i>C. californica</i>)			
Family Pieridae (Whites and Sulphurs)			Gabb's Checkerspot (<i>C. gabbii gabbii</i>)			
Sleepy Orange (<i>Abaeis nicippe</i>)				4	3	
Desert Orangetip (<i>Anthocharis cethura</i>)			Chalcedon Checkerspot (<i>Euphydryas chalcedona</i>)			
	4		Quino Checkerspot (<i>E. editha quino</i>)			
Pacific Sara Orangetip (<i>A. sara sara</i>)				1,610	11	
Orange Sulphur (<i>Colias eurytheme</i>)			Unidentified Checkerspot			
Harford's Sulphur (<i>Colias harfordii</i>)				6	1	
Dainty Sulphur (<i>Nathalis iole</i>)				1	1	
Cloudless Sulphur (<i>Phoebis sennae</i>)			Mylitta Crescent (<i>Phyciodes mylitta mylitta</i>)			
Cabbage White (<i>Pieris rapae</i>)				5	10	
Becker's White (<i>Pontia beckerii</i>)			West Coast Lady (<i>Vanessa annabella</i>)			
Checkered (Common) White (<i>P. protodice</i>)				43	4	
Spring White (<i>P. sisymbrii</i>)			Red Admiral (<i>V. atalanta rubria</i>)			
Southern Dogface (<i>Zerene cesonia cesonia</i>)				6	226	
unidentified white				1	249	
unidentified sulphur				14		
Family Lycaenidae (Gossamer-wing Butterflies)			Subfamily Limenitidinae (Admirals and Relatives)			
Subfamily Theclinae (Hairstreaks)			Subfamily Satyrinae (Satyrs)			
Great Purple Hairstreak (<i>Atlides halesus corcorani</i>)			California Sister (<i>Adelpha californica</i>)			
Western Brown Elfin (<i>Callophrys augustinus iroides</i>)				52		
Bramble Hairstreak (<i>C. dumetorum perplexa</i>)			Lorquin's Admiral (<i>Limenitis lorquini</i>)			
Gray Hairstreak (<i>Strymon melinus pudica</i>)				1	9	
Subfamily Polyommatae (Blues)			Subfamily Danainae (Monarchs)			
Western Pygmy-Blue (<i>Brephidium exilis</i>)			Monarch (<i>Danaus plexippus plexippus</i>)			
Echo Azure (<i>Celastrina echo echo</i>)				3		
Western Tailed Blue (<i>Cupido amyntula amyntula</i>)			Queen (<i>Danaus gilippus thersippus</i>)			
Bernardino Blue (<i>Euphilotes bernardino</i>)			Subfamily Heliconiinae (Heliconians and Fritillaries)			
Southern California Silvery Blue (<i>Glaucopsyche lygdamus australis</i>)			Gulf Fritillary (<i>Agraulis vanillae incarnata</i>)			
Ceraunus (Edward's) Blue (<i>Hemiargus ceraunus gyas</i>)				10		
Marine Blue (<i>Leptotes marina</i>)			Comstock's Fritillary (<i>Speyeria callippe comstocki</i>)			
Acmon Blue (<i>Icaricia acmon</i>)				1	135	
Clemence's Blue (<i>Icaricia monticola</i>)			Family Hesperidae (Skippers)			
Sonoran Blue (<i>Philotes sonorensis</i>)			Subfamily Pyrginae (Spread-wing Skippers)			
unidentified blue				79		
Family Riodinidae (Metalmarks)			Funereal Duskywing (<i>Erynnis funeralis</i>)			
Behr's Metalmark (<i>Apodemia virgulti</i>)				1	135	
Wright's Metalmark (<i>Calephelis wrighti</i>)				3	7	
			Northern White-Skipper (<i>Heliopetes ericetorum</i>)			
			White Checkered-Skipper (<i>Pyrgus albescens</i>)			
			unidentified blue			
			Subfamily Herperiinae (Grass Skippers)			
			Orange Skipperling (<i>Copaeodes aurantiaca</i>)			
			Fiery Skipper (<i>Hylephila phyleus</i>)			
			Other			
			Unidentified butterfly			
Column Subtotal			2,869	Column Subtotal		805
			Total Butterflies Observed			3,674

APPENDIX J

Jurisdictional Waters/Wetland Delineation Report for the El Capitan Dam Spillway Vegetation Removal Project



**Jurisdictional Waters/
Wetland Delineation Report for the
El Capitan Dam Spillway Vegetation
Removal Project,
San Diego, California**

Prepared for
City of San Diego
Public Utilities Department
9192 Topaz Way
San Diego, CA 92123
Contact: Megan Hickey

Prepared by
RECON Environmental, Inc.
3111 Camino del Rio North, Suite 600
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P 619.308.9333

RECON Number 8863
December 4, 2020

A handwritten signature in black ink, appearing to read "AS", is written over a horizontal line.

Andrew Smisek, Associate Biologist

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Acronyms and Abbreviations

ACOE	U.S. Army Corps of Engineers
Arid Supplement	ACOE Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region
CDFW	California Department of Fish and Wildlife
CFR	Code of Federal Regulations
City	City of San Diego
CWA	Clean Water Act
EPA	Environmental Protection Agency
FAC	facultative
FACU	facultative upland
FACW	facultative wet
NI	not indicated
OBL	obligate
OHWM	ordinary high watermark
project	El Capitan Dam Spillway Vegetation Removal Project
RWQCB	Regional Water Quality Control Board
SANDAG	San Diego Association of Governments
UPL	upland
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey

1.0 Summary of Findings

RECON Environmental, Inc. (RECON) conducted a routine jurisdictional waters/wetland delineation in the 75.44-acre El Capitan Dam Spillway Vegetation Removal Project survey area during November of 2017. Methods for delineating wetlands followed guidelines set forth by the U.S. Army Corps of Engineers (ACOE), including the 1987 *Corps of Engineers Wetlands Delineation Manual* (ACOE 1987) and the 2008 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Arid Supplement; ACOE 2008).

A total of 4.92 acres of wetland waters of the U.S. and 0.83 acre of non-wetland waters of the U.S. were delineated on-site. Wetland waters were delineated using the ACOE three-parameter method. These non-wetland areas were delineated by an observable ordinary high water mark. Impacts to ACOE jurisdictional waters on-site, including any wetlands, would require a 404 Permit from the ACOE.

The California Department of Fish and Wildlife (CDFW) and Regional Water Quality Control Board (RWQCB) jurisdictional area consists of waters of the state composed of 0.26 acre of streambed, 0.57 acre of lake, and 11.10 acres of riparian habitat (wetland), totaling 11.93 acres. Impacts to the riparian habitat (wetland), streambed, or lake would require a 1602 Streambed Alteration Agreement from the CDFW and a 401 Water Quality Certification from the RWQCB.

The City of San Diego (City) wetlands include vegetated riparian habitat. The area considered City wetlands totals 5.13 acres. The unvegetated streambed is not included. Any impacts to City wetlands will require a deviation from the Environmentally Sensitive Lands Regulations.

2.0 Introduction

This report describes the results of a jurisdictional waters/wetland delineation conducted for El Capitan Dam Spillway Vegetation Removal Project (project), which includes vegetation and debris removal from the El Capitan Dam spillway, plunge-pool, and chute, as well as additional vegetation removal, grading, and/or slope reinforcement in order to allow for inspection of the structures. The jurisdictional waters/wetland delineation is used to identify and map the extent of the federal jurisdictional waters of the U.S. and state wetlands/waters.

The project area is located at El Capitan Dam in central San Diego County, northwest of the community of Alpine and northeast of the community of Flinn Springs in San Diego county, California (Figure 1). The main project components (i.e., vegetation removal, grading, and/or slope reinforcement) will take place in three areas: one located on a south-facing upland slope immediately north of the upper portion of the dam's spillway; one located at the bottom of the spillway and extending downstream (west) along the spillway, plunge-pool, and chute for approximately 1,200 feet; and one located at the base of the dam and extending downstream for approximately 1,000 feet (Figures 2 and 3). Additional project components, such as staging areas and habitat mitigation sites, have yet to be identified but will be located within the limits of the "Survey Area" shown on Figure 3. The project site is located within the limits of Cleveland National Forest and is in the northeast quarter of Section 7, Township 15 South, Range 02 East, on the U.S. Geological Survey (USGS) 7.5-minute topographical maps, El Cajon Mtn., California quadrangle (see Figure 2; USGS 1997).

The purpose of this study was to identify and map the location of jurisdictional waters to provide necessary background information for analysis by the ACOE, CDFW, RWQCB, and the City of San Diego (City). Additional reports containing detailed biological resource information and impact assessments for the project will be prepared in 2018.

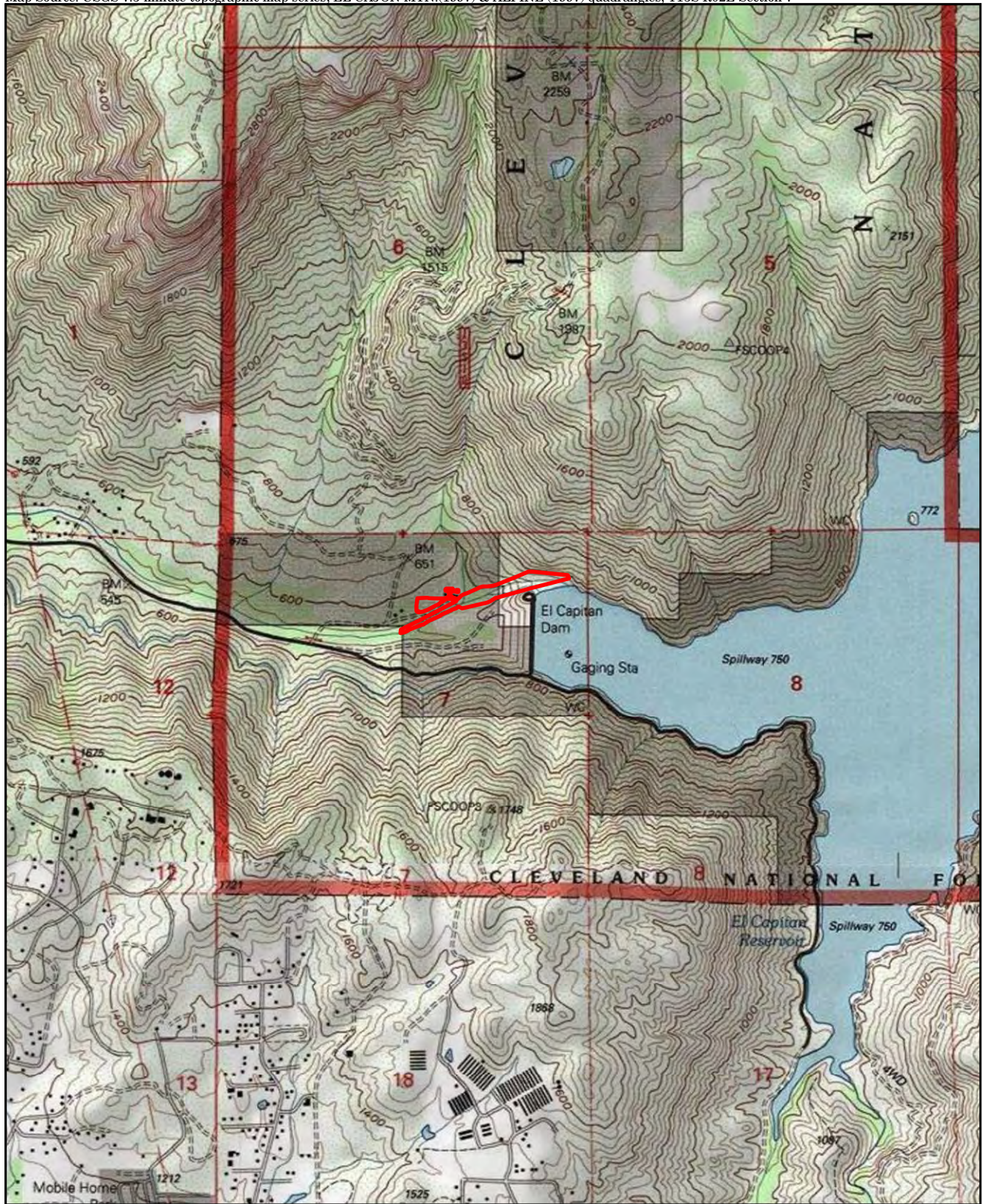
3.0 Methods and Jurisdictions

A routine jurisdictional waters/wetland delineation, following the guidelines set forth by the ACOE (1987, 2008), was performed to gather field data at potential jurisdictional waters in the survey area. For purposes of this report, the survey included the three main project areas, whose combined limit is shown on Figure 3 as "project boundary," as well as a surrounding buffer area, which was identified by the City and is shown on Figure 3 as "Survey Area." RECON biologists J.R. Sundberg and Andrew Smisek conducted the routine delineation fieldwork on November 14, 2017. Prior to conducting the delineation, aerial photographs and USGS topographic maps of the site were examined. Once on site, the potential federal, state, and City jurisdictional areas were examined to determine the presence and extent of any jurisdictional waters.



***** Project Location

FIGURE 1
Regional Location



 Project Boundary

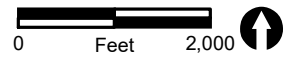




FIGURE 2

Project Location on USGS Map



-  Project Boundary
-  Survey Area

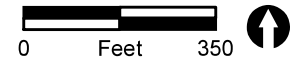


FIGURE 3

Project Location on Aerial Photograph

3.1 ACOE Methods and Jurisdictions

As stated in the federal regulations for the Clean Water Act (CWA), wetlands are defined as:

. . . those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances, do support a prevalence of vegetation typically adapted for life in saturated soil conditions (Environmental Protection Agency [EPA], 40 Code of Federal Regulations [CFR] 230.3 and, 33 CFR 328.3).

Wetlands are delineated using three parameters, which include hydrophytic vegetation, hydric soils, and wetland hydrology. According to the ACOE, indicators for all three parameters must be present to qualify an area as a wetland.

3.1.1 Regulatory Definition

In accordance with Section 404 of the CWA, the ACOE regulates the discharge of dredged or fill material into waters of the U.S. The term “waters of the United States” is defined as:

- All waters currently used, or used in the past, or which may be susceptible to be used in interstate or foreign commerce, including all waters subject to the ebb and flow of the tide;
- All interstate waters including interstate wetlands;
- All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds; the use, degradation, or destruction of which could affect foreign commerce including any such waters:
 - (1) which could be used by interstate or foreign travelers for recreational or other purposes; or
 - (2) from which fish or shellfish are, or could be, taken and sold in interstate or foreign commerce; or
 - (3) which are used or could be used for industries in interstate commerce;
- All other impoundments of waters otherwise defined as waters of the United States under the definition;
- Tributaries of waters identified above;
- The territorial seas; and
- Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in the paragraphs above [33 CFR Part 328.3(a)].

3.1.2 Wetland Parameters

3.1.2.1 Hydrophytic Vegetation

Hydrophytic vegetation is defined as “the sum total of macrophytic plant life growing in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content” (ACOE 1987). The potential wetland areas were surveyed by walking throughout the survey area and making observations of areas exhibiting characteristics of jurisdictional waters or wetlands. Vegetation units with the potential to be wetlands were examined, and data for each vegetation stratum (i.e., tree, shrub, herb, and vine) were recorded on the datasheet provided in the 2008 Arid Supplement (ACOE 2008). The percent absolute cover of each species present was visually estimated and recorded.

The wetland indicator status of each species observed was recorded, according to the National Wetland Plant List (Lichvar 2016). An obligate (OBL) indicator status refers to plants that have a 99 percent probability of occurring in wetlands under natural conditions. A Facultative-Wet (FACW) indicator status refers to plants that occur in wetlands (67 to 99 percent probability) but are occasionally found in non-wetlands. A Facultative (FAC) indicator status refers to plants that are equally likely to occur in wetlands and non-wetlands (estimated probability 34 to 66 percent). Facultative upland (FACU) species are more often found in upland sites. Upland (UPL) species have a high probability to occur in upland sites. A Not Indicated (NI) indicator status refers to species that have insufficient data currently available to determine an indicator status for the local region.

Plant species nomenclature follows that contained in *The Jepson Manual* (Baldwin et al. 2012). Dominant species with an indicator status of NI or not listed in the ACOE National List of Vascular Plant Species that Occur in Wetlands (Lichvar 2016) were evaluated as either wetland or upland indicator species based on local professional knowledge of where the species are most often observed in habitats that are characteristic of southern California.

There are three indicators or tests to determine hydrophytic vegetation on a site: the dominance test, prevalence index, and morphological adaptations. The 50/20 rule is a repeatable and objective procedure for selecting dominant plant species and is recommended when data are available for all species in the community (ACOE 2008). A species is considered dominant if those plants contribute more than 50 percent of the vegetative cover within a plant stratum or comprise 20 percent or more of the total cover.

If the vegetation at a particular site passes the dominance test (using the 50/20 rule), the hydrophytic vegetation criterion is considered fulfilled. If it fails the dominance test and positive indicators of hydric soils and/or wetland hydrology are present, it is necessary to apply the prevalence index. The prevalence index is a weighted-average wetland indicator status of all plant species at a test site where each indicator status category is given a numeric code and weighting by percent cover (ACOE 2008). If a prevalence index is 3.0 or less, the hydrophytic vegetation criterion is considered fulfilled.

If a site fails the prevalence index and positive indicators of hydric soils and/or wetland hydrology are present, it is necessary to assess the presence or absence of morphological adaptations. To apply this indicator, morphological features must be observed on more than 50 percent of the individuals of a FACU species living in an area where indicators of hydric soil and wetland hydrology are present (ACOE 2008). Once this indicator is applied, the dominance test and/or the prevalence index are/is recalculated using a FAC indicator status of this species (ACOE 2008).

3.1.2.2 Hydric Soils

A hydric soil is a soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions that favor the growth and regeneration of hydrophytic vegetation (ACOE 1987). Hydric soil indicators are formed predominantly by the accumulation or loss of iron, manganese, sulfur, or carbon compounds (ACOE 2008). The hydric soil criterion is considered fulfilled at a location if soils in the area can be inferred to have a high groundwater table, there is evidence of prolonged soil saturation, or there are any indicators suggesting a long-term reducing environment in the upper 18 inches of the soil profile.

Sample points were selected within potential wetland areas and where the apparent boundary between wetland and upland was inferred based on changes in the composition of the vegetation and topography. Soil pits were dug to a depth of at least 18 inches or to a depth necessary to determine soil color, evidence of soil saturation, depth to groundwater, and indicators of a reducing soil environment (i.e., mottling, gleying, and sulfidic odor).

Hydric soil indicators are presented in three groups in the Arid Supplement (ACOE 2008): all soils, sandy soils, and loamy and clayey soils. Indicators applicable to all soil textures are indicated as A1 through A10 on the datasheet and include histosols, histic epipedon, stratified layers, and muck, among others. Indicators in sandy soils are noted as S1 through S6 and include sandy gleyed matrix, sandy redox, and stripped matrix. F1 (loamy mucky mineral) through F9 (vernal pools) are indicators of hydric conditions within loamy and clayey soils. A complete description of each of the hydric soil indicators is provided in the 2008 Arid Supplement, which was referenced during the delineation.

3.1.2.3 Wetland Hydrology

The presence of wetland hydrology indicators confirm that inundation or saturation has occurred on a site but may not provide information about the timing, duration, or frequency of the event. Hydrology features are generally the most ephemeral of the three wetland parameters (ACOE 2008).

In the 2008 Arid Supplement, wetland hydrology indicators are divided into four groups. Those that are determined based on direct observation are in Group A; these include the presence of surface water, a high water table, and saturation. Water marks, drift deposits, surface soil cracks, and other indicators of flooding or ponding fall within Group B. Group C consists of indicators that provide indirect evidence that a site was saturated recently, such

as the presence of sulfidic odors or oxidized rhizospheres along living roots. Finally, Group D consists of vegetation and soil features that indicate recent wet conditions such as the FAC neutral test or a shallow aquitard (ACOE 2008). These indicators are further classified as primary or secondary indicators.

Hydrologic information for the site was obtained by reviewing USGS topographic maps and by directly observing hydrology indicators in the field. The wetland hydrology criterion was considered fulfilled at a location if, based upon the conclusions inferred from the field observations, the area had a high probability of being periodically inundated or had soils saturated to the surface at some time during the growing season to develop anaerobic conditions in the surface soil environment, especially the root zone (ACOE 1987). If at least one primary indicator or at least two secondary indicators were found at a sample point, the wetland hydrology criterion was considered fulfilled.

3.1.3 Non-wetland Jurisdictional Waters

The ACOE also requires the delineation of non-wetland jurisdictional waters. These waters must have strong hydrology indicators such as the presence of seasonal flows and an ordinary high watermark (OHWM). An OHWM is defined as:

... that line on the shore established by the fluctuations of water and indicated by physical characteristics such as [a] clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas (33 CFR Part 328.3).

Areas delineated as non-wetland jurisdictional waters may lack wetland vegetation or hydric soil characteristics. Hydric soil indicators may be missing, because topographic position precludes ponding and subsequent development of hydric soils. Absence of wetland vegetation can result from frequent scouring due to rapid water flow. These types of jurisdictional waters are delineated by the lateral and upstream/downstream extent of the OHWM of the particular drainage or depression.

3.2 CDFW Methods and Jurisdictions

Under sections 1600–1607 of the Fish and Game Code, the CDFW regulates activities that would divert or obstruct the natural flow or would substantially change the bed, channel, or bank of any river, stream, or lake that supports fish or wildlife. The CDFW has jurisdiction over riparian habitats associated with watercourses. Jurisdictional areas are delineated by the outer edge of riparian vegetation or at the top of the bank of streams or lakes, whichever is wider.

3.3 RWQCB Methods and Jurisdictions

The RWQCB is the regional agency responsible for protecting water quality in California. The jurisdiction of this agency includes hydrophytic vegetation and all waters of the United

States as mandated by Section 401 in the CWA and the California Porter–Cologne Water Quality Control Act. State waters are all waters that meet one of three criteria (hydrology, hydric soils, or wetland vegetation) and generally include but are not limited to, all waters under the jurisdiction of the ACOE. Methods used to delineate these areas are described in Section 3.1 above.

3.4 City of San Diego Wetlands Methods and Jurisdictions

The City recognizes wetlands as vegetated waters, state jurisdictional areas, and ACOE wetlands as per the Land Development Code (City of San Diego 2012). These do not include unvegetated stream channels. Methods used to delineate these areas are described in Section 3.1 above.

4.0 Results of Field Data

A description of the hydrophytic vegetation units observed and soil types encountered, as well as a discussion of the local hydrology in the survey area are presented below. Copies of the field data forms summarizing information collected at each sample site on vegetation, soils, and hydrology observed are provided in Attachment 1.

4.1 Vegetation

Vegetation communities and land cover types observed include: coastal and valley freshwater marsh, fresh water, southern cottonwood-willow riparian forest, disturbed southern cottonwood-willow riparian forest, southern coast live oak riparian forest, southern riparian woodland, scrub oak chaparral, Diegan coastal sage scrub, disturbed Diegan coastal sage scrub, arundo-dominated riparian, eucalyptus woodland, non-native grassland, disturbed land (i.e., disturbed habitat), and urban/developed land).

4.1.1 Areas with Hydrophytic Vegetation

Three vegetation communities within the survey area contain hydrophytic vegetation: coastal and valley freshwater marsh, southern cottonwood-willow riparian forest (including the disturbed form), and arundo-dominated riparian.

Coastal and valley freshwater marsh occurs in patches in both the northern and southern riparian corridors within the survey area. Many of these areas are dominated by cattails (*Typha* sp., OBL) and tule (*Schoenoplectus* sp., OBL). One marsh patch is dominated by San Diego sedge (*Carex spissa*, FAC) and western ragweed (*Ambrosia psilostachya*, FACU) with a substantial amount of dead cattail stalks.

Southern cottonwood-willow riparian forest occurs throughout much of the northern river corridor from the base of the spillway west beyond where the southern and northern corridors

merge. It is dominated by Goodding's black willow (*Salix gooddingii*, FACW), red willow (*Salix laevigata*, FACW), and arroyo willow (*Salix lasiolepis*, FACW) and also contains scattered sycamore (*Platanus racemosa*, FAC) and Fremont cottonwood (*Populus fremontii*, NI). The understory contains scattered herbaceous species such as rushes (*Juncus* sp.), and leaf litter covers a majority of the ground surface. Portions of this habitat contain patches of mule fat (*Baccharis salicifolia*, FAC) and areas with a substantial amount of desert wild grape (*Vitis girdiana*). Scattered dead cattail stalks were observed in the understory of many areas as well. Trees in this area are tall and form a moderately dense to very dense canopy. A portion of southern cottonwood-willow riparian forest is considered disturbed due to the prevalence of non-native trees such as gum trees (*Eucalyptus* sp., NI).

Arundo-dominated riparian is dominated by giant reed (*Arundo donax*, FACW) and occurs as two small patches in a ditch along a dirt access road in the southern riparian corridor of the project site. A third small patch occurs downstream (west) of the first two adjacent to coastal and valley freshwater marsh. Few other plants were observed growing among these arundo patches.

4.1.2 Areas Lacking Hydrophytic Vegetation

Vegetation communities or land cover types within the survey area that lack hydrophytic vegetation include southern coast live oak riparian forest, southern riparian woodland, scrub oak chaparral, Diegan coastal sage scrub (including the disturbed form), eucalyptus woodland, non-native grassland, disturbed land, and urban/developed land. These vegetation communities are dominated by upland plant species.

The areas of coast live oak riparian forest are dominated by coast live oak (*Quercus agrifolia*, NI). Although they also contain hydrophytic species such as western sycamore (*Platanus racemosa*, FAC) and Goodding's black willow, these individuals are scattered and are not dominant species within this vegetation type. The patches of southern riparian woodland are dominated by Fremont cottonwood and lack a dominance of willows or other hydrophytic species. Both of these vegetation types lack any species with FACW or OBL indicator status.

4.2 Soils

Information on the soil types sampled in the survey area is summarized from the Soil Survey for San Diego County (U.S. Department of Agriculture [USDA] 1973), the San Diego Association of Governments' (SANDAG's) geographic information system data (SANDAG 1995), and the Hydric Soils of California list obtained from the Natural Resource Conservation Service (2015).

Four soil types – riverwash; stony land; Cieneba–Fallbrook rocky sandy loams, 30 to 65 percent slopes, eroded; and Visalia sandy loam, 5 to 9 percent slopes – are mapped within the survey area (Figure 4; USDA 1973). Of these, riverwash is the only soil listed on the Natural Resource Conservation Service hydric soils list (2015) and is described below. The water and dam of the El Capitan Reservoir are mapped as well.

Riverwash soils occur in intermittent stream channels and typically consist of sand, gravel, or cobble. Riverwash soil may be devoid of vegetation in many places or may contain sparse patches of shrubs and forbs. The soil is rapidly permeable and excessively drained.

In the survey area, riverwash soil occurs at the base of the dam and the spillway and continues west within the river corridor. All five sample points were taken in areas mapped as riverwash soil. Hydric soil indicators were observed at sample points 1, 3, and 5 shown on Figures 5 through 7. Redox depressions were observed at sample point 1, and redox dark surfaces were observed at sample points 3 and 5 (see Attachment 1).

4.3 Hydrology

The survey area includes two riparian corridors of the San Diego River, extending westward from both the spillway and the base of the El Capitan Dam. Here, the river collects water from the surrounding slopes of El Monte Valley along with any water that flows or is released from El Capitan Reservoir. According to the City of San Diego biologist, water has not spilled over the spillway since 2005. From the dam, the San Diego River flows approximately 29 miles westward before emptying into the Pacific Ocean, a Traditional Navigable Waterway.

Hydrology indicators were observed at sample points 1, 3, and 5. These included two primary indicators, oxidized rhizospheres along living root and surface soil cracks, and three secondary indicators, water marks, sediment deposits, and drift deposits. These secondary indicators were observed as being very prevalent in some portions of the site.

The northern and southern river corridors occur generally as vegetated ditches with variable microtopography. They converge approximately 1,200 feet west of the dam and continue west as a single corridor. Water appears to pond or be held for extended periods of time within certain portions of the river corridors. For instance, in the northern river corridor at the base of the spillway, water appears to pond due to the alluvial fan created by a drainage flowing into the river from the north. Beyond the alluvial fan, the northern river corridor occurs as a ditch that may carry water during flow events with portions remaining ponded for some time due to the width and/or microtopography of the channel.

As with the northern river corridor, the southern corridor contains small portions where water appears to pond for an extended period of time. These areas are generally indicated by the presence of freshwater marsh habitats. In addition, two culverts that carry water from the reservoir drain into the southern river corridor.

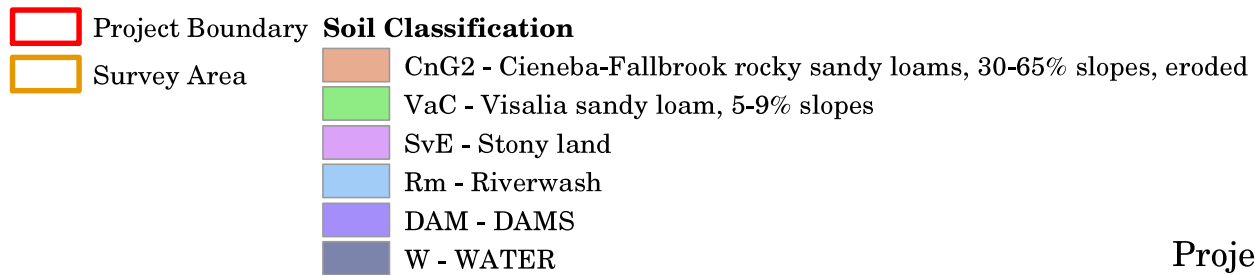
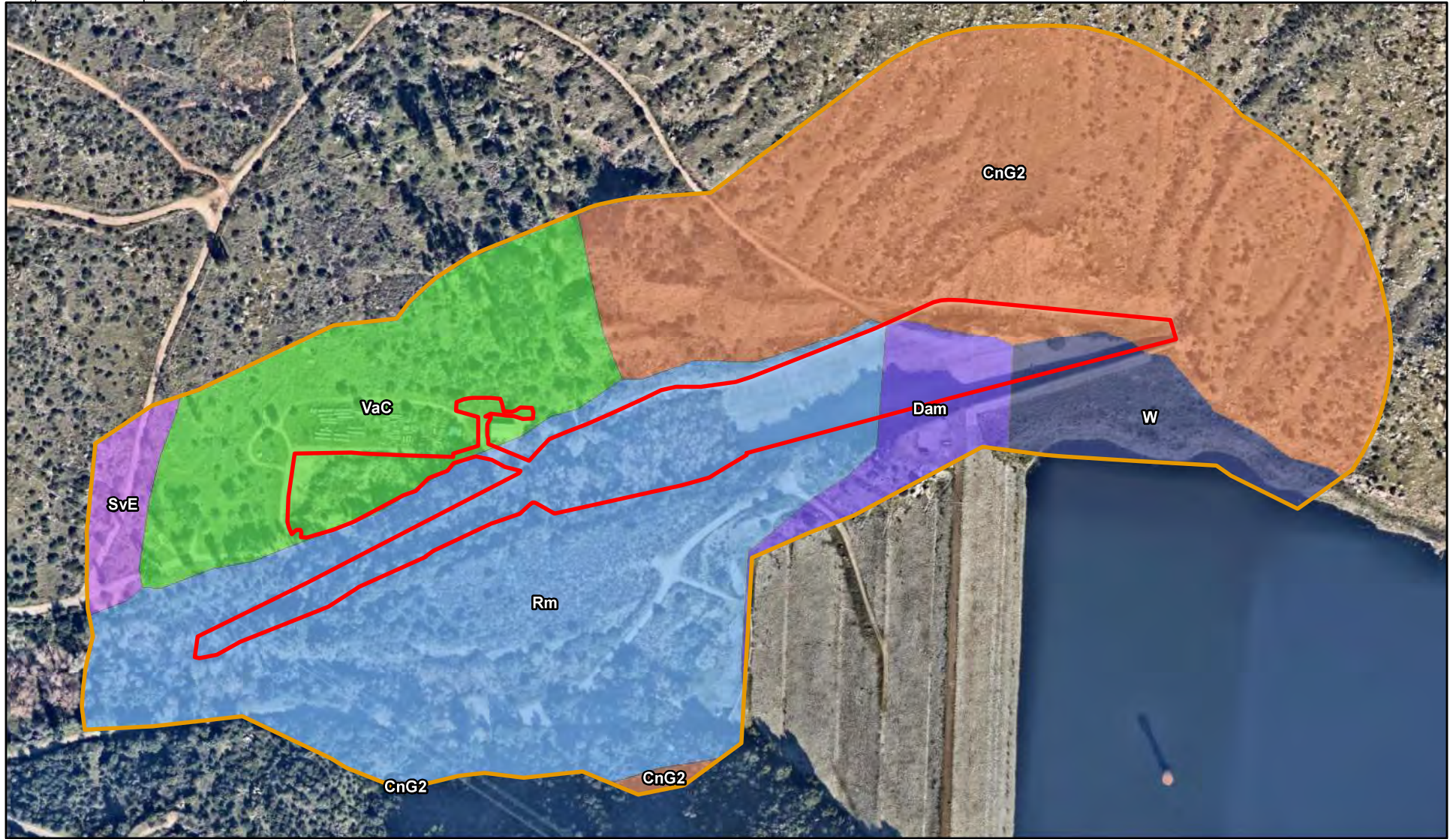


FIGURE 4

Project Location on Soils Map



- Project Boundary
- Survey Area
- ACOE Non-wetland Waters of the U.S.
- ACOE Wetland Waters of the U.S.
- Sample Points
- Sample Transects
- Sheet Flow

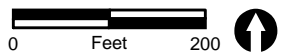
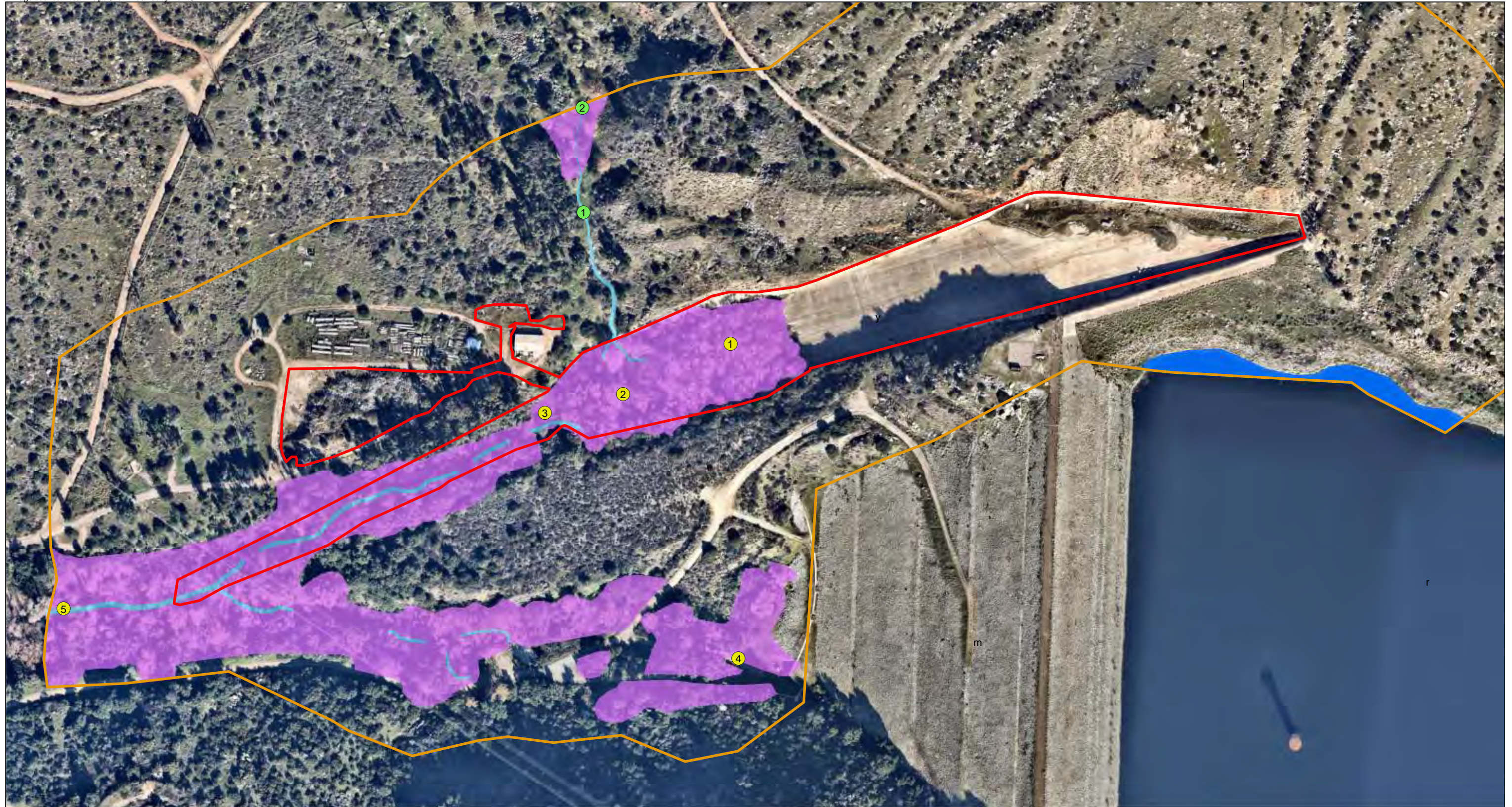


FIGURE 5
Location of Waters of the U.S.



- | | | |
|------------------|----------------------|------------------|
| Project Boundary | CDFW/RWQCB Lake | Sample Points |
| Survey Area | CDFW/RWQCB Streambed | Sample Transects |
| | CDFW/RWQCB Riparian | |

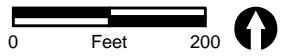
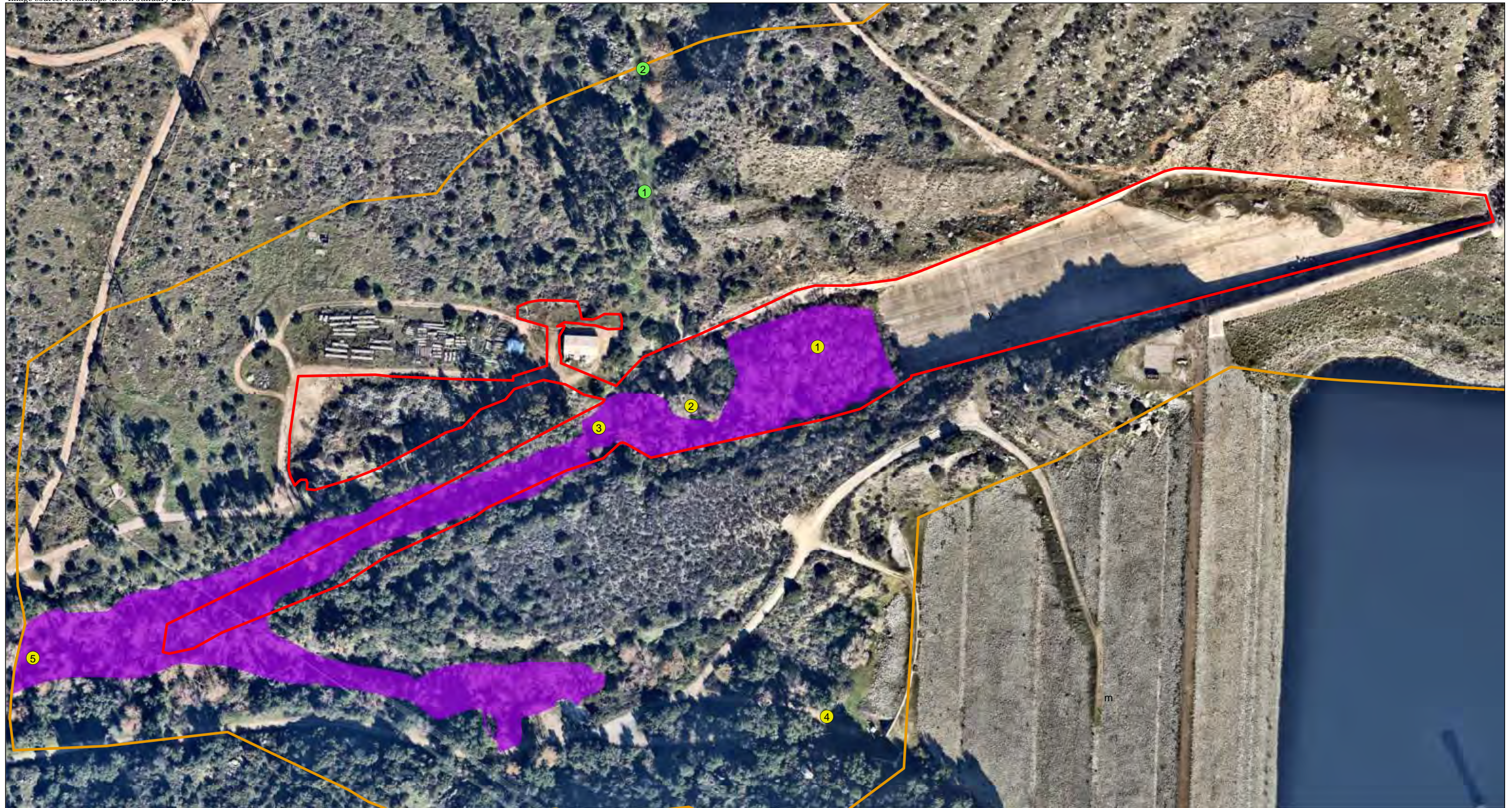


FIGURE 6
Location of Waters of the State



- Project Boundary
- City of San Diego Wetlands
- Sample Points
- Survey Area
- Sample Transects

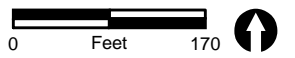


FIGURE 7
Location of City of San Diego Wetlands

In the northern portion of the survey area, a stream channel drains a substantial portion of the uplands to the north. No hydrophytic vegetation or hydric soils were observed within this drainage, but an OHWM was observed and recorded. This drainage was delineated by the lateral and upstream/downstream extent of the OHWM. A concrete outfall has been installed at the mouth of the drainage, where it flows into the river corridor. Sediment has built up immediately downstream of the mouth and within the river to form a small alluvial fan. Two low-flow channels extend from the mouth of the drainage into this alluvial fan forming a radiating pattern before dissipating into sheet flow, These low-flow channels will likely shift over time as a result of ongoing sediment deposition during flow events.

On the steep slopes in the northern portion of the survey area, there are several swales. However, these swales are small in size and do not have an OHWM or exhibit other hydrological indicators.

5.0 Location of Jurisdictional Waters

Jurisdictional waters were delineated on-site according to ACOE, CDFW, RWQCB, and City of San Diego regulations. Acreages of jurisdictional waters for each of the different jurisdiction are provided in Table 1. Figures 5 through 7 show the locations of the jurisdictional waters identified on-site for each agency jurisdiction.

Table 1 Existing Jurisdictional Areas within the Survey Area	
Jurisdictional Areas	Total Acres (linear feet)
ACOE Total Jurisdiction (404)	5.75
Wetland Waters of the U.S.	4.92
Non-wetland Waters of the U.S. ²	0.83 (2,271)
CDFW and RWQCB Total Jurisdictional Areas (1602)¹	11.93
Riparian Habitat	11.10
Streambed ²	0.26 (2,271)
Lake	0.57
City of San Diego Wetlands	5.13
¹ CDFW/RWQCB area of jurisdiction includes all ACOE jurisdictional waters. ² Non-wetland waters/streambed area not included in the wetland/riparian areas so that no area is counted twice for the same jurisdiction.	

5.1 Waters of the U.S. (ACOE Jurisdictional Areas)

Waters of the U.S. on-site, and thus ACOE jurisdictional areas, consist of wetland waters and non-wetland waters in the form of an intermittent and ephemeral stream channel. These waters of the U.S. are discussed below.

5.1.1 Wetland Waters

A total of 4.92 acres of wetland waters of the U.S. considered under ACOE jurisdiction were delineated within the survey area (see Figure 5). These areas occur in the bottom portions of the river corridors and mostly follow vegetation community boundaries to include all areas of southern cottonwood-willow riparian forest and coastal and valley freshwater marsh. The three sample points taken within these habitats each met all three wetland parameters (see Attachment 1). Therefore, these areas meet the ACOE criteria for wetland waters of the U.S. The western patch of arundo-dominated riparian, which occurs near coastal and valley freshwater marsh and within southern cottonwood-willow riparian forest, is included in ACOE jurisdiction, because it occurs within this wetland complex and has hydrophytic vegetation. However, the eastern two patches of arundo-dominated riparian are not in ACOE jurisdiction, because they are isolated from other wetlands on-site. No hydrology indicators were observed in these eastern patches and it is unlikely they contain hydric soils.

5.1.2 Non-wetland Waters

A total of 0.83 acre (2,271 linear feet) of non-wetland waters of the U.S. considered under ACOE jurisdiction were delineated within the survey area (see Figure 5). Jurisdictional non-wetland waters on-site include the open water of El Capitan Reservoir and a drainage that flows from a canyon north of the project into the northern corridor of the San Diego River near the base of the spillway. An alluvial fan occurs at the mouth of this drainage where it connects to the wetlands of the northern river corridor. These non-wetland waters lack hydrophytic vegetation. The presence of an OHWM and a connection to the San Diego River, which empties into the Pacific Ocean (a traditional navigable water) approximately 29 miles west, were used to determine the jurisdictional status of the drainage. The lateral extent of the non-wetland waters was determined by the observable OHWM. Ephemeral and Intermittent Streams OHWM Datasheets were completed for two sample transect points along this drainage. These are included as Attachment 2.

The non-wetland waters on-site also include segments within both the northern and southern river corridors where an obvious channel has formed capable of conveying flow. These channels occur within riparian vegetation and often have riparian canopy overhead. However, the channels are unvegetated and are, therefore, considered non-wetland waters. The segments of these intermittent stream channels are connected by a series of pools vegetated with coastal and valley freshwater marsh.

5.2 Waters of the State (CDFW and RWQCB Jurisdictional Areas)

On-site areas determined to be waters of the state and under the jurisdiction of the CDFW and RWQCB include streambed, lake, and wetland (see Figure 6). CDFW/RWQCB streambed delineated on-site includes all areas of non-wetland waters of the U.S. described above and totals 0.26 acre (2,271 linear feet). CDFW/RWQCB lake delineated on-site includes a portion of the open water of El Capitan Reservoir that occurs in the eastern portion of the survey area and totals 0.57 acre. CDFW/RWQCB riparian habitat (wetland) on-site includes areas mapped as arundo-dominated riparian, coastal and valley freshwater marsh, southern cottonwood-willow riparian forest (including disturbed form), southern riparian woodland, and southern coast live oak riparian forest that are associated with the river corridors and total 11.10 acres.

5.3 City of San Diego Wetlands

City wetlands include all areas of wetland waters of the U.S. as described above, but do not include any areas of non-wetland waters/streambed. The area considered City wetlands totals 5.13 acres. These wetlands include areas of hydrophytic vegetation including areas mapped as coastal and valley freshwater marsh and southern cottonwood-willow riparian forest (including disturbed form). The western patch of arundo-dominated riparian described above would also be included as a City wetland (see Figure 7).

6.0 Regulatory Issues

Due to a no-net-loss policy implemented by the resource agencies, the first consideration in project planning should be avoidance of jurisdictional waters. ACOE, CDFW, and RWQCB jurisdictional waters are regulated by the federal, state, and local governments. All impacts are considered significant and need to be avoided to the greatest extent possible.

Unavoidable impacts to jurisdictional waters may be authorized through permit authorizations from the ACOE through the Section 404 Permit Program, from the CDFW through a 1602 Streambed Alteration Agreement, and from the RWQCB through a 401 State Water Quality Certification and waste discharge permit for isolated wetlands. Approved impacts to ACOE, CDFW, and RWQCB jurisdictional waters require mitigation through habitat creation, enhancement, and/or credits in a mitigation bank to achieve a no net loss of jurisdictional waters, as determined by a qualified restoration specialist in consultation with the regulatory agencies.

Any impacts to City of San Diego wetlands will require a deviation from the City's Environmentally Sensitive Lands regulations. The project qualifies as an Essential Public Project, which would allow a deviation from the City's Environmentally Sensitive Lands wetland regulations to be granted. Additional mitigation measure may be required to avoid/minimize impacts to wetlands outside and adjacent to the project impact area.

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- 2008 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region. Prepared by U.S. Army Engineer Research and Development Center. December.
- U.S. Department of Agriculture (USDA)
1973 Soil Survey, San Diego Area, California. Edited by Roy H. Bowman. Soil Conservation Service and Forest Service.
- U.S. Geological Survey (USGS)
1997 El Cajon Mtn. Quadrangle 7.5-Minute Topographic Map.

ATTACHMENT 1
Wetland Determination Forms

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: El Capitan Dam Spillway City/County: San Diego County Sampling Date: Nov. 14, 2017
 Applicant/Owner: City of San Diego State: CA Sampling Point: 1
 Investigator(s): J. R. Sundberg and Andrew Smisek Section, Township, Range: Section 7, Township 15S, Range 02E
 Landform (hillslope, terrace, etc.): Floodplain, bottomland Local relief (concave, convex, none): concave Slope (%): 0-2
 Subregion (LRR): Mediterranean California (LRR C) Lat: 32.88548954770 Long: -116.81164685100 Datum: UTM
 Soil Map Unit Name: Riverwash NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? No Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: According to the City biologist, the last time water from the reservoir spilled over the spillway was in 2005. This area occurs at the base of the dam spillway and appears to hold water because it is lower than portion of floodplain downstream to the west where sediment appears to be deposited from a separate drainage.	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Salix gooddingii</u>	50	Yes	FACW	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. <u>Salix lasiolepis</u>	5	No	FACW	
3. _____				
4. _____				
	55	= Total Cover		
Sapling/Shrub Stratum (Plot size: _____)				
1. <u>Baccharis salicifolia</u>	4	Yes	FAC	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
2. <u>Tamarix ramosissima</u>	1	No	NI	
3. _____				
4. _____				
5. _____				
	5	= Total Cover		
Herb Stratum (Plot size: _____)				
1. <u>Xanthium strumarium</u>	<1	No	FAC	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Juncus dubius</u>	2	Yes	FACW	
3. <u>Eleocharis montevidensis</u>	<1	No	FACW	
4. <u>Cyperus eragrostis</u>	<1	No	FACW	
5. _____				
6. _____				
7. _____				
8. _____				
	3	= Total Cover		
Woody Vine Stratum (Plot size: _____)				
1. <u>Vitis girdiana</u>	<1	Yes	FAC	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
2. _____				
	<1	= Total Cover		
% Bare Ground in Herb Stratum _____		% Cover of Biotic Crust _____		

Remarks: Dead Typha occurs scattered throughout the understory at approximately 10 percent cover. Some willows have aerial roots.

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
+2-0							organic	decomposing litter and many fine roots
0-4	10 YR 4/3	95	10 YR 5/8	5	C	M	silt loam	
4-18	7.5 YR 4/2	100					sand	variable particle size including granitic gravel

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)	Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> 1 cm Muck (A9) (LRR C)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> 2 cm Muck (A10) (LRR B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Reduced Vertic (F18)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Stratified Layers (A5) (LRR C)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 1 cm Muck (A9) (LRR D)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	
<input type="checkbox"/> Thick Dark Surface (A12)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	
<input type="checkbox"/> Sandy Redox (S5)	
<input type="checkbox"/> Stripped Matrix (S6)	
<input type="checkbox"/> Loamy Mucky Mineral (F1)	
<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Dark Surface (F7)	
<input checked="" type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Vernal Pools (F9)	

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present): Type: <u>None</u> Depth (inches): _____	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____
Remarks: Hydric soil indicators observed. Redox features observed as concentrations. This area is a depression that appears to hold water.	

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (2 or more required)
Primary Indicators (minimum of one required; check all that apply)	
<input type="checkbox"/> Surface Water (A1)	<input checked="" type="checkbox"/> Water Marks (B1) (Riverine)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Salt Crust (B11)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Biotic Crust (B12)	
<input type="checkbox"/> Aquatic Invertebrates (B13)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	
<input type="checkbox"/> Thin Muck Surface (C7)	
<input type="checkbox"/> Other (Explain in Remarks)	

Field Observations: Surface Water Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present? Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: aerial photos

Remarks: One secondary indicator was observed, water marks were visible on most tree trunks.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: El Capitan Dam Spillway City/County: San Diego County Sampling Date: Nov. 14, 2017
 Applicant/Owner: City of San Diego State: CA Sampling Point: 2
 Investigator(s): J. R. Sundberg and Andrew Smisek Section, Township, Range: Section 7, Township 15S, Range 02E
 Landform (hillslope, terrace, etc.): alluvial fan Local relief (concave, convex, none): none, irregular Slope (%): 0
 Subregion (LRR): Mediterranean California (LRR C) Lat: 32.88519557330 Long: -116.81238321200 Datum: UTM
 Soil Map Unit Name: Riverwash NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? No Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: This area appears to be an alluvial fan formed by sedimentation from the drainage flowing from the north. This terrace is approximately 3 feet higher in elevation than the wetland to the east. The lack of hydric soils and hydrology is likely due to the active sedimentation that occurs here. Wetland vegetation is only represented by FAC species.	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. <u>Populus fremontii</u>	15	Yes	NI	Number of Dominant Species That Are OBL, FACW, or FAC:	<u>3</u> (A)
2. <u>Quercus agrifolia</u>	5	Yes	NI	Total Number of Dominant Species Across All Strata:	<u>5</u> (B)
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>60%</u> (A/B)
4. _____					
	20	= Total Cover			
Sapling/Shrub Stratum (Plot size: _____)				Prevalence Index worksheet:	
1. <u>Baccharis salicifolia</u>	40	Yes	FAC	Total % Cover of:	Multiply by:
2. <u>Malosma laurina</u>	3	No	NI	OBL species _____	x 1 = _____
3. _____				FACW species _____	x 2 = _____
4. _____				FAC species _____	x 3 = _____
5. _____				FACU species _____	x 4 = _____
	43	= Total Cover		UPL species _____	x 5 = _____
				Column Totals: _____	(A) _____ (B)
				Prevalence Index = B/A = _____	
Herb Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators:	
1. <u>Xanthium strumarium</u>	3	Yes	FAC	<input checked="" type="checkbox"/> Dominance Test is >50%	
2. <u>Stipa mellicia</u>	1	No	NI	_____ Prevalence Index is ≤3.0 ¹	
3. <u>Artemisia douglasiana</u>	1	No	FAC	_____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
4. _____				_____ Problematic Hydrophytic Vegetation ¹ (Explain)	
5. _____					
6. _____					
7. _____					
8. _____					
	5	= Total Cover			
Woody Vine Stratum (Plot size: _____)				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
1. <u>Vitis girdiana</u>	10	Yes	FAC		
2. _____					
	10	= Total Cover			
% Bare Ground in Herb Stratum <u>30</u> % Cover of Biotic Crust <u>0</u>				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____	
Remarks: No aerial roots were observed in this area. Some leaf litter occurs in this area.					

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: El Capitan Dam Spillway City/County: San Diego County Sampling Date: Nov. 14, 2017
 Applicant/Owner: City of San Diego State: CA Sampling Point: 3
 Investigator(s): J. R. Sundberg and Andrew Smisek Section, Township, Range: Section 7, Township 15S, Range 02E
 Landform (hillslope, terrace, etc.): bottomland Local relief (concave, convex, none): none Slope (%): 0
 Subregion (LRR): Mediterranean California (LRR C) Lat: 32.88508469940 Long: -116.81291993100 Datum: UTM
 Soil Map Unit Name: Riverwash NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? No Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: It is suspected that this area was cleared historically because it does not contain trees. Hydrology indicators and hydric soils were observed.	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66.7%</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
= Total Cover				
Sapling/Shrub Stratum (Plot size: _____)				
1. _____	_____	_____	_____	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
= Total Cover				
Herb Stratum (Plot size: _____)				
1. <i>Carex spissa</i>	10	Yes	FAC	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <i>Ambrosia psilostachya</i>	30	Yes	FACU	
3. <i>Xanthium strumarium</i>	3	No	FAC	
4. <i>Artemisia douglasiana</i>	4	No	FAC	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
47 = Total Cover				
Woody Vine Stratum (Plot size: _____)				
1. <i>Vitis girdiana</i>	30	Yes	FAC	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
2. _____	_____	_____	_____	
30 = Total Cover				
% Bare Ground in Herb Stratum <u>30</u> % Cover of Biotic Crust <u>0</u>				

Remarks: Dead Typha occurs in patches at approximately 10 percent cover. more here about veg, why no trees?

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: El Capitan Dam Spillway City/County: San Diego County Sampling Date: Nov. 14, 2017
 Applicant/Owner: City of San Diego State: CA Sampling Point: 4
 Investigator(s): J. R. Sundberg and Andrew Smisek Section, Township, Range: Section 7, Township 15S, Range 02E
 Landform (hillslope, terrace, etc.): floodplain, bottomland Local relief (concave, convex, none): none, irregular Slope (%): 0
 Subregion (LRR): Mediterranean California (LRR C) Lat: 32.88366718170 Long: -116.81158127400 Datum: UTM
 Soil Map Unit Name: Riverwash NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? No Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/> Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Remarks: No wetland indicators were observed in this area.	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Populus fremontii</u>	10	Yes	NI	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0%</u> (A/B)
2. <u>Quercus agrifolia</u>	10	Yes	NI	
3. _____				
4. _____				
	20	= Total Cover		
Sapling/Shrub Stratum (Plot size: _____)				
1. <u>Toxicodendron diversilobum</u>	2	No	FACU	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
2. <u>Heteromeles arbutifolia</u>	10	No	NI	
3. <u>Malosma laurina</u>	30	Yes	NI	
4. _____				
5. _____				
	42	= Total Cover		
Herb Stratum (Plot size: _____)				
1. <u>Stipa miliacea</u>	5	No	NI	Hydrophytic Vegetation Indicators: _____ Dominance Test is >50% _____ Prevalence Index is ≤3.0 ¹ _____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Ambrosia psilostachya</u>	50	Yes	FACU	
3. <u>Cynodon dactylon</u>	2	No	FACU	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
	57	= Total Cover		
Woody Vine Stratum (Plot size: _____)				
1. _____				Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>
2. _____				
		= Total Cover		
% Bare Ground in Herb Stratum <u>15</u> % Cover of Biotic Crust <u>0</u>				

Remarks: This area contains a variety of trees and shrubs at the base of the dam. Vegetation is not considered hydrophytic.

SOIL

Sampling Point: 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	10 YR 3/3	100					loamy sand	
5-18	7.5 YR 3/4	100					loamy sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

<p>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</p> <p><input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Sandy Redox (S5)</p> <p><input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Stripped Matrix (S6)</p> <p><input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Loamy Mucky Mineral (F1)</p> <p><input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Loamy Gleyed Matrix (F2)</p> <p><input type="checkbox"/> Stratified Layers (A5) (LRR C) <input checked="" type="checkbox"/> Depleted Matrix (F3)</p> <p><input type="checkbox"/> 1 cm Muck (A9) (LRR D) <input type="checkbox"/> Redox Dark Surface (F6)</p> <p><input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Depleted Dark Surface (F7)</p> <p><input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Redox Depressions (F8)</p> <p><input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Vernal Pools (F9)</p> <p><input type="checkbox"/> Sandy Gleyed Matrix (S4)</p>	<p>Indicators for Problematic Hydric Soils³:</p> <p><input type="checkbox"/> 1 cm Muck (A9) (LRR C)</p> <p><input type="checkbox"/> 2 cm Muck (A10) (LRR B)</p> <p><input type="checkbox"/> Reduced Vertic (F18)</p> <p><input type="checkbox"/> Red Parent Material (TF2)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p> <p>³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.</p>
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<p>Restrictive Layer (if present):</p> <p>Type: <u>None</u></p> <p>Depth (inches): _____</p>	<p>Hydric Soil Present? Yes _____ No <u>X</u></p>
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Remarks: No hydric soils were observed. Leaf litter occurs through much of this area.

HYDROLOGY

<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators (minimum of one required; check all that apply)</p> <p><input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Salt Crust (B11)</p> <p><input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Biotic Crust (B12)</p> <p><input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Aquatic Invertebrates (B13)</p> <p><input type="checkbox"/> Water Marks (B1) (Nonriverine) <input type="checkbox"/> Hydrogen Sulfide Odor (C1)</p> <p><input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)</p> <p><input type="checkbox"/> Drift Deposits (B3) (Nonriverine) <input type="checkbox"/> Presence of Reduced Iron (C4)</p> <p><input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)</p> <p><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Thin Muck Surface (C7)</p> <p><input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Other (Explain in Remarks)</p>	<p>Secondary Indicators (2 or more required)</p> <p><input type="checkbox"/> Water Marks (B1) (Riverine)</p> <p><input type="checkbox"/> Sediment Deposits (B2) (Riverine)</p> <p><input type="checkbox"/> Drift Deposits (B3) (Riverine)</p> <p><input type="checkbox"/> Drainage Patterns (B10)</p> <p><input type="checkbox"/> Dry-Season Water Table (C2)</p> <p><input type="checkbox"/> Thin Muck Surface (C7)</p> <p><input type="checkbox"/> Crayfish Burrows (C8)</p> <p><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)</p> <p><input type="checkbox"/> Shallow Aquitard (D3)</p> <p><input type="checkbox"/> FAC-Neutral Test (D5)</p>
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<p>Field Observations:</p> <p>Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____</p> <p>Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____</p> <p>Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)</p>	<p>Wetland Hydrology Present? Yes _____ No <u>X</u></p>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: aerial photos

Remarks: No hydrology indicators were observed.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: El Capitan Dam Spillway City/County: San Diego County Sampling Date: Nov. 14, 2017
 Applicant/Owner: City of San Diego State: CA Sampling Point: 5
 Investigator(s): J. R. Sundberg and Andrew Smisek Section, Township, Range: Section 7, Township 15S, Range 02E
 Landform (hillslope, terrace, etc.): floodplain, bottomland Local relief (concave, convex, none): none, irregular Slope (%): 0
 Subregion (LRR): Mediterranean California (LRR C) Lat: 32.88393432050 Long: -116.81621687700 Datum: UTM
 Soil Map Unit Name: Riverwash NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? No Are "Normal Circumstances" present? Yes No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____ Hydric Soil Present? Yes <input checked="" type="checkbox"/> No _____ Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No _____	Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No _____
Remarks: This area occurs downstream of where two main channels of the river corridor merge.	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Salix gooddingii</u>	20	Yes	FACW	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)
2. <u>Salix lasiolepis</u>	20	Yes	FACW	
3. <u>Platanus racemosa</u>	1	No	FAC	
4. _____				
	41	= Total Cover		
Sapling/Shrub Stratum (Plot size: _____)				
1. _____				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
2. _____				
3. _____				
4. _____				
5. _____				
		= Total Cover		
Herb Stratum (Plot size: _____)				
1. <u>Shoenoplectus</u>	<1	No	OBL	Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Juncus dubius</u>	15	Yes	FACW	
3. <u>Eleocharis montevidensis</u>	<1	No	FACW	
4. <u>Rumex crispus</u>	<1	No	FAC	
5. <u>Carex spissa</u>	<1	No	FAC	
6. _____				
7. _____				
8. _____				
	16	= Total Cover		
Woody Vine Stratum (Plot size: _____)				
1. <u>Vitis girdiana</u>	15	Yes	FAC	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No _____
2. _____				
	15	= Total Cover		
% Bare Ground in Herb Stratum <u>75</u> % Cover of Biotic Crust <u>0</u>				

Remarks: Vegetation is hydrophytic and consists of an open canopy of willows with an understory of herbaceous species.

ATTACHMENT 2
Ephemeral and Intermittent Streams
OHWM Datasheets

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: El Capitan Spillway Veg Removal Project Project Number: 8863 Stream: Ephemeral channel north of San Diego River Investigator(s): JK Sundberg and Andrew Smisek	Date: 11/14/17 Town: San Diego County Photo begin file#:	Time: 1000 State: CA Photo end file#:
--	---	--

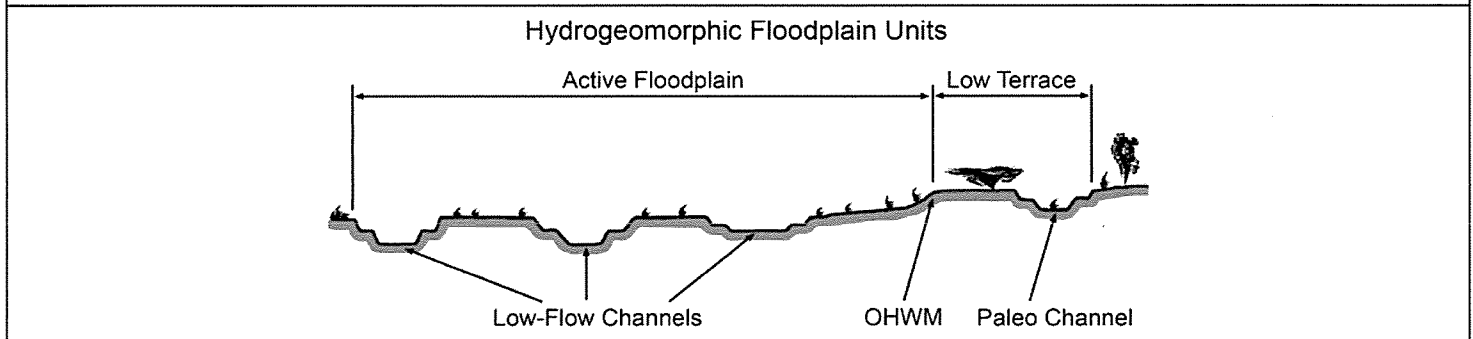
Y <input checked="" type="checkbox"/> / N <input type="checkbox"/> Do normal circumstances exist on the site? Y <input type="checkbox"/> / N <input checked="" type="checkbox"/> Is the site significantly disturbed?	Location Details: North of San Diego River near base of Spillway Projection: Mercator Datum: WGS 84 Coordinates:
--	--

Potential anthropogenic influences on the channel system:
 Negligible. Possible minor erosion from access road

Brief site description: Ephemeral channel in undeveloped area, approximately 30 inches wide. Low-flow channel comprises active floodplain and a low terrace occurs on east side of channel. Surrounded by upland vegetation.

Checklist of resources (if available):

<input checked="" type="checkbox"/> Aerial photography	<input type="checkbox"/> Stream gage data
Dates:	Gage number:
<input checked="" type="checkbox"/> Topographic maps	Period of record:
<input type="checkbox"/> Geologic maps	<input type="checkbox"/> History of recent effective discharges
<input type="checkbox"/> Vegetation maps	<input type="checkbox"/> Results of flood frequency analysis
<input checked="" type="checkbox"/> Soils maps	<input type="checkbox"/> Most recent shift-adjusted rating
<input type="checkbox"/> Rainfall/precipitation maps	<input type="checkbox"/> Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event
<input type="checkbox"/> Existing delineation(s) for site	
<input checked="" type="checkbox"/> Global positioning system (GPS)	
<input type="checkbox"/> Other studies	

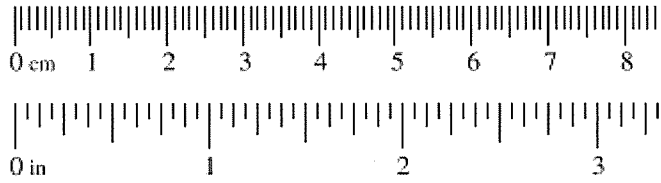


- Procedure for identifying and characterizing the floodplain units to assist in identifying the OHW:**
1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
 2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
 3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
 - a) Record the floodplain unit and GPS position.
 - b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
 - c) Identify any indicators present at the location.
 4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
 5. Identify the OHW and record the indicators. Record the OHW position via:

<input checked="" type="checkbox"/> Mapping on aerial photograph	<input checked="" type="checkbox"/> GPS
<input type="checkbox"/> Digitized on computer	<input type="checkbox"/> Other:

Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class
10.08	256	Boulder
2.56	64	Cobble
0.157	4	Pebble
		Granule
0.079	2.00	Very coarse sand
0.039	1.00	Coarse sand
0.020	0.50	Medium sand
1/2 0.0098	0.25	Fine sand
1/4 0.005	0.125	Very fine sand
1/8 0.0025	0.0625	
1/16 0.0012	0.031	Coarse silt
1/32 0.00061	0.0156	Medium silt
1/64 0.00031	0.0078	Fine silt
1/128 0.00015	0.0039	Very fine silt
		Clay



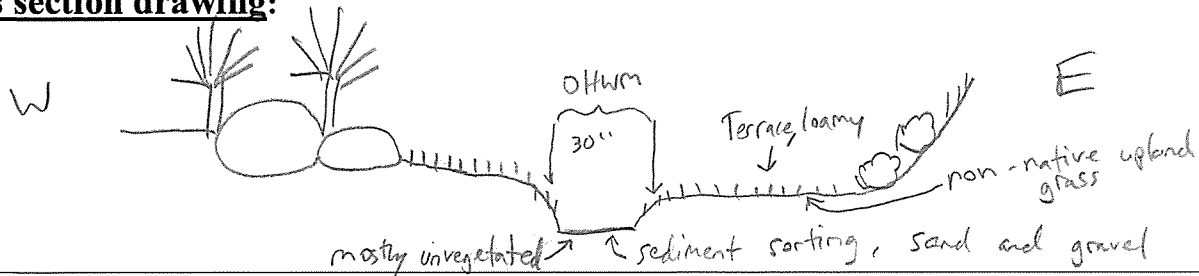
Project ID: 8863

Cross section ID: #1

Date: 11/14/17

Time: 1000

Cross section drawing:



OHWM

GPS point: 32.886247, -116.812676

Indicators:

- Change in average sediment texture
- Change in vegetation species
- Change in vegetation cover
- Break in bank slope
- Other: _____
- Other: _____

Comments:

The low-flow channel is clearly defined by a change in slope, lack of vegetation, and sediment sorting.

Floodplain unit: Low-Flow Channel Active Floodplain Low Terrace

GPS point: 32.886247, -116.812676

Characteristics of the floodplain unit:

Average sediment texture: Sand
 Total veg cover: <1 % Tree: 0 % Shrub: 0 % Herb: <1 %
 Community successional stage:

- NA
- Early (herbaceous & seedlings)
- Mid (herbaceous, shrubs, saplings)
- Late (herbaceous, shrubs, mature trees)

Indicators:

- Mudcracks
- Ripples
- Drift and/or debris
- Presence of bed and bank
- Benches
- Soil development
- Surface relief
- Other: mostly lacking vegetation
- Other: _____
- Other: _____

Comments:

Bed and bank is clearly defined by change in slope, sediment sorting, and near absence of vegetation. The active floodplain does not extend outside the channel. But, moderate flood events may extend onto the terrace.

Project ID: 8963

Cross section ID: #1

Date: 11/14/17

Time: 1000

Floodplain unit: Low-Flow Channel Active Floodplain Low Terrace

GPS point: 32.886247, -116.812676

Characteristics of the floodplain unit:

Average sediment texture: loamy

Total veg cover: 50 % Tree: % Shrub: % Herb: 50 %

Community successional stage:

- NA Mid (herbaceous, shrubs, saplings)
- Early (herbaceous & seedlings) Late (herbaceous, shrubs, mature trees)

Indicators:

- Mudcracks Soil development
- Ripples Surface relief
- Drift and/or debris Other: _____
- Presence of bed and bank Other: _____
- Benches Other: _____

Comments:

Dominated by non-native upland grasses. This terrace contain a high amount of bioturbation in the form of rodent burrows.

Floodplain unit: Low-Flow Channel Active Floodplain Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: % Tree: % Shrub: % Herb: %

Community successional stage:

- NA Mid (herbaceous, shrubs, saplings)
- Early (herbaceous & seedlings) Late (herbaceous, shrubs, mature trees)

Indicators:

- Mudcracks Soil development
- Ripples Surface relief
- Drift and/or debris Other: _____
- Presence of bed and bank Other: _____
- Benches Other: _____

Comments:

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

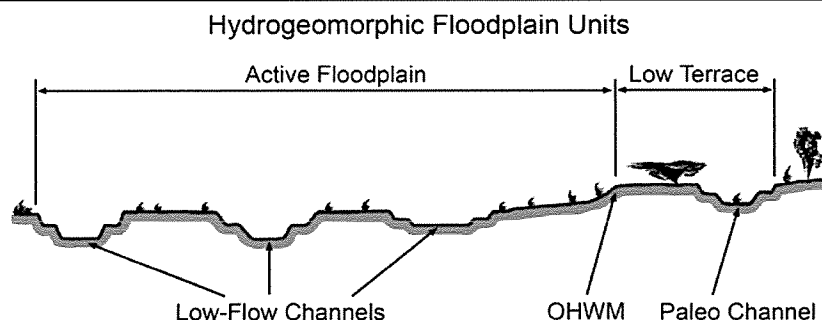
Project: El Capitan Spillway Veg Removal Project Project Number: 8863 Stream: Ephemeral drainage Investigator(s): JR Sundberg and Andrew Smizek	Date: 11/14/17 Town: San Diego County Photo begin file#:	Time: 1030 State: CA Photo end file#:
Y <input checked="" type="checkbox"/> / N <input type="checkbox"/> Do normal circumstances exist on the site?	Location Details: North of San Diego River near base of spillway	
Y <input type="checkbox"/> / N <input checked="" type="checkbox"/> Is the site significantly disturbed?	Projection: Mercator Datum: WGS 84 Coordinates:	

Potential anthropogenic influences on the channel system:
 Negligible. Possible minor erosion from dirt access road

Brief site description:
 Ephemeral channel in undeveloped area, approximately 5 feet wide. Active floodplain comprised of low-flow channel and a small bench. A low terrace occurs on the east side of the channel. Surrounded by upland veg.

Checklist of resources (if available):

<input type="checkbox"/> Aerial photography	<input type="checkbox"/> Stream gage data
Dates:	Gage number:
<input type="checkbox"/> Topographic maps	Period of record:
<input type="checkbox"/> Geologic maps	<input type="checkbox"/> History of recent effective discharges
<input type="checkbox"/> Vegetation maps	<input type="checkbox"/> Results of flood frequency analysis
<input type="checkbox"/> Soils maps	<input type="checkbox"/> Most recent shift-adjusted rating
<input type="checkbox"/> Rainfall/precipitation maps	<input type="checkbox"/> Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event
<input type="checkbox"/> Existing delineation(s) for site	
<input type="checkbox"/> Global positioning system (GPS)	
<input type="checkbox"/> Other studies	



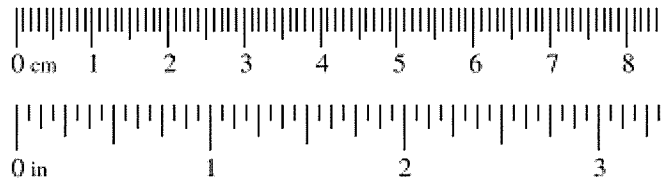
Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
 - a) Record the floodplain unit and GPS position.
 - b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
 - c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:

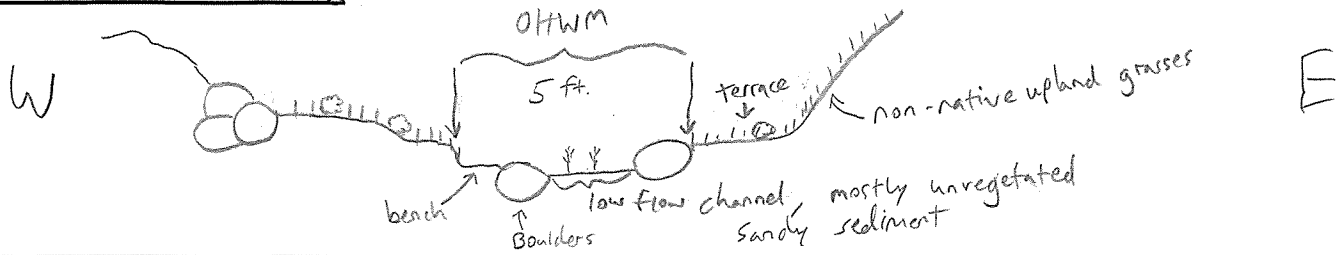
<input type="checkbox"/> Mapping on aerial photograph	<input type="checkbox"/> GPS
<input type="checkbox"/> Digitized on computer	<input type="checkbox"/> Other:

Wentworth Size Classes

Inches (in)	Millimeters (mm)	Wentworth size class
10.08	256	Boulder
2.56	64	Cobble
0.157	4	Pebble
0.079	2.00	Granule
0.039	1.00	Very coarse sand
0.020	0.50	Coarse sand
1/2 0.0098	0.25	Medium sand
1/4 0.005	0.125	Fine sand
1/8 0.0025	0.0625	Very fine sand
1/16 0.0012	0.031	Coarse silt
1/32 0.00061	0.0156	Medium silt
1/64 0.00031	0.0078	Fine silt
1/128 0.00015	0.0039	Very fine silt
		Clay



Cross section drawing:



OHWM

GPS point: 32.887016, -116.812769

Indicators:

- Change in average sediment texture
- Change in vegetation species
- Change in vegetation cover
- Break in bank slope
- Other: _____
- Other: _____

Comments:

The low-flow channel is clearly defined by a change in slope, vegetation, and sediment sorting. Scattered *Xanthium strumarium* occur within the channel. A bench occurs within the OHWM.

Floodplain unit: Low-Flow Channel Active Floodplain Low Terrace

GPS point: 32.887016, -116.812769

Characteristics of the floodplain unit:

Average sediment texture: sand
 Total veg cover: 1 % Tree: 0 % Shrub: 0 % Herb: 1 %
 Community successional stage:

- NA
- Early (herbaceous & seedlings)
- Mid (herbaceous, shrubs, saplings)
- Late (herbaceous, shrubs, mature trees)

Indicators:

- Mudcracks
- Ripples
- Drift and/or debris
- Presence of bed and bank
- Benches
- Soil development
- Surface relief
- Other: _____
- Other: _____
- Other: _____

Comments:

The active floodplain includes the low-flow channel and a small bench. Moderate flood events may extend onto the terrace.

Project ID: 8863

Cross section ID: #2

Date: 11/14/17

Time: 1030

Floodplain unit: Low-Flow Channel Active Floodplain Low Terrace

GPS point: 32.887016, -116.812769

Characteristics of the floodplain unit:

Average sediment texture: loamy

Total veg cover: 55 % Tree: 0 % Shrub: 5 % Herb: 50 %

Community successional stage:

- NA Mid (herbaceous, shrubs, saplings)
- Early (herbaceous & seedlings) Late (herbaceous, shrubs, mature trees)

Indicators:

- Mudcracks Soil development
- Ripples Surface relief
- Drift and/or debris Other: _____
- Presence of bed and bank Other: _____
- Benches Other: _____

Comments:

Dominated by non-native upland grasses. Terrace contains bioturbation in the form of rodent burrows.

Floodplain unit: Low-Flow Channel Active Floodplain Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: _____

Total veg cover: _____ % Tree: _____ % Shrub: _____ % Herb: _____ %

Community successional stage:

- NA Mid (herbaceous, shrubs, saplings)
- Early (herbaceous & seedlings) Late (herbaceous, shrubs, mature trees)

Indicators:

- Mudcracks Soil development
- Ripples Surface relief
- Drift and/or debris Other: _____
- Presence of bed and bank Other: _____
- Benches Other: _____

Comments:

APPENDIX K

El Capitan Dam Spillway Vegetation Removal Project California Rapid Assessment Method (CRAM) Pre-Impact Surveys



An Employee-Owned Company

July 20, 2018

Mr. Mark Berninger
City of San Diego
Public Utilities Department
9192 Topaz Way
San Diego, CA 92123

Reference: El Capitan Dam Spillway Vegetation Removal Project California Rapid Assessment Method (CRAM) Pre-Impact Surveys (RECON Number 8863)

Dear Mr. Berninger:

As requested, RECON Environmental, Inc. (RECON) personnel completed pre-impact California Rapid Assessment Method for Wetlands (CRAM) surveys for the City of San Diego's El Capitan Dam Spillway Vegetation Removal Project (project). As the project is currently in the design phase, a preliminary project boundary was provided by the City of San Diego for purposes of this survey and assessment. This preliminary project area includes two riparian areas/stream channels: (1) a section of the main San Diego River channel, located immediately downstream of El Capitan Dam, and (2) a manufactured channel associated with and downstream of El Capitan Spillway. The project area is located at the east end of El Monte Valley in an unincorporated area of central San Diego County, California (Figures 1 and 2). This letter report provides a summary of work, associated figures and photographs, CRAM results, and field data sheets.

CRAM Field Survey

The pre-impact CRAM surveys were conducted on June 6, 2018 by RECON personnel and trained CRAM practitioners Terressa Whitaker and Andrew Smisek. Ms. Whitaker is a restoration ecologist with a background in hydrology, and Mr. Smisek is a biologist with a focus in botany and is a trained wetland delineator. The surveys utilized CRAM for Riverine Wetlands, Version 6.1 (CRAM 2013).

Conditions on the day of the surveys were clear and cool with mostly dry soil. There was no stream flow in the channels at the time of the surveys. The only surface water present was a small (less than 5 square meters) area of ponded water at the lowest dam outfall, just upstream of and adjacent to the Dam Assessment Area (AA). The 2017-18 rainfall season in San Diego has provided generally dry conditions with less than average rainfall and no significant (i.e., daily total at least 0.2 inch) precipitation since March 17, 2018. At the time of the surveys, the National Weather Service gage operated at Lindbergh Field in San Diego had registered a total of 8.43 centimeters (cm; 3.32 inches) for Water Year 2018 (i.e., since October 1, 2017) (CDEC 2018). For comparison, normal annual rainfall for Lindbergh Field is 26.26 cm (10.34 inches) (San Diego County Water Authority [SDCWA] 2018).

Photographs were taken during the surveys for general reference and from standard CRAM photo point locations. Photographs are provided in Attachment 1. Photo point locations are shown on Figure 3. Photo point coordinates are provided on page 2 of each field data sheet (Attachment 2).

Assessment Areas

The CRAM AAs for the Dam and Spillway locations were established on the day of the field surveys. Each AA begins at a hydrologic break that corresponds to a significant change in flow and sediment regime. El

Capitan Dam AA begins directly below the lowest outfall, from which the City releases water into the main San Diego River channel approximately once every six months during valve tests. El Capitan Spillway AA begins directly below the confluence of the spillway channel with a natural ephemeral drainage that flows from the north. The AAs each extend 100 meters downstream, which is the default minimum AA size for Riverine Wetlands CRAM. The default minimum size was used because bankfull width was measured to be less than 10 meters at both locations. The AAs extend outward from the main stream course to include the immediate floodplain and adjacent tree canopy. The AA boundaries are shown in Figure 3.

CRAM Scores

The final index scores for the Dam and Spillway AAs are 66 and 74, respectively. The final index score is the mean of four primary attribute scores, as provided in Table 1. The maximum possible score is 100. A detailed summary of all metrics and sub-metrics used to calculate these attribute scores is provided on page 3 of the field data sheets (see Attachment 2).

Table 1 Attribute Scores for El Capitan Dam and Spillway			
	Attribute Name	Attribute Score ¹	
		Dam	Spillway
Attribute 1	Buffer and Landscape	52.79	93.29
Attribute 2	Hydrology	83.34	91.67
Attribute 3	Physical Structure	50.00	37.50
Attribute 4	Biotic Structure	77.78	75.00
AA Index Score		66	74
¹ The maximum possible score for each attribute is 100.			

CRAM Results Discussion

This section provides a brief discussion of strengths and weaknesses of each attribute and of the metrics and sub-metrics that contributed to each attribute score. Complete scoring for each survey can be found on the field data sheets provided in Attachment 2. For an explanation of factors that are considered in each metric, reference the CRAM for Riverine Wetlands Field Book, available online or upon request.

El Capitan Dam AA

Attribute 1: The Buffer and Landscape Context attribute scored fair to low in this survey, primarily due to the lack of upstream corridor connectivity caused by presence of the dam. The size and steepness of the dam prevents movement of aquatic and terrestrial wildlife within the stream corridor. As shown in Figure 4, the non-buffer distance within the upstream segment is nearly half of the 500-meter distance being considered in this metric, giving it the lowest score possible (D).

However, buffer size and condition were very good. As shown in Figure 5, 100 percent of the AA had presence of a buffer, and buffer size was only limited on the south side of the AA by a paved access road leading to the reservoir. Buffer condition was good because vegetation is dominated by native species, non-native cover is less than 20 percent, and impacts from human visitation are minimal and infrequent. Soil throughout the buffer was widely disturbed at the time of dam construction, but active soil disturbance is limited to maintenance activities associated with facilities and the dirt access road.

Attribute 2: The Hydrology attribute scored fair to high in this survey, but was adversely affected by a strongly controlled water source that nearly eliminates dry season streamflow within the AA (Figure 6). The dam releases are very rare (none since 1985), and valve tests result in low-volume and infrequent (only every six months) releases of water. Because the AA is directly below the dam, it experiences substantial input of subsurface flow from El Capitan Reservoir that sustains a high water table in the AA. The high

water table supports surface hydrology and is a component of water source. The primary water sources are from valve test releases and direct inputs of runoff from the surrounding area.

Channel stability and hydrologic floodplain connectivity were excellent. The channel showed no indications of active degradation or aggradation. Within the AA the primary stream course(s) can access the floodplain easily during high flows and meander as needed.

Attribute 3: The Physical Structure attribute scored fair to low in this survey due to lack of diverse structural patches (e.g., debris jams, wrack, algal mats, in-channel bars, and submerged vegetation) and topographic complexity (e.g., breaks in stream gradient, benches parallel to the bank, and uneven floodplain). Typically, these types of complex physical structures form naturally over time by the force of hydrologic flows – especially the high flows, which are the most powerful influence on form and structure. However, flows tend to remain low in this AA even during storm events, because direct runoff from the surrounding area is low, and water is only released from the dam (1) to test the valves every six months and (2) in the case of emergency to keep the reservoir below capacity. The volume of water released during a valve test is minimal; a valve will be opened for 15 to 20 seconds. Emergency releases, although large, are very rare; none have occurred since 1985 (Berninger, pers. comm. 2018). Therefore, hydrologic flows have consisted primarily of direct runoff from the surrounding area occasionally supplemented by valve tests, and have been too low to effect large changes in physical form and structure within the constructed channel.

Attribute 4: The Biotic Structure attribute scored fair in this survey. The vegetation is very dense (nearly 100 percent foliar cover), is dominated by native species common in riparian ecosystems, and has excellent vertical structure (i.e., canopy). Since the most plentiful and consistent water source is groundwater rather than surface water, the riparian vegetation tends toward deep-rooted perennial species. The score in this metric was limited by low plant diversity and horizontal interspersion (i.e., variation in plant groupings). There were only six co-dominant species, namely poison oak (*Toxicodendron diversilobum*), wild grape (*Vitis californica*), laurel sumac (*Malosma laurina*), coast live oak (*Quercus agrifolia*), western sycamore (*Platanus racemosa*), and mule fat (*Baccharis salicifolia*). Percent invasion was zero at the time of the survey.

El Capitan Spillway AA

Attribute 1: The Buffer and Landscape Context attribute scored very well in this survey. Stream Corridor Continuity is very good. Although the gradient is very steep immediately upstream of the AA, there are no physical barriers or other types of non-buffer segments upstream or downstream of the AA (see Figure 4).

Buffer size and condition were very good. As shown in Figure 5, 100 percent of the AA had presence of a buffer, and buffer size was only limited slightly by the paved access road to the south of the AA. Vegetation is dominated by native species. Non-native cover is less than 20 percent, and impacts from human visitation are minimal and infrequent. Soil throughout the buffer was widely disturbed at the time of dam construction, but active soil disturbance is limited to maintenance activities associated with facilities and the dirt access road.

Attribute 2: The Hydrology attribute score was fairly high. Despite the AA's location directly below the highly modified dam spillway, the primary source of surface flow is an uncontrolled tributary flowing from north of the spillway and into the manufactured channel at a rip-rap protected confluence just upstream of the AA (see Figure 6). Hydrology in the AA is also supported by direct runoff from the surrounding area and substantial subsurface flow from El Capitan Reservoir.

The water source metric generally fits the A condition, because the primary water source is the un-named tributary coming from the north, which is uncontrolled. However, given the occasional use of the spillway the water source better fits the B condition; freshwater sources that affect the dry season are mostly natural but include occasional effects of modified hydrology.

Mr. Mark Berninger
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July 20, 2018

Channel stability and hydrologic floodplain connectivity were excellent. The channel showed no indications of active degradation or aggradation. Within the AA the primary stream course(s) can access the floodplain easily during high flows and meander as needed.

Attribute 3: The Physical Structure attribute scored fair to low in this survey due to lack of diverse structural patches (e.g., debris jams, wrack, algal mats, in-channel bars, and submerged vegetation) and topographic complexity (e.g., breaks in stream gradient, benches parallel to the bank, and uneven floodplain). Typically these types of complex physical structures form naturally over time by the force of hydrologic flows – especially the high flows, which are the most powerful influence on form and structure. However, flows tend to remain low in this AA even during storm events, because the watershed is very small and the spillway does not often get used. Within this AA, hydrologic flows have affected only small changes in physical form and structure.

Attribute 4: The vegetation is very dense (nearly 100 percent foliar cover), is dominated by native species common in riparian ecosystems, and has excellent vertical structure (i.e., canopy). Since the most plentiful and consistent water source is groundwater rather than surface water, the riparian vegetation tends toward deep-rooted perennial species. The score in this metric was limited by low plant diversity and horizontal interspersion (i.e., variation in plant groupings). There were only six co-dominant species, namely wild grape, laurel sumac, arroyo willow (*Salix lasiolepis*), California mugwort (*Artemisia douglasiana*), ragweed (*Ambrosia psilostachya*), and mule fat. Percent invasion was zero at the time of this survey.

Stressor Checklist

Environmental stressors were assessed for each AA at the time of the surveys. Environmental stressors do not factor into the AA index score but are included in the CRAM surveys because they provide information about potential future change in condition. For the purposes of CRAM, a stressor is defined as an anthropogenic influence within the wetland or immediate surroundings that is likely to negatively impact the condition and function of the AA. Stressors for both the Dam and Spillway AAs were identical and primarily involved effects of managed hydrology associated with the dam, the engineered channels, and recreational use of the reservoir.

At your request, all photographs and geographical information system data presented in this report can be provided. If you have any questions about these results or would like additional information, please feel free to contact me at (619) 308-9333, extension 156.

Sincerely,



Terressa Whitaker
Restoration Ecologist

TMW:sh

Attachments

Mr. Mark Berninger

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July 20, 2018

References Cited

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2018 Personal communication at the project site prior to survey. June 6.

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2013 CRAM for Riverine Wetlands Field Book, ver. 6.1. The California Wetland Monitoring Workgroup and EcoAtlas. January.

San Diego County Water Authority (SDCWA)

2018 Annual Rainfall - Lindbergh Field; San Diego County Water Authority.
<https://www.sdcwa.org/annual-rainfall-lindbergh-field> Accessed July 10, 2018.




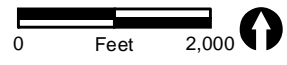
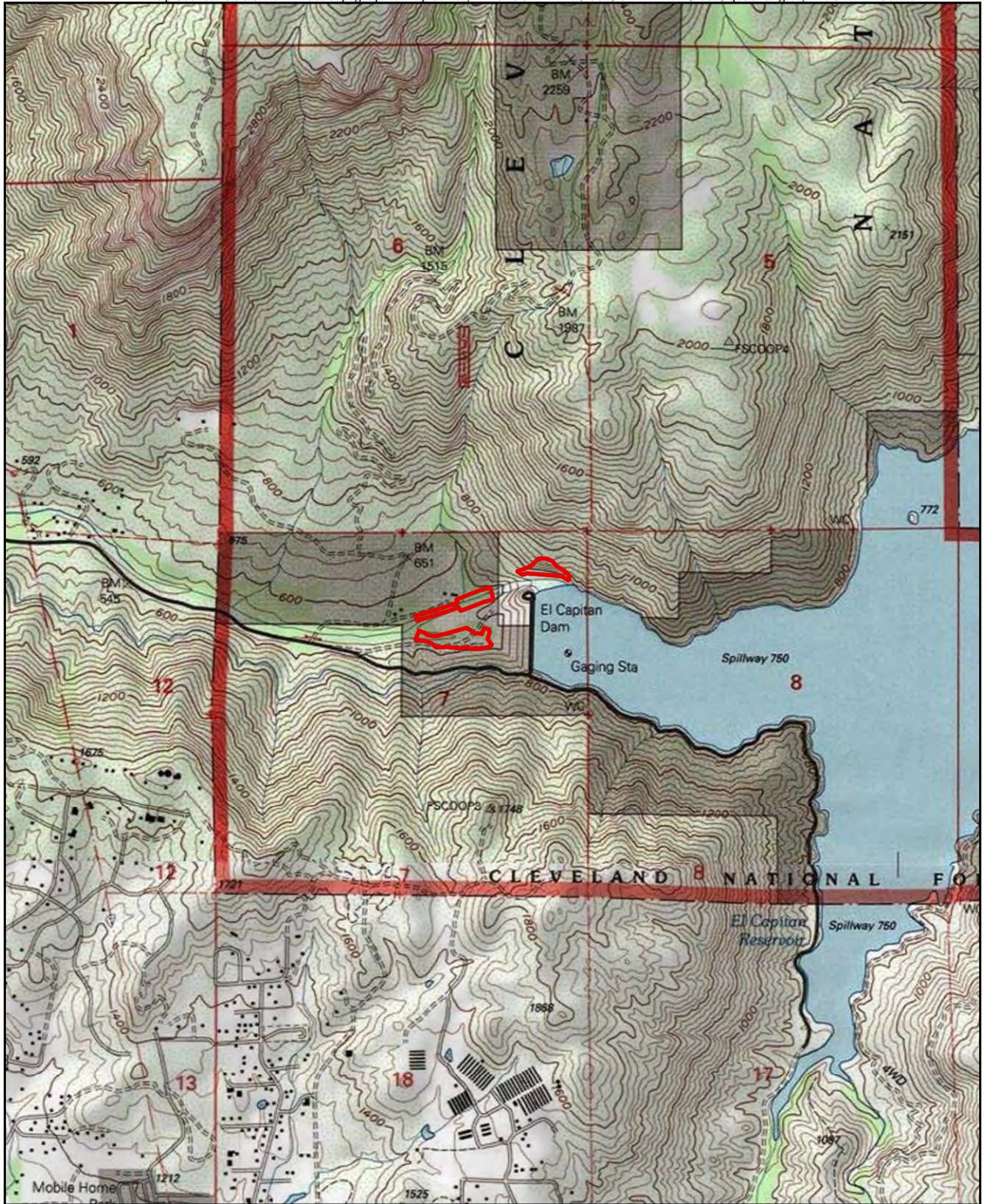
 Project Location

FIGURE 1
Regional Location










 Project Boundary

FIGURE 2

Project Location on USGS Map



-  Project Boundary
-  20-ft Contours
-  Stream/River
-  CRAM Assessment Area
-  Transect
-  Photo Point

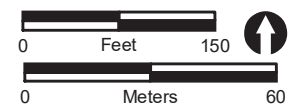
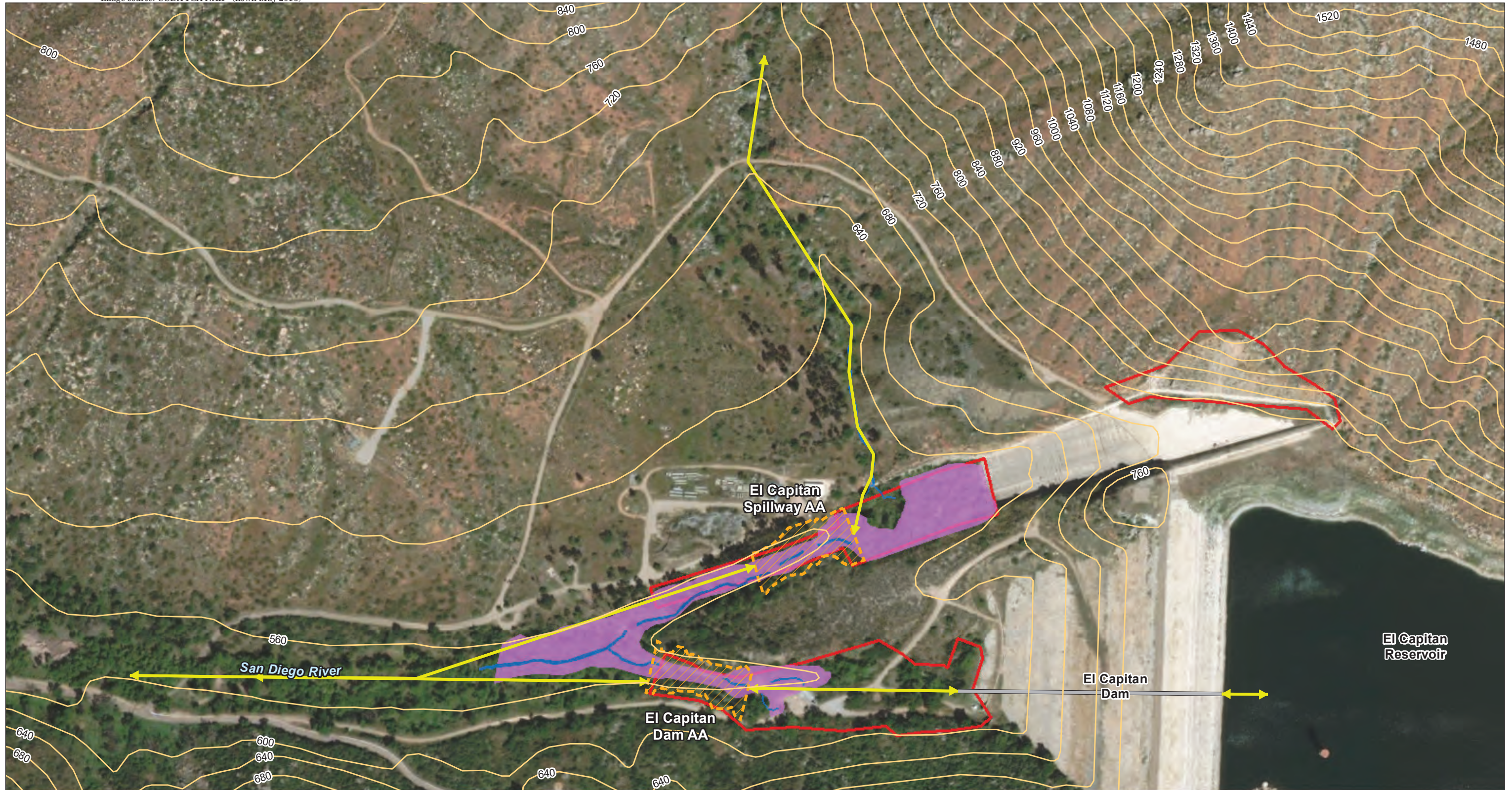


FIGURE 3
CRAM Assessment Areas



- | | | |
|--------------------|------------------------------|---|
| Project Boundary | CRAM Assessment Area | Jurisdictional Resource Polygons |
| 20-ft Contours | 500-meter Up and Down Stream | ACOE Non-wetland Waters of the U.S. |
| Non-buffer Segment | | ACOE Wetland Waters of the U.S. |

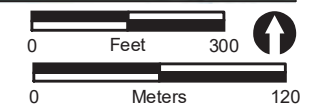








FIGURE 4
Attribute 1: Buffer
and Landscape Context
Stream Corridor Continuity



-  Project Boundary
-  20-ft Contours
-  CRAM Assessment Area
-  Buffer Lines
- Jurisdictional Resource Polygons**
-  ACOE Non-wetland Waters of the U.S.
-  ACOE Wetland Waters of the U.S.

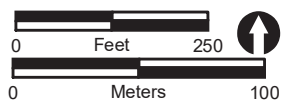
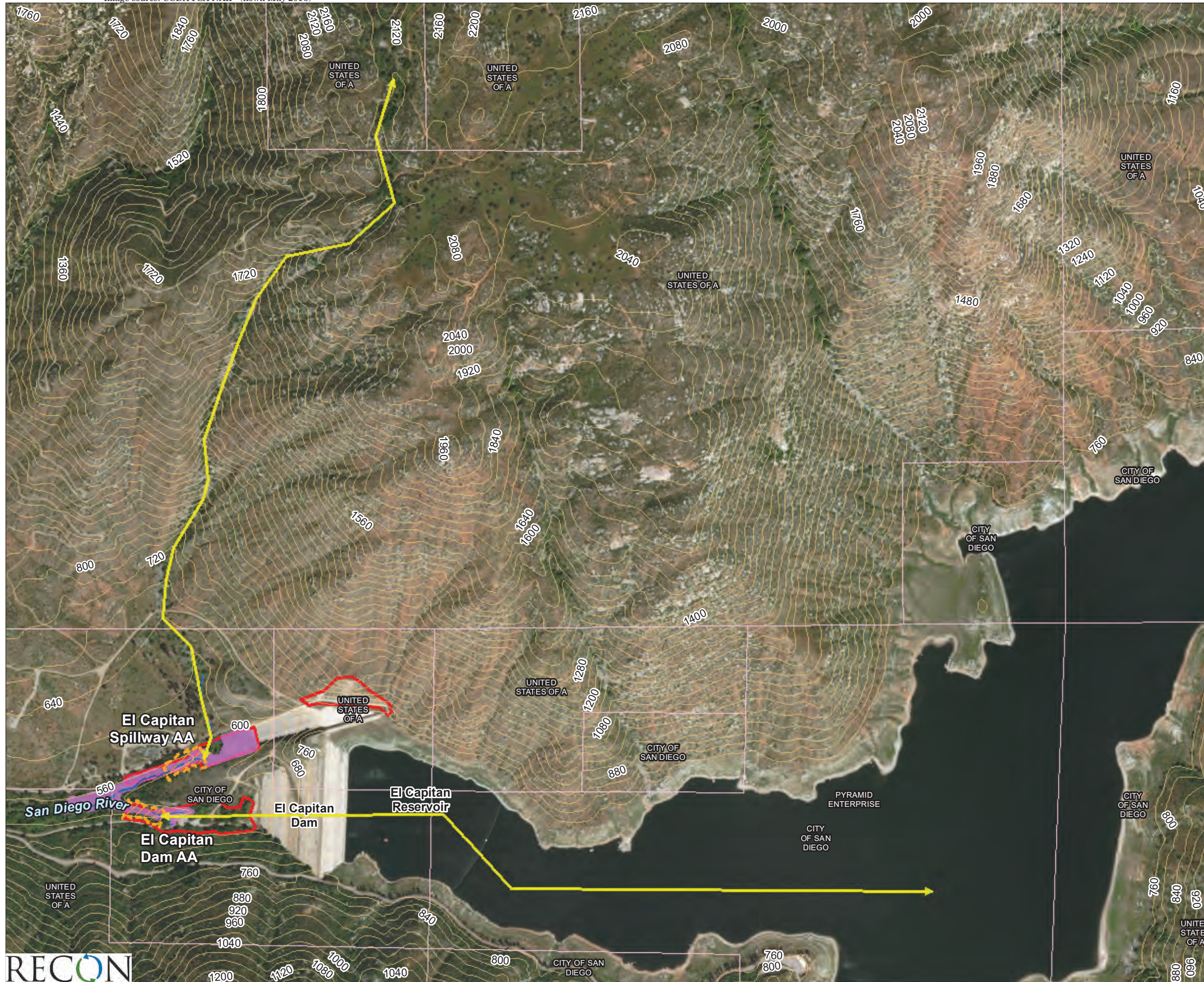









FIGURE 5
Attribute 1: Buffer and
Landscape Context
Buffer



-  Project Boundary
-  Parcel Boundaries
-  20-foot Contours
-  CRAM Assessment Area
-  2000-meter Up Stream
- Jurisdictional Resource Polygons**
-  ACOE Non-wetland Waters of the U.S.
-  ACOE Wetland Waters of the U.S.

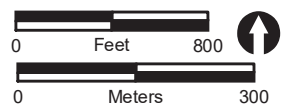


FIGURE 6
Attribute 2: Hydrology
Water Source

ATTACHMENTS

ATTACHMENT 1

Photographs



PHOTOGRAPH 1
El Capitan Dam AA, Photopoint 1
Upstream Looking West
June 6, 2018



PHOTOGRAPH 2
El Capitan Dam AA, Photopoint 2
River Right Looking South
June 6, 2018



PHOTOGRAPH 3
El Capitan Dam AA, Photopoint 3
River Left Looking North
June 6, 2018



PHOTOGRAPH 4
El Capitan Dam AA, Photopoint 4
Downstream Looking East
June 6, 2018



PHOTOGRAPH 5
El Capitan Dam AA, Photopoint 5
Upstream Transect Looking North
June 6, 2018



PHOTOGRAPH 6
El Capitan Dam AA, Photopoint 6
Middle Transect Looking North
June 6, 2018



PHOTOGRAPH 7
El Capitan Dam AA, Photopoint 7
Downstream Transect Looking North
June 6, 2018



PHOTOGRAPH 8
El Capitan Dam AA, View of At-grade
Unpaved Road Included in Buffer
June 6, 2018



PHOTOGRAPH 9
El Capitan Dam AA, View of Lowermost Outfall that was
Used to Establish the Upper Extent of the AA
June 6, 2018



PHOTOGRAPH 10
El Capitan Spillway AA, Photopoint 1
Upstream Looking Southwest
June 6, 2018



PHOTOGRAPH 11
El Capitan Spillway AA, Photopoint 2
River Right Looking Southeast
June 6, 2018



PHOTOGRAPH 12
El Capitan Spillway AA, Photopoint 3
River Left Looking Northwest
June 6, 2018



PHOTOGRAPH 13
El Capitan Spillway AA, Photopoint 4
Downstream Looking Northeast
June 6, 2018



PHOTOGRAPH 14
El Capitan Spillway AA, Photopoint 5
Upstream Transect Looking Northwest
June 6, 2018



PHOTOGRAPH 15
El Capitan Spillway AA, Photopoint 6
Middle Transect Looking Northwest
June 6, 2018



PHOTOGRAPH 16
El Capitan Spillway AA, Photopoint 7
Downstream Transect Looking Northwest
June 6, 2018



PHOTOGRAPH 17
El Capitan Spillway AA, View of Staging Yard Included in Buffer
June 6, 2018



PHOTOGRAPH 18
El Capitan Spillway AA, View of Degraded Fence Included in Buffer
June 6, 2018



PHOTOGRAPH 19
El Capitan Spillway AA, View of Runoff Culvert that was Used to
Establish the Upstream End of the AA
June 6, 2018

ATTACHMENT 2

Field Data Sheets

Basic Information Sheet: Riverine Wetlands

Assessment Area Name: El Capitan Dam	
Project Name: El Capitan Dam and Spillway Vegetation Removal Project	
Assessment Area ID #: N/A	
Project ID #: RECON JN8863	Date: June 6, 2018
Assessment Team Members for This AA:	
Terressa Whitaker (RECON) - CRAM Practitioner	
Andrew Smisek (RECON) - CRAM Practitioner	
Average Bankfull Width: 3.1 meters	
Approximate Length of AA (10 times bankfull width, min 100 m, max 200 m): 100 meters	
Upstream Point Latitude: 32.88376028800	Longitude: -116.81369221300
Downstream Point Latitude: 32.88396405530	Longitude: -116.81472666100
Wetland Sub-type:	
<input type="checkbox"/> Confined <input checked="" type="checkbox"/> Non-confined	
AA Category:	
<input type="checkbox"/> Restoration <input type="checkbox"/> Mitigation <input checked="" type="checkbox"/> Impacted <input type="checkbox"/> Ambient <input type="checkbox"/> Reference <input type="checkbox"/> Training	
<input type="checkbox"/> Other:	
Did the river/stream have flowing water at the time of the assessment? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
What is the apparent hydrologic flow regime of the reach you are assessing?	
<p>The hydrologic flow regime of a stream describes the frequency with which the channel conducts water. <i>Perennial</i> streams conduct water all year long, whereas <i>ephemeral</i> streams conduct water only during and immediately following precipitation events. <i>Intermittent</i> streams are dry for part of the year, but conduct water for periods longer than ephemeral streams, as a function of watershed size and water source.</p>	
<input type="checkbox"/> perennial <input type="checkbox"/> intermittent <input checked="" type="checkbox"/> ephemeral	

Photo Identification Numbers and Description:

	Photo ID No.	Description	Latitude	Longitude	Datum
1	PP 1	Upstream	32.88376028800	-116.81369221300	NAD 84
2	PP 2	Middle Left	32.88367640440	-116.81418422600	NAD 84
3	PP 3	Middle Right	32.88394486230	-116.81393109300	NAD 84
4	PP 4	Downstream	32.88396405530	-116.81472666100	NAD 84
5					
6					
7					
8					
9					
10					

Site Location Description:

The AA is located immediately downstream of the El Capitan Reservoir and Dam. The CRAM survey is being conducted for the City of San Diego Public Utilities Division in support of their El Capitan Spillway Vegetation Removal Project. The AA was determined in the field. It was situated as far upstream in the Project impact area as possible per conditions of the CRAM protocol.

The constructed channel is approximately 60 meters wide and has earthen banks 4-5 meters high. The channel is densely vegetation with tall tree and shrub canopy. The primary source of hydrology is direct runoff and occasional releases from the outfalls. The average bankfull width of the stream is 3.1 meters and it has plenty of room to migrate naturally within the constructed channel.

The AA category is considered Impacted because it lies within a constructed channel that was heavily impacted during construction of the dam.

Comments:

The stream is not currently flowing but water was ponded directly upstream of the AA, directly below an outfall where valve tests release water from the reservoir every six months.

Scoring Sheet: Riverine Wetlands

AA Name: El Capitan Dam				Date: June 6, 2018		
Attribute 1: Buffer and Landscape Context (pp. 11-19)				Comments		
Stream Corridor Continuity (D)		Alpha.	Numeric			
		D	3			
Buffer:						
<i>Buffer submetric A: Percent of AA with Buffer</i>	Alpha.					Numeric
	A					12
<i>Buffer submetric B: Average Buffer Width</i>	B					9
<i>Buffer submetric C: Buffer Condition</i>	B	9				
Raw Attribute Score = $D + [C \times (A \times B)^{1/2}]^{1/2}$			12.67	Final Attribute Score = (Raw Score/24) x 100	52.79	
Attribute 2: Hydrology (pp. 20-26)						
Water Source		Alpha.	Numeric			
		C	6			
Channel Stability		A	12			
Hydrologic Connectivity		A	12			
Raw Attribute Score = sum of numeric scores			30.00	Final Attribute Score = (Raw Score/36) x 100	83.34	
Attribute 3: Physical Structure (pp. 27-33)						
Structural Patch Richness		Alpha.	Numeric			
		D	3			
Topographic Complexity		B	9			
Raw Attribute Score = sum of numeric scores			12.00	Final Attribute Score = (Raw Score/24) x 100	50.00	
Attribute 4: Biotic Structure (pp. 34-41)						
Plant Community Composition (based on sub-metrics A-C)						
<i>Plant Community submetric A: Number of plant layers</i>		Alpha.	Numeric			
		A	12			
<i>Plant Community submetric B: Number of Co-dominant species</i>		C	6			
<i>Plant Community submetric C: Percent Invasion</i>		A	12			
Plant Community Composition Metric (numeric average of submetrics A-C)			10.00			
Horizontal Interspersion		C	6			
Vertical Biotic Structure		A	12			
Raw Attribute Score = sum of numeric scores			28.00	Final Attribute Score = (Raw Score/36) x 100	77.78	
Overall AA Score (average of four final Attribute Scores)				65.97		

Worksheet for Stream Corridor Continuity Metric for Riverine Wetlands

Lengths of Non-buffer Segments For Distance of 500 m Upstream of AA		Lengths of Non-buffer Segments For Distance of 500 m Downstream of AA	
Segment No.	Length (m)	Segment No.	Length (m)
1	200m	1	0
2		2	
3		3	
4		4	
5		5	
Upstream Total Length	200m	Downstream Total Length	0

Percent of AA with Buffer Worksheet

In the space provided below make a quick sketch of the AA, or perform the assessment directly on the aerial imagery; indicate where buffer is present, estimate the percentage of the AA perimeter providing buffer functions, and record the estimate amount in the space provided.

Percent of AA with Buffer: 100% %

Worksheet for calculating average buffer width of AA

Line	Buffer Width (m)
A	250
B	250
C	250
D	250
E	130
F	135
G	121
H	107
Average Buffer Width *Round to the nearest integer*	186.63

Worksheet for Assessing Channel Stability for Riverine Wetlands

Condition	Field Indicators (check all existing conditions)
Indicators of Channel Equilibrium	<ul style="list-style-type: none"> <input type="checkbox"/> The channel (or multiple channels in braided systems) has a well-defined bankfull contour that clearly demarcates an obvious active floodplain in the cross-sectional profile of the channel throughout most of the AA. <input type="checkbox"/> Perennial riparian vegetation is abundant and well established along the bankfull contour, but not below it. <input type="checkbox"/> There is leaf litter, thatch, or wrack in most pools (if pools are present). <input checked="" type="checkbox"/> The channel contains embedded woody debris of the size and amount consistent with what is naturally available in the riparian area. <input checked="" type="checkbox"/> There is little or no active undercutting or burial of riparian vegetation. <input type="checkbox"/> If mid-channel bars and/or point bars are present, they are not densely vegetated with perennial vegetation. <input type="checkbox"/> Channel bars consist of well-sorted bed material (smaller grain size on the top and downstream end of the bar, larger grain size along the margins and upstream end of the bar). <input type="checkbox"/> There are channel pools, the spacing between pools tends to be regular and the bed is not planar throughout the AA <input type="checkbox"/> The larger bed material supports abundant mosses or periphyton.
Indicators of Active Degradation	<ul style="list-style-type: none"> <input type="checkbox"/> The channel is characterized by deeply undercut banks with exposed living roots of trees or shrubs. <input type="checkbox"/> There are abundant bank slides or slumps. <input type="checkbox"/> The lower banks are uniformly scoured and not vegetated. <input type="checkbox"/> Riparian vegetation is declining in stature or vigor, or many riparian trees and shrubs along the banks are leaning or falling into the channel. <input type="checkbox"/> An obvious historical floodplain has recently been abandoned, as indicated by the age structure of its riparian vegetation. <input type="checkbox"/> The channel bed appears scoured to bedrock or dense clay. <input type="checkbox"/> Recently active flow pathways appear to have coalesced into one channel (i.e. a previously braided system is no longer braided). <input type="checkbox"/> The channel has one or more knickpoints indicating headward erosion of the bed.
Indicators of Active Aggradation	<ul style="list-style-type: none"> <input type="checkbox"/> There is an active floodplain with fresh splays of coarse sediment (sand and larger that is not vegetated) deposited in the current or previous year. <input type="checkbox"/> There are partially buried living tree trunks or shrubs along the banks. <input type="checkbox"/> The bed is planar (flat or uniform gradient) overall; it lacks well-defined channel pools, or they are uncommon and irregularly spaced. <input type="checkbox"/> There are partially buried, or sediment-choked, culverts. <input type="checkbox"/> Perennial terrestrial or riparian vegetation is encroaching into the channel or onto channel bars below the bankfull contour. <input type="checkbox"/> There are avulsion channels on the floodplain or adjacent valley floor.
Overall	<input checked="" type="checkbox"/> Equilibrium <input type="checkbox"/> Degradation <input type="checkbox"/> Aggradation

Riverine Wetland Entrenchment Ratio Calculation Worksheet

The following 5 steps should be conducted for each of 3 cross-sections located in the AA at the approximate midpoints along straight riffles or glides, away from deep pools or meander bends. An attempt should be made to place them at the top, middle, and bottom of the AA.					
Steps	Replicate Cross-sections \longrightarrow	TOP	MID	BOT	
1 Estimate bankfull width.	This is a critical step requiring familiarity with field indicators of the bankfull contour. Estimate or measure the distance between the right and left bankfull contours.	2.0	4.6	2.8	
2: Estimate max. bankfull depth.	Imagine a level line between the right and left bankfull contours; estimate or measure the height of the line above the thalweg (the deepest part of the channel).	15cm 0.15m	38cm 0.38m	35cm 0.35	
3: Estimate flood prone depth.	Double the estimate of maximum bankfull depth from Step 2.	0.30m	0.8m	0.7m	
4: Estimate flood prone width.	Imagine a level line having a height equal to the flood prone depth from Step 3; note where the line intercepts the right and left banks; estimate or measure the length of this line.	9.0	6.8m	5.9	
5: Calculate entrenchment ratio.	Divide the flood prone width (Step 4) by the bankfull width (Step 1).	4.5	1.5	2.1	
6: Calculate average entrenchment ratio.	Calculate the average results for Step 5 for all 3 replicate cross-sections. Enter the average result here and use it in Table 13a or 13b.				2.7



Typha was 20cm deep
we measured from soil beneath

Structural Patch Type Worksheet for Riverine wetlands

Circle each type of patch that is observed in the AA and enter the total number of observed patches in Table below. In the case of riverine wetlands, their status as confined or non-confined must first be determined (see page 6) to determine with patches are expected in the system (indicated by a "1" in the table below). Any feature onsite should only be counted once as a patch type. If a feature appears to meet the definition of more than one patch type (i.e. swale and secondary channel) the practitioner should choose which patch type best illustrates the feature. Not all features at a site will be patch types.

**Please refer to the CRAM Photo Dictionary at www.cramwetlands.org for photos of each of the following patch types.*

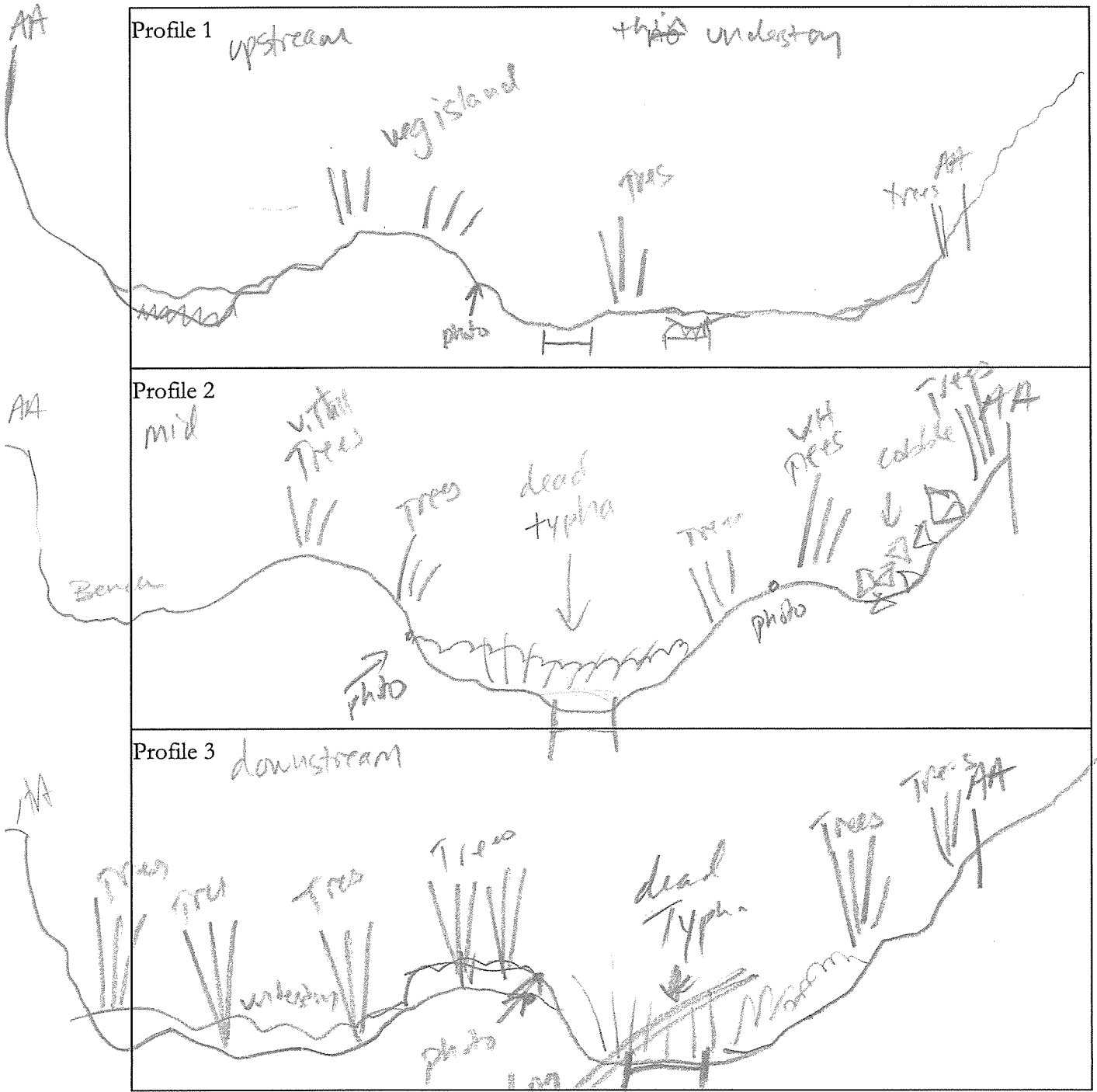
STRUCTURAL PATCH TYPE (circle for presence)	Riverine (Non-confined)	Riverine (Confined)
Minimum Patch Size	3 m²	3 m²
Abundant wrackline or organic debris in channel, on floodplain	1	1
Bank slumps or undercut banks in channels or along shoreline	1	1
Cobbles and/or Boulders	①	1
Debris jams	1	1
Filamentous macroalgae or algal mats	1	1
Large woody debris	①	1
Pannes or pools on floodplain	1	N/A
Plant hummocks and/or sediment mounds	1	1
Point bars and in-channel bars	1	1
Pools or depressions in channels (wet or dry channels)	1	1
Riffles or rapids (wet or dry channels)	1	1
Secondary channels on floodplains or along shorelines	①	N/A
Standing snags (at least 3 m tall)	①	1
Submerged vegetation	1	N/A
Swales on floodplain or along shoreline	1	N/A
Variegated, convoluted, or crenulated foreshore (instead of broadly arcuate or mostly straight)	①	1
Vegetated islands (mostly above high-water)	①	N/A
Total Possible	17	12
No. Observed Patch Types (enter here and use in Table 14 below)	5	

?

← one

Worksheet for AA Topographic Complexity

At three locations along the AA, make a sketch of the profile of the stream from the AA boundary down to its deepest area then back out to the other AA boundary. Try to capture the benches and the intervening micro-topographic relief. To maintain consistency, make drawings at each of the stream hydrologic connectivity measurements, always facing downstream. Include the water level, an arrow at the bankfull contour, and label the benches. Based on these sketches and the profiles in Figure 10, choose a description in Table 16 that best describes the overall topographic complexity of the AA.



0.5m
x
20m

Plant Community Metric Worksheet: Co-dominant species richness for Riverine wetlands
 (A dominant species represents $\geq 10\%$ relative cover)

Special Note:

* Combine the counts of co-dominant species from all layers to identify the total species count. Each plant species is only counted once when calculating the Number of Co-dominant Species and Percent Invasion submetric scores, regardless of the numbers of layers in which it occurs.

Floating or Canopy-forming (non-confined only)	Invasive?	Short (<0.5 m)	Invasive?
/		poison oak TOX DIV 1	
		VIT GIT 2	
Medium (0.5-1.5 m)	Invasive?	Tall (1.5-3.0 m)	Invasive?
Typha Dom - mostly dead		MAL LAM 3	
VIT GIT		QUE AGR 4	
POISON OAK		VIT GIT	
		SAL LAS 5	
Very Tall (>3.0 m)	Invasive?	Total number of co-dominant species for all layers combined (enter here and use in Table 18)	6
SAL LAS			
PLA RAC 6		Percent Invasion *Round to the nearest integer* (enter here and use in Table 18)	0
MAL LAM			
QUE AGR			
POP TRE			

BRO MAD
BRO PUT
done
on
benches

TWO Palms, V tall
Neither 10%

Horizontal Interspersion Worksheet.

Use the spaces below to make a quick sketch of the AA in plan view, outlining the major plant zones (this should take no longer than 10 minutes). Assign the zones names and record them on the right. Based on the sketch, choose a single profile from Figure 12 that best represents the AA overall.

	<p>Assigned zones:</p> <ol style="list-style-type: none"> 1) <i>Typha (dead)</i> 2) <i>Mullain, and Salix Oreogr.</i> 3) <i>Salix dominated little understory</i> 4) <i>Immature Oreogr and dense Toxiciv understory Vitis</i> 5) <i>Mature Oreogr + Parac w/open understory</i> 6) <i>Lacking canopy</i>
--	--

Worksheet for Wetland disturbances and conversions

Has a major disturbance occurred at this wetland?	Yes	No		
If yes, was it a flood, fire, landslide, or other?	flood	fire	landslide	other
If yes, then how severe is the disturbance?	likely to affect site next 5 or more years	likely to affect site next 3-5 years	likely to affect site next 1-2 years	
Has this wetland been converted from another type? If yes, then what was the previous type?	depressional	vernal pool	vernal pool system	
	non-confined riverine	confined riverine	seasonal estuarine	
	perennial saline estuarine	perennial non-saline estuarine	wet meadow	
	lacustrine	seep or spring	playa	

Stressor Checklist Worksheet

HYDROLOGY ATTRIBUTE (WITHIN 50 M OF AA)	Present	Significant negative effect on AA
Point Source (PS) discharges (POTW, other non-stormwater discharge)		
Non-point Source (Non-PS) discharges (urban runoff, farm drainage)		
Flow diversions or unnatural inflows		
Dams (reservoirs, detention basins, recharge basins)		
Flow obstructions (culverts, paved stream crossings)		
Weir/drop structure, tide gates		
Dredged inlet/channel		
Engineered channel (riprap, armored channel bank, bed)		
Dike/levees		
Groundwater extraction		
Ditches (borrow, agricultural drainage, mosquito control, etc.)		
Actively managed hydrology		
Comments		

PHYSICAL STRUCTURE ATTRIBUTE (WITHIN 50 M OF AA)	Present	Significant negative effect on AA
Filling or dumping of sediment or soils (N/A for restoration areas)		
Grading/ compaction (N/A for restoration areas)		
Plowing/Discing (N/A for restoration areas)		
Resource extraction (sediment, gravel, oil and/or gas)		
Vegetation management		
Excessive sediment or organic debris from watershed		
Excessive runoff from watershed		
Nutrient impaired (PS or Non-PS pollution)		
Heavy metal impaired (PS or Non-PS pollution)		
Pesticides or trace organics impaired (PS or Non-PS pollution)		
Bacteria and pathogens impaired (PS or Non-PS pollution)		
Trash or refuse		
Comments		

BIOTIC STRUCTURE ATTRIBUTE (WITHIN 50 M OF AA)	Present	Significant negative effect on AA
Mowing, grazing, excessive herbivory (within AA)		
Excessive human visitation		
Predation and habitat destruction by non-native vertebrates (e.g., <i>Virginia opossum</i> and domestic predators, such as feral pets)		
Tree cutting/sapling removal		
Removal of woody debris		
Treatment of non-native and nuisance plant species		
Pesticide application or vector control		
Biological resource extraction or stocking (fisheries, aquaculture)		
Excessive organic debris in matrix (for vernal pools)		
Lack of vegetation management to conserve natural resources		
Lack of treatment of invasive plants adjacent to AA or buffer		
Comments		

BUFFER AND LANDSCAPE CONTEXT ATTRIBUTE (WITHIN 500 M OF AA)	Present	Significant negative effect on AA
Urban residential		
Industrial/commercial		
Military training/Air traffic		
Dams (or other major flow regulation or disruption)		
Dryland farming		
Intensive row-crop agriculture		
Orchards/nurseries		
Commercial feedlots		
Dairies		
Ranching (enclosed livestock grazing or horse paddock or feedlot)		
Transportation corridor		
Rangeland (livestock rangeland also managed for native vegetation)		
Sports fields and urban parklands (golf courses, soccer fields, etc.)		
Passive recreation (bird-watching, hiking, etc.)		
Active recreation (off-road vehicles, mountain biking, hunting, fishing)		
Physical resource extraction (rock, sediment, oil/gas)		
Biological resource extraction (aquaculture, commercial fisheries)		
Comments		

Basic Information Sheet: Riverine Wetlands

Assessment Area Name: El Capitan Spillway	
Project Name: El Capitan Dam and Spillway Vegetation Removal Project	
Assessment Area ID #: N/A	
Project ID #: RECON JN8863	Date: June 6, 2018
Assessment Team Members for This AA:	
Terressa Whitaker (RECON) – CRAM Practitioner	
Andrew Smisek (RECON) – CRAM Practitioner	
Average Bankfull Width: 2.5 meters	
Approximate Length of AA (10 times bankfull width, min 100 m, max 200 m): 100 meters	
Upstream Point Latitude: 32.88513095410	Longitude: -116.81283677900
Downstream Point Latitude: 32.88473387340	Longitude: -116.81378030500
Wetland Sub-type:	
<input type="checkbox"/> Confined <input checked="" type="checkbox"/> Non-confined	
AA Category:	
<input type="checkbox"/> Restoration <input type="checkbox"/> Mitigation <input checked="" type="checkbox"/> Impacted <input type="checkbox"/> Ambient <input type="checkbox"/> Reference <input type="checkbox"/> Training	
<input type="checkbox"/> Other:	
Did the river/stream have flowing water at the time of the assessment? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no	
What is the apparent hydrologic flow regime of the reach you are assessing?	
<p>The hydrologic flow regime of a stream describes the frequency with which the channel conducts water. <i>Perennial</i> streams conduct water all year long, whereas <i>ephemeral</i> streams conduct water only during and immediately following precipitation events. <i>Intermittent</i> streams are dry for part of the year, but conduct water for periods longer than ephemeral streams, as a function of watershed size and water source.</p>	
<input type="checkbox"/> perennial <input type="checkbox"/> intermittent <input checked="" type="checkbox"/> ephemeral	

Photo Identification Numbers and Description:

	Photo ID No.	Description	Latitude	Longitude	Datum
1	PP1	Upstream	32.88513095410	-116.81283677900	NAD 84
2	PP2	Middle Left	32.88474289990	-116.81312584900	NAD 84
3	PP3	Middle Right	32.88501311380	-116.81337161800	NAD 84
4	PP4	Downstream	32.88473387340	-116.81378030500	NAD 84
5					
6					
7					
8					
9					
10					

Site Location Description:

The subject riparian area is located within a constructed flood control spillway channel located downstream of El Capitan Dam and Reservoir. The CRAM survey is being conducted for the City of San Diego Public Utilities Division in support of their El Capitan Spillway Vegetation Removal Project. The AA was determined in the field. It was situated as far upstream in the Project impact area as possible per conditions of the CRAM protocol.

Within the AA, the spillway is approximately 50 meters wide and has earthen banks 3-4 meters high. It is densely vegetated with tall tree and shrub canopy. Approximately 120 meters upstream of the AA, the spillway is concrete-lined and unvegetated, occurring on a steep slope leading down from the mouth of the spillway at the El Capitan reservoir. The primary source of surface hydrology in the AA is an ephemeral stream that enters the spillway from the north. The average bankfull width of the channel within the spillway is 2.5 meters, and has plenty of room to migrate naturally within the spillway.

The AA category is considered Impacted because it lies within a constructed channel that was heavily impacted during construction of the dam.

Comments:

The most recent overflow of El Capitan Reservoir into the spillway was 1985. Since that time, the only surface flow within this subject riparian area has been from direct rainfall/runoff and streamflow from the ephemeral stream.

Scoring Sheet: Riverine Wetlands

AA Name: El Capitan Spillway				Date: June 6, 2018		
Attribute 1: Buffer and Landscape Context (pp. 11-19)				Comments		
Stream Corridor Continuity (D)		Alpha.	Numeric			
		A	12			
Buffer:						
<i>Buffer submetric A: Percent of AA with Buffer</i>	Alpha.					Numeric
	A					12
<i>Buffer submetric B: Average Buffer Width</i>	A					12
<i>Buffer submetric C: Buffer Condition</i>	B	9				
Raw Attribute Score = $D + [C \times (A \times B)^{1/2}]^{1/2}$			22.39	Final Attribute Score = (Raw Score/24) x 100	93.29	
Attribute 2: Hydrology (pp. 20-26)						
Water Source		Alpha.	Numeric			
		B	9			
Channel Stability		A	12			
Hydrologic Connectivity		A	12			
Raw Attribute Score = sum of numeric scores			33.00	Final Attribute Score = (Raw Score/36) x 100	91.67	
Attribute 3: Physical Structure (pp. 27-33)						
Structural Patch Richness		Alpha.	Numeric			
		D	3			
Topographic Complexity		C	6			
Raw Attribute Score = sum of numeric scores			9.00	Final Attribute Score = (Raw Score/24) x 100	37.50	
Attribute 4: Biotic Structure (pp. 34-41)						
Plant Community Composition (based on sub-metrics A-C)						
<i>Plant Community submetric A: Number of plant layers</i>		Alpha.	Numeric			
		A	12			
<i>Plant Community submetric B: Number of Co-dominant species</i>		C	6			
<i>Plant Community submetric C: Percent Invasion</i>		B	9			
Plant Community Composition Metric <i>(numeric average of submetrics A-C)</i>			9.00			
Horizontal Interspersion		B	9			
Vertical Biotic Structure		B	9			
Raw Attribute Score = sum of numeric scores			27.00	Final Attribute Score = (Raw Score/36) x 100	75.00	
Overall AA Score (average of four final Attribute Scores)				74.36		

Worksheet for Stream Corridor Continuity Metric for Riverine Wetlands

Lengths of Non-buffer Segments For Distance of 500 m Upstream of AA		Lengths of Non-buffer Segments For Distance of 500 m Downstream of AA	
Segment No.	Length (m)	Segment No.	Length (m)
1	380	1	0
2	380	2	
3		3	
4		4	
5		5	
Upstream Total Length	760	Downstream Total Length	

Percent of AA with Buffer Worksheet

In the space provided below make a quick sketch of the AA, or perform the assessment directly on the aerial imagery; indicate where buffer is present, estimate the percentage of the AA perimeter providing buffer functions, and record the estimate amount in the space provided.

Percent of AA with Buffer: 100% %

Worksheet for calculating average buffer width of AA

Line	Buffer Width (m)
A	250
B	250
C	250
D	250
E	218
F	232
G	250
H	250
Average Buffer Width	243.75
Round to the nearest integer	

Worksheet for Assessing Channel Stability for Riverine Wetlands

Condition	Field Indicators (check all existing conditions)
Indicators of Channel Equilibrium	<ul style="list-style-type: none"> <input type="checkbox"/> The channel (or multiple channels in braided systems) has a well-defined bankfull contour that clearly demarcates an obvious active floodplain in the cross-sectional profile of the channel throughout most of the AA. <input type="checkbox"/> Perennial riparian vegetation is abundant and well established along the bankfull contour, but not below it. <input type="checkbox"/> There is leaf litter, thatch, or wrack in most pools (if pools are present). <input checked="" type="checkbox"/> The channel contains embedded woody debris of the size and amount consistent with what is naturally available in the riparian area. <input checked="" type="checkbox"/> There is little or no active undercutting or burial of riparian vegetation. <input type="checkbox"/> If mid-channel bars and/or point bars are present, they are not densely vegetated with perennial vegetation. <input type="checkbox"/> Channel bars consist of well-sorted bed material (smaller grain size on the top and downstream end of the bar, larger grain size along the margins and upstream end of the bar). <input type="checkbox"/> There are channel pools, the spacing between pools tends to be regular and the bed is not planar throughout the AA <input type="checkbox"/> The larger bed material supports abundant mosses or periphyton.
Indicators of Active Degradation	<ul style="list-style-type: none"> <input type="checkbox"/> The channel is characterized by deeply undercut banks with exposed living roots of trees or shrubs. <input type="checkbox"/> There are abundant bank slides or slumps. <input type="checkbox"/> The lower banks are uniformly scoured and not vegetated. <input type="checkbox"/> Riparian vegetation is declining in stature or vigor, or many riparian trees and shrubs along the banks are leaning or falling into the channel. <input type="checkbox"/> An obvious historical floodplain has recently been abandoned, as indicated by the age structure of its riparian vegetation. <input type="checkbox"/> The channel bed appears scoured to bedrock or dense clay. <input type="checkbox"/> Recently active flow pathways appear to have coalesced into one channel (i.e. a previously braided system is no longer braided). <input type="checkbox"/> The channel has one or more knickpoints indicating headward erosion of the bed.
Indicators of Active Aggradation	<ul style="list-style-type: none"> <input type="checkbox"/> There is an active floodplain with fresh splays of coarse sediment (sand and larger that is not vegetated) deposited in the current or previous year. <input type="checkbox"/> There are partially buried living tree trunks or shrubs along the banks. <input type="checkbox"/> The bed is planar (flat or uniform gradient) overall; it lacks well-defined channel pools, or they are uncommon and irregularly spaced. <input type="checkbox"/> There are partially buried, or sediment-choked, culverts. <input type="checkbox"/> Perennial terrestrial or riparian vegetation is encroaching into the channel or onto channel bars below the bankfull contour. <input type="checkbox"/> There are avulsion channels on the floodplain or adjacent valley floor.
Overall	<input checked="" type="checkbox"/> Equilibrium <input type="checkbox"/> Degradation <input type="checkbox"/> Aggradation

Riverine Wetland Entrenchment Ratio Calculation Worksheet

The following 5 steps should be conducted for each of 3 cross-sections located in the AA at the approximate midpoints along straight riffles or glides, away from deep pools or meander bends. An attempt should be made to place them at the top, middle, and bottom of the AA.

Steps	Replicate Cross-sections \longrightarrow	TOP	MID	BOT
1 Estimate bankfull width.	This is a critical step requiring familiarity with field indicators of the bankfull contour. Estimate or measure the distance between the right and left bankfull contours.	2.7m	3.7m	1.2m
2: Estimate max. bankfull depth.	Imagine a level line between the right and left bankfull contours; estimate or measure the height of the line above the thalweg (the deepest part of the channel).	10cm 0.1m	12cm 0.1m	15cm 0.15
3: Estimate flood prone depth.	Double the estimate of maximum bankfull depth from Step 2.	0.2m	0.2m	0.3m
4: Estimate flood prone width.	Imagine a level line having a height equal to the flood prone depth from Step 3; note where the line intercepts the right and left banks; estimate or measure the length of this line.	7.0m	12.8m	9.8m
5: Calculate entrenchment ratio.	Divide the flood prone width (Step 4) by the bankfull width (Step 1).	2.6	3.5	8.1
6: Calculate average entrenchment ratio.	Calculate the average results for Step 5 for all 3 replicate cross-sections. Enter the average result here and use it in Table 13a or 13b.			4.7

Structural Patch Type Worksheet for Riverine wetlands

Circle each type of patch that is observed in the AA and enter the total number of observed patches in Table below. In the case of riverine wetlands, their status as confined or non-confined must first be determined (see page 6) to determine with patches are expected in the system (indicated by a "1" in the table below). Any feature onsite should only be counted once as a patch type. If a feature appears to meet the definition of more than one patch type (i.e. swale and secondary channel) the practitioner should choose which patch type best illustrates the feature. Not all features at a site will be patch types.

**Please refer to the CRAM Photo Dictionary at www.cramwetlands.org for photos of each of the following patch types.*

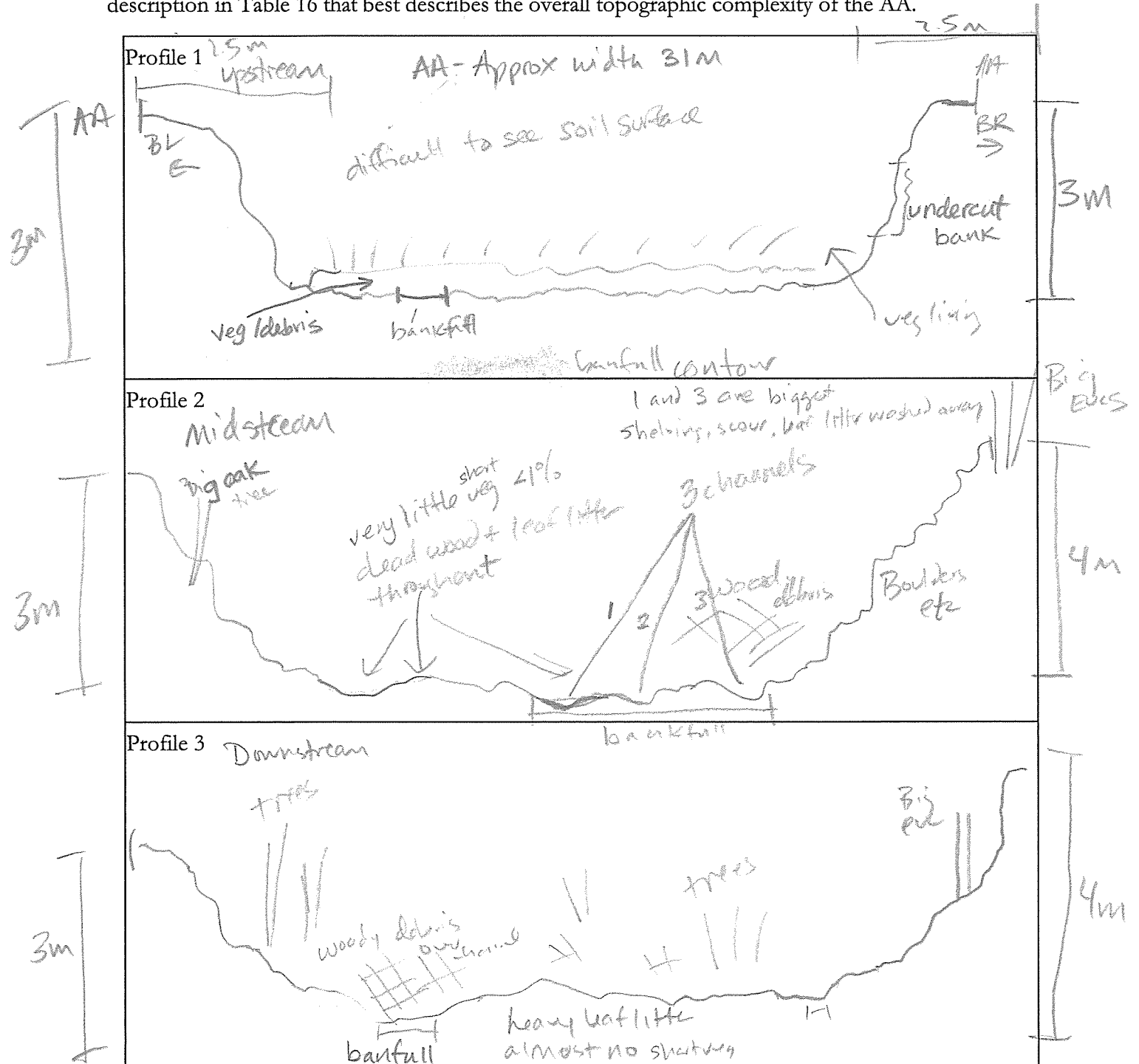
*we saw sand
one time →*

STRUCTURAL PATCH TYPE (circle for presence)	Riverine (Non-confined)	Riverine (Confined)
Minimum Patch Size	3 m ²	3 m ²
Abundant wrackline or organic debris in channel, on floodplain	1	1
Bank slumps or undercut banks in channels or along shoreline	1	1
Cobbles and/or Boulders	1	1
Debris jams	1	1
Filamentous macroalgae or algal mats	1	1
Large woody debris	1	1
Pannes or pools on floodplain	1	N/A
Plant hummocks and/or sediment mounds	1	1
Point bars and in-channel bars	1	1
Pools or depressions in channels (wet or dry channels)	1	1
Riffles or rapids (wet or dry channels)	1	1
Secondary channels on floodplains or along shorelines	1	N/A
Standing snags (at least 3 m tall)	1	1
Submerged vegetation	1	N/A
Swales on floodplain or along shoreline	1	N/A
Variiegated, convoluted, or crenulated foreshore (instead of broadly arcuate or mostly straight)	1	1
Vegetated islands (mostly above high-water)	1	N/A
Total Possible	17	12
No. Observed Patch Types (enter here and use in Table 14 below)	5	

← on edge of floodplain

Worksheet for AA Topographic Complexity

At three locations along the AA, make a sketch of the profile of the stream from the AA boundary down to its deepest area then back out to the other AA boundary. Try to capture the benches and the intervening micro-topographic relief. To maintain consistency, make drawings at each of the stream hydrologic connectivity measurements, always facing downstream. Include the water level, an arrow at the bankfull contour, and label the benches. Based on these sketches and the profiles in Figure 10, choose a description in Table 16 that best describes the overall topographic complexity of the AA.



Plant Community Metric Worksheet: Co-dominant species richness for Riverine wetlands
 (A dominant species represents $\geq 10\%$ relative cover)

Special Note:

* Combine the counts of co-dominant species from all layers to identify the total species count. Each plant species is only counted once when calculating the Number of Co-dominant Species and Percent Invasion submetric scores, regardless of the numbers of layers in which it occurs.

Floating or Canopy-forming (non-confined only)	Invasive?	Short (<0.5 m)	Invasive?
/		VIT GIR 1	
		ART DOU 2	
		AMB PSY 3	
Medium (0.5-1.5 m)	Invasive?	Tall (1.5-3.0 m)	Invasive?
VIT GIR		VIT GIR	
AMB PSY		SAL LAS 4	
ART DOU		MAZ LAU 5	
Very Tall (>3.0 m)	Invasive?	Total number of co-dominant species for all layers combined (enter here and use in Table 18)	6
EVC SP 6	Y		
SAL LAS		Percent Invasion *Round to the nearest integer* (enter here and use in Table 18)	17%

Horizontal Interspersion Worksheet.

Use the spaces below to make a quick sketch of the AA in plan view, outlining the major plant zones (this should take no longer than 10 minutes). Assign the zones names and record them on the right. Based on the sketch, choose a single profile from Figure 12 that best represents the AA overall.

	<p>Assigned zones:</p> <ol style="list-style-type: none"> 1) Short low veg, high cover Aca OML / Amersy → 2) Open, no canopy vit only 3) EUC canopy some understory 4) Upland canopy oak, mal lam some understory 5) Montane willow canopy min understory 6)
--	---

Worksheet for Wetland disturbances and conversions

Has a major disturbance occurred at this wetland?	Yes	<u>No</u>		
If yes, was it a flood, fire, landslide, or other?	flood	fire	landslide	other
If yes, then how severe is the disturbance?	likely to affect site next 5 or more years	likely to affect site next 3-5 years	likely to affect site next 1-2 years	
Has this wetland been converted from another type? If yes, then what was the previous type?	depressional	vernal pool	vernal pool system	
	non-confined riverine	confined riverine	seasonal estuarine	
	perennial saline estuarine	perennial non-saline estuarine	wet meadow	
	lacustrine	seep or spring	playa	

Stressor Checklist Worksheet

HYDROLOGY ATTRIBUTE (WITHIN 50 M OF AA)	Present	Significant negative effect on AA
Point Source (PS) discharges (POTW, other non-stormwater discharge)		
Non-point Source (Non-PS) discharges (urban runoff, farm drainage)		
Flow diversions or unnatural inflows	/	
Dams (reservoirs, detention basins, recharge basins)	/	
Flow obstructions (culverts, paved stream crossings)	/	
Weir/drop structure, tide gates		
Dredged inlet/channel		
Engineered channel (riprap, armored channel bank, bed)	/	
Dike/levees		
Groundwater extraction		
Ditches (borrow, agricultural drainage, mosquito control, etc.)		
Actively managed hydrology	/	
Comments		

PHYSICAL STRUCTURE ATTRIBUTE (WITHIN 50 M OF AA)	Present	Significant negative effect on AA
Filling or dumping of sediment or soils (N/A for restoration areas)		
Grading/ compaction (N/A for restoration areas)		
Plowing/Discing (N/A for restoration areas)		
Resource extraction (sediment, gravel, oil and/or gas)		
Vegetation management		
Excessive sediment or organic debris from watershed		
Excessive runoff from watershed		
Nutrient impaired (PS or Non-PS pollution)		
Heavy metal impaired (PS or Non-PS pollution)		
Pesticides or trace organics impaired (PS or Non-PS pollution)		
Bacteria and pathogens impaired (PS or Non-PS pollution)		
Trash or refuse	/	
Comments		

BIOTIC STRUCTURE ATTRIBUTE (WITHIN 50 M OF AA)	Present	Significant negative effect on AA
Mowing, grazing, excessive herbivory (within AA)		
Excessive human visitation		
Predation and habitat destruction by non-native vertebrates (e.g., <i>Virginia opossum</i> and domestic predators, such as feral pets)		
Tree cutting/sapling removal		
Removal of woody debris		
Treatment of non-native and nuisance plant species		
Pesticide application or vector control		
Biological resource extraction or stocking (fisheries, aquaculture)		
Excessive organic debris in matrix (for vernal pools)		
Lack of vegetation management to conserve natural resources	/	
Lack of treatment of invasive plants adjacent to AA or buffer	/	
Comments		

BUFFER AND LANDSCAPE CONTEXT ATTRIBUTE (WITHIN 500 M OF AA)	Present	Significant negative effect on AA
Urban residential		
Industrial/commercial		
Military training/Air traffic		
Dams (or other major flow regulation or disruption)	/	
Dryland farming		
Intensive row-crop agriculture		
Orchards/nurseries		
Commercial feedlots		
Dairies		
Ranching (enclosed livestock grazing or horse paddock or feedlot)		
Transportation corridor		
Rangeland (livestock rangeland also managed for native vegetation)		
Sports fields and urban parklands (golf courses, soccer fields, etc.)		
Passive recreation (bird-watching, hiking, etc.)	/	
Active recreation (off-road vehicles, mountain biking, hunting, fishing)	/	
Physical resource extraction (rock, sediment, oil/gas)		
Biological resource extraction (aquaculture, commercial fisheries)		
Comments		

APPENDIX L

Plant Species Observed at the El Capitan Dam Spillway Vegetation Removal Project Site

Appendix L
Plant Species Observed at the El Capitan Dam Spillway Vegetation Removal Project Site

Scientific Name	Common Name	Habitat	Origin
LYCOPODS			
SELAGINELLACEAE	SPIKE-MOSS FAMILY		
<i>Selaginella bigelovii</i> Underw.	Bigelow's spike-moss	CSS	N
FERNS			
PTERIDACEAE	BRAKE FAMILY		
<i>Myriopteris</i> [= <i>Cheilanthes</i>] <i>newberryi</i> (D. C. Eaton) Grusz & Windham	Newberry's lip fern	CSS	N
<i>Pellaea mucronata</i> (D.C. Eaton) D.C. Eaton var. <i>mucronata</i>	bird's-foot fern	CSS	N
<i>Pentagramma triangularis</i> (Kaulf.) Yatsk. Windham & E. Wollenw.	goldback fern	SOC	N
ANGIOSPERMS: MONOCOTS			
AGAVACEAE	AGAVE FAMILY		
<i>Hesperoyucca</i> [= <i>Yucca</i>] <i>whipplei</i> (Torr.) Trel.	chaparral candle	CSS, DCSS	N
<i>Yucca schidigera</i> Ortgies	Mojave yucca	CSS	N
ALLIACEAE	ONION FAMILY		
<i>Allium peninsulare</i> Lemmon ex Greene var. <i>peninsulare</i>	red-flower onion	SOC	N
ARECACEAE	PALM FAMILY		
<i>Phoenix canariensis</i> Chabaud	Canary Island palm	DCWR, SCLO, NNG	I
<i>Washingtonia robusta</i> H. Wendl.	Mexican fan palm	SRW, SCLO	I
CYPERACEAE	SEDGE FAMILY		
<i>Carex spissa</i> L.H. Bailey	San Diego sedge	CVFM	N
<i>Cyperus eragrostis</i> Lam.	tall flatsedge	SRW	N
<i>Schoenoplectus</i> sp.	tule	CVFM	N
IRIDACEAE	IRIS FAMILY		
<i>Sisyrinchium bellum</i> S. Watson	western blue-eyed grass	CSS	N
JUNCACEAE	RUSH FAMILY		
<i>Juncus dubius</i> Engelm.	mariposa rush		N
LILIACEAE	LILY FAMILY		
<i>Calochortus splendens</i> Benth.	splendid mariposa lily	SOC	N
POACEAE (GRAMINEAE)	GRASS FAMILY		
<i>Aristida purpurea</i> Nutt.	three-awn	CSS, DL	N

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Plant Species Observed at the El Capitan Dam Spillway Vegetation Removal Project Site

Scientific Name	Common Name	Habitat	Origin
<i>Arundo donax</i> L.	giant reed	ADR	I
<i>Avena</i> sp.	oats	CSS, DCSS	I
<i>Bromus diandrus</i> Roth	rippgut grass	CSS, DCSS, SRW, SOC, SCLO	I
<i>Bromus rubens</i> (L.) Husn.	red brome	CSS, DCSS, SCLO	I
<i>Cynodon dactylon</i> (L.) Pers.	Bermuda grass	SRW, DCSS	I
<i>Ehrharta</i> sp.	veldt grass	SOC	I
<i>Festuca</i> [= <i>Vulpia</i>] <i>myuros</i> L.	rattail sixweeks grass	CSS	I
<i>Lamarckia aurea</i> (L.) Moench	golden-top	CSS	I
<i>Melinis</i> [= <i>Rhyncholytrum</i>] <i>repens</i> (Willd.) Zizka	natal grass	SRW, CSS	I
<i>Pennisetum setaceum</i> (Forssk.) Chiov.	crimson fountain grass	DCSS, SRW, U/D, CSS, DL	I
<i>Schismus barbatus</i> (L.) Thell.	Mediterranean schismus	DL, CSS, NNG	I
<i>Stipa</i> [= <i>Nassella</i>] sp.	needle grass	SOC	N
<i>Stipa miliacea</i> (L.) Hoover var. <i>miliacea</i> [= <i>Piptatherum miliaceum</i> ssp. <i>miliaceum</i> and <i>Oryzopsis miliacea</i>]	smilo grass	CSS, SRW, EW, SCLO,	I
THEMIDACEAE	BRODIAEA FAMILY		
<i>Bloomeria crocea</i> (Torr.) Coville	common goldenstar	CSS	N
<i>Dichelostemma capitatum</i> (Benth.) Alph. Wood	blue dicks	CSS	N
TYPHACEAE	CATTAIL FAMILY		
<i>Typha</i> sp.	cattail	CVFM, SCWR	N
ANGIOSPERMS: DICOTS			
ACANTHACEAE	ACANTHUS FAMILY		
ADOXACEAE	ADOXA FAMILY		
<i>Sambucus nigra</i> L. ssp. <i>caerulea</i> (Raf.) Bolli [= <i>Sambucus mexicana</i>]	blue elderberry	CSS, SCLO	N
ANACARDIACEAE	SUMAC OR CASHEW FAMILY		
<i>Malosma laurina</i> Nutt. ex Abrams	laurel sumac	CSS, SRW, SCLO, SOC, DCSS, DCWR	N
<i>Rhus aromatica</i> [= <i>Rhus trilobata</i>] Aiton	skunk bush	CSS	N

Appendix L
Plant Species Observed at the El Capitan Dam Spillway Vegetation Removal Project Site

Scientific Name	Common Name	Habitat	Origin
<i>Schinus molle</i> L.	Peruvian pepper tree	CSS, SRW, DCWR	I
<i>Toxicodendron diversilobum</i> (Torr. & A. Gray) Greene	western poison oak	SRW, CSS, SCLO	N
APIACEAE (UMBELLIFERAE)	CARROT FAMILY		
<i>Bowlesia incana</i> Ruiz & Pav.	American bowlesia	SOC	N
<i>Daucus pusillus</i> Michx.	rattlesnake weed	CSS	N
APOCYNACEAE	DOGBANE FAMILY		
<i>Funastrum</i> [= <i>Sarcostemma</i>] <i>cynanchoides</i> (Decne.) Schltr. var. <i>hartwegii</i> (Vail) Krings	climbing milkweed	CSS	N
ASTERACEAE	SUNFLOWER FAMILY		
<i>Ambrosia psilostachya</i> DC.	western ragweed	CSS, SRW, SCLO, CVFM	N
<i>Artemisia californica</i> Less.	California sagebrush	CSS, SOC, DCSS	N
<i>Artemisia douglasiana</i> Besser	mugwort	SRW, SCLO	N
<i>Baccharis salicifolia</i> (Ruiz & Pav.) Pers. ssp. <i>salicifolia</i>	mule fat, seep-willow	CSS, SRW, SCWR	N
<i>Baccharis sarothroides</i> A. Gray	broom baccharis	CSS, SRW, DL, DCSS	N
<i>Bebbia juncea</i> (Benth.) Greene var. <i>aspera</i> Greene	rush sweetbush	CSS, DCSS	N
<i>Brickellia californica</i> (Torr. & A. Gray) A. Gray	California brickellbush	CSS	N
<i>Centaurea melitensis</i> L.	totalote, Maltese star-thistle	CSS	I
<i>Chaenactis artemisiifolia</i> (Harv. & A. Gray) A. Gray	white pincushion	CSS	N
<i>Chaenactis glabriuscula</i> DC.	yellow pincushion	CSS	N
<i>Cirsium occidentale</i> (Nutt.) Jeps. var. <i>californicum</i> (A. Gray) D.J. Keil & C.E. Turner	California thistle	CSS	N
<i>Corethrogyne filaginifolia</i> [= all previously known <i>Lessingia</i> <i>filaginifolia</i> varieties in California] (Hook. & Arn.) Nutt.	California-aster	CSS	N
<i>Gutierrezia</i> sp.	matchweed	CSS	N
<i>Hazardia squarrosa</i> (Hook. & Arn.) Greene	saw-toothed goldenbush	CSS, SCLO	N
<i>Hedypnois cretica</i> (L.) Dum. Cours.	crete weed	CSS	I
<i>Helianthus gracilentus</i> A. Gray	slender sunflower	CSS	N
<i>Helminthotheca</i> [= <i>Picris</i>] <i>echioides</i> (L.) Holub	bristly ox-tongue	DL, DSRW	I
<i>Heterotheca grandiflora</i> Nutt.	telegraph weed	CSS, DL	N
<i>Hypochaeris glabra</i> L.	smooth cat's-ear	CSS, DL	I

Appendix L
Plant Species Observed at the El Capitan Dam Spillway Vegetation Removal Project Site

Scientific Name	Common Name	Habitat	Origin
<i>Logfia</i> [= <i>Filago</i>] <i>gallica</i> (L.) Coss. & Germ.	daggerleaf cottonrose	DCSS	I
<i>Pluchea odorata</i> (L.) Cass.	salt marsh fleabane	CVFM	N
<i>Porophyllum gracile</i> Benth.	odora, slender poreleaf	CSS	N
<i>Pseudognaphalium beneolens</i> [= <i>Gnaphalium canescens</i> ssp. <i>beneolens</i>] (Davidson) Anderb.	fragrant everlasting	CSS	N
<i>Pseudognaphalium biolettii</i> Anderb. [= <i>Gnaphalium bicolor</i>]	bicolor cudweed	CSS, SOC	N
<i>Pseudognaphalium</i> [= <i>Gnaphalium</i>] <i>californicum</i> (DC.) Anderb.	California everlasting, green everlasting	CSS	N
<i>Rafinesquia californica</i> Nutt.	California chicory	CSS	N
<i>Senecio vulgaris</i> L.	common groundsel	CSS	I
<i>Sonchus oleraceus</i> L.	common sow thistle	DL, CSS	I
<i>Stephanomeria</i> sp.	wreath-plant	CSS	N
<i>Uropappus lindleyi</i> (DC.) Nutt.	silver puffs	CSS	N
<i>Xanthisma junceum</i> [= <i>Machaeranthera juncea</i>] (Greene) D.R. Morgan & R.L. Hartm.	rush-like bristleweed	CSS	N
<i>Xanthium strumarium</i> L.	cocklebur	CSS, SRW, DCWR	N
BORAGINACEAE	BORAGE FAMILY		
<i>Amsinckia menziesii</i> (Lehm.) A. Nelson & J.F. Macbr.	common fiddleneck, small-flowered fiddleneck, rancher's fireweed	DL, CSS, DCSS	N
<i>Cryptantha</i> sp.	cryptantha	CSS	N
<i>Heliotropium curassavicum</i> L. var. <i>oculatum</i> (A. Heller) I. M. Johnst. ex Tidestr.	seaside heliotrope, alkali heliotrope	DL	N
<i>Pectocarya</i> sp.	pectocarya	CSS	N
<i>Phacelia cicutaria</i> Greene var. <i>hispida</i> (A. Gray) J.T. Howell	caterpillar phacelia	CSS	N
<i>Phacelia distans</i> Benth.	wild-heliotrope	CSS	N
<i>Phacelia parryi</i> Torr.	Parry's phacelia	CSS	N
<i>Pholistoma auritum</i> (Lindl.) Lilja var. <i>auritum</i>	fiesta flower	CSS	N
<i>Pholistoma membranaceum</i> (Benth.) Constance	white fiesta flower	CSS	N
<i>Pholistoma racemosum</i> (Nutt. ex A. Gray) Constance	San Diego fiesta flower, pholistoma	CSS	N
<i>Plagiobothrys</i> sp.	popcornflower	CSS, DL	N
BRASSICACEAE (CRUCIFERAE)	MUSTARD FAMILY		
<i>Brassica tournefortii</i> Gouan	Sahara mustard	CSS	I
<i>Hirschfeldia incana</i> (L.) Lagr.-Fossat	short-pod mustard	CSS, DCSS	I

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Scientific Name	Common Name	Habitat	Origin
<i>Lepidium nitidum</i> Nutt.	shining peppergrass	CSS	N
<i>Sisymbrium irio</i> L.	London rocket	CSS	I
<i>Thysanocarpus</i> sp.	lacepod, fringedpod	CSS	N
CACTACEAE	CACTUS FAMILY		
<i>Opuntia ficus-indica</i> (L.) Mill.	mission prickly-pear, Indian fig	DCSS	I
CAPRIFOLIACEAE	HONEYSUCKLE FAMILY		
<i>Lonicera subspicata</i> Hook. & Arn.	southern honeysuckle	SOC	N
CARYOPHYLLACEAE	PINK FAMILY		
<i>Silene gallica</i> L.	small-flower catchfly, windmill pink	CSS	I
CHENOPODIACEAE	GOOSEFOOT FAMILY		
<i>Salsola tragus</i> L.	Russian thistle, tumbleweed	SRW, DCSS	I
CISTACEAE	ROCK-ROSE FAMILY		
<i>Crocianthemum [=Helianthemum] scoparium</i> Nutt. Millsp.	peak rush-rose	CSS	N
CONVOLVULACEAE	MORNING-GLORY FAMILY		
<i>Calystegia macrostegia</i> (Greene) Brummitt	morning-glory	DCSS, CSS	N
<i>Cuscuta californica</i> Hook. & Arn.	chaparral dodder	CSS	N
CRASSULACEAE	STONECROP FAMILY		
<i>Crassula connata</i> (Ruiz & Pav.) A. Berger	pygmy-weed	CSS, DL	N
<i>Dudleya pulverulenta</i> (Nutt.) Britton & Rose	chalk lettuce, chalk dudleya	DCSS, CSS	N
CUCURBITACEAE	GOURD FAMILY		
<i>Marah macrocarpa</i> (Greene) Greene	wild cucumber	SOC	N
ERICACEAE	HEATH FAMILY		
<i>Xylococcus bicolor</i> Nutt.	mission manzanita	SOC, CSS	N
EUPHORBIACEAE	SPURGE FAMILY		
<i>Acalypha californica</i> Benth.	California copperleaf	CSS	N
<i>Croton californicus</i> Müll. Arg.	California croton	CSS, DL	N
<i>Croton</i> [=Eremocarpus] <i>setiger</i> Hook.	turkey-mullein, dove weed	CSS, DL, DCSS	N
<i>Euphorbia</i> [=Chamaesyce] <i>polycarpa</i> Benth.	smallseed sandmat	CSS, DL	N
<i>Ricinus communis</i> L.	castor bean	SCLO	I
<i>Stillingia linearifolia</i> S. Watson	linear-leaf stillingia	CSS	N

Appendix L
Plant Species Observed at the El Capitan Dam Spillway Vegetation Removal Project Site

Scientific Name	Common Name	Habitat	Origin
FABACEAE (LEGUMINOSAE)	LEGUME FAMILY		
<i>Acmispon americanus</i> (Nutt.) Rydb. var. <i>americanus</i> [= <i>Lotus purshianus</i> var. <i>purshianus</i>]	Spanish-clover	DCSS, DL	N
<i>Acmispon argophyllum</i> (A. Gray) Brouillet var. <i>argophyllum</i> [= <i>Lotus argophyllum</i> var. <i>argophyllum</i>]	silver-leaf lotus	DCSS	N
<i>Acmispon glaber</i> (Vogel) Brouillet [= <i>Lotus scoparius</i>]	deerweed, California broom	CSS, SOC	N
<i>Acmispon heermannii</i> (Durand & Hilg.) Brouillet var. <i>heermannii</i> [= <i>Lotus heermannii</i> var. <i>heermannii</i>]	Heermann's lotus	CSS, U/D	N
<i>Acmispon micranthus</i> (Torr. & A. Gray) Brouillet [= <i>Lotus hamatus</i>]	grab lotus	CSS	N
<i>Acmispon strigosus</i> (Nutt.) Brouillet [= <i>Lotus strigosus</i>]	bishop's lotus, strigose lotus	CSS	N
<i>Astragalus deanei</i> (Rydb.) Barneby	Dean's milkvetch	CSS	N
<i>Lupinus concinnus</i> J. Agardh	bajada lupine	CSS	N
<i>Lupinus hirsutissimus</i> Benth.	stinging lupine	CSS	N
<i>Lupinus truncatus</i> Nutt.	collar lupine	CSS	N
<i>Melilotus</i> sp.	sweetclover	CSS	I
FAGACEAE	OAK FAMILY		
<i>Quercus agrifolia</i> Née	coast live oak, encina	SCLO, SRW, SOC, CSS, DCWR, NNG	N
<i>Quercus berberidifolia</i> Liebm.	scrub oak	SOC, CSS	N
<i>Quercus engelmannii</i> Greene	Engelmann oak, mesa oak	NNG, SCLO	N
GERANIACEAE	GERANIUM FAMILY		
<i>Erodium</i> sp.	filaree, storksbill	DCSS, CSS, DL	I
LAMIACEAE	MINT FAMILY		
<i>Marrubium vulgare</i> L.	horehound	CSS, DCSS	I
<i>Salvia apiana</i> Jeps.	white sage	CSS	N
<i>Salvia columbariae</i> Benth.	chia	CSS	N
MALVACEAE	MALLOW FAMILY		
<i>Malacothamnus fasciculatus</i> (Nutt. ex Torr. & A. Gray) Greene	chaparral mallow	CSS	N
MONTIACEAE	MONTIA FAMILY		
<i>Calandrinia menziesii</i> [replaced <i>C. ciliata</i>] (Hook.) Torr. & A. Gray	red maids	CSS, DCSS, NNG	N
<i>Claytonia perfoliata</i> Donn ex Willd.	miner's lettuce	CSS, SOC	N

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Scientific Name	Common Name	Habitat	Origin
MYRTACEAE	MYRTLE FAMILY		
<i>Eucalyptus</i> sp.	gum tree	EW, DCWR, CSS, NNG	I
<i>Eucalyptus cladocalyx</i> F. Muell.	sugar gum	EW, DCWR	I
NYCTAGINACEAE	FOUR O’CLOCK FAMILY		
<i>Mirabilis laevis</i> [= <i>Mirabilis californica</i>] (Benth.) Curran var. <i>crassifolia</i> (Choisy) Spellenb.	wishbone bush	CSS	N
OLEACEAE	OLIVE FAMILY		
<i>Olea europaea</i> L.	olive	CSS, SRW	I
ONAGRACEAE	EVENING-PRIMROSE FAMILY		
<i>Camissoniopsis</i> sp. [= <i>Camissonia</i> sp.]	sun cup	CSS, DL	N
<i>Clarkia delicata</i> (Abrams) A. Nelson & J.F. Macbr.	delicate clarkia, Campo clarkia	SCLO, CSS	N
<i>Clarkia epilobioides</i> (Nutt. ex Torr. & A. Gray) A. Nelson & J.F. Macbr.	canyon godetia, willow herb clarkia, canyon clarkia	SCLO, CSS	N
<i>Eulobus californicus</i> Torr. & A. Gray [= <i>Camissonia californica</i>]	false-mustard	CSS, DL	N
OXALIDACEAE	OXALIS FAMILY		
<i>Oxalis pes-caprae</i> L.	Bermuda buttercup	DSRW	I
<i>Eschscholzia californica</i> Cham.	California poppy	CSS, DL	N
PHRYMACEAE [=SCROPHULARIACEAE]	HOPSEED FAMILY		
<i>Mimulus aurantiacus</i> Curtis	bush monkey-flower	SOC, SCLO	N
PLANTAGINACEAE	PLANTAIN FAMILY		
<i>Antirrhinum nuttallianum</i> Benth. ex A. DC.	Nuttall’s snapdragon	CSS	N
<i>Collinsia concolor</i> Greene	southern Chinese houses	SOC	N
<i>Keckiella cordifolia</i> (Benth.) Straw	climbing bush penstemon	SCLO	N
<i>Penstemon spectabilis</i> Thurb. ex A. Gray	violet beard-tongue	CSS	N
<i>Plantago erecta</i> E. Morris	dot-seed plantain	CSS, DL	N
PLATANACEAE	PLANE TREE OR SYCAMORE FAMILY		
<i>Platanus racemosa</i> Nutt.	western sycamore	SCLO, SRW, CSS, SCWR	N
POLEMONIACEAE	PHLOX FAMILY		
<i>Eriastrum sapphirinum</i> (Eastw.) H. Mason.	sapphire woolly-star	CSS	N
<i>Gilia</i> sp.	gilia	CSS	N
<i>Navarretia hamata</i> Greene	hooked navarretia	CSS	N

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Scientific Name	Common Name	Habitat	Origin
POLYGONACEAE	BUCKWHEAT FAMILY		
<i>Eriogonum elongatum</i> Benth. var. <i>elongatum</i>	long-stem wild buckwheat	CSS	N
<i>Eriogonum fasciculatum</i> Benth. var. <i>fasciculatum</i>	coast California buckwheat	CSS, DCSS	N
<i>Eriogonum gracile</i> Benth.	slender buckwheat	CSS	N
<i>Pterostegia drymarioides</i> Fisch. & C.A. Mey.	California thread-stem, granny's hairnet	CSS, DL	N
<i>Rumex conglomeratus</i> Murray	clustered dock	SRW	I
PROTEACEAE	PRIMROSE FAMILY		
<i>Macadamia integrifolia</i>	Macadamia nut tree	NNG	I
RANUNCULACEAE	BUTTERCUP FAMILY		
<i>Clematis pauciflora</i> Nutt.	southern California clematis, few-flowered clematis	CSS	N
RHAMNACEAE	BUCKTHORN FAMILY		
<i>Rhamnus ilicifolia</i> Kellogg	hollyleaf redberry	SOC, CSS	N
ROSACEAE	ROSE FAMILY		
<i>Adenostoma fasciculatum</i> Hook. & Arn.	chamise, greasewood	CSS	N
<i>Cercocarpus betuloides</i> Nutt.	birch-leaf mountain-mahogany	SOC	N
<i>Heteromeles arbutifolia</i> (Lindl.) M. Roem.	toyon, Christmas berry	CSS, SCLO, SOC	N
<i>Rubus ursinus</i> Cham. & Schtdl.	California blackberry	SCLO	N
RUBIACEAE	MADDER FAMILY		
<i>Galium angustifolium</i> Nutt. ex A. Gray ssp. <i>angustifolium</i>	narrow-leaf bedstraw	CSS	N
<i>Galium aparine</i> L.	goose grass, stickywilly	SOC	N
SALICACEAE	WILLOW FAMILY		
<i>Populus fremontii</i> S. Watson ssp. <i>fremontii</i>	Fremont cottonwood, alamo	SRW, SCLO, SCWR	N
<i>Salix gooddingii</i> C.R. Ball.	Goodding's black willow	SRW, SCLO, DCWR, SCWR	N
<i>Salix laevigata</i> Bebb	red willow	SRW, SCLO, SCWR	N
<i>Salix lasiolepis</i> Benth.	arroyo willow	SRW, DCWR, SCLO, SCWR	N
SCROPHULARIACEAE	FIGWORT FAMILY		
<i>Scrophularia californica</i> Cham. & Schtdl.	California figwort	CSS	N

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Scientific Name	Common Name	Habitat	Origin
SOLANACEAE	NIGHTSHADE FAMILY		
<i>Datura wrightii</i> Regel	western Jimson weed	CSS, SRW	N
<i>Nicotiana glauca</i> Graham	tree tobacco	CSS, DL	I
<i>Physalis crassifolia</i> Benth.	Greene's ground-cherry	CSS	N
<i>Solanum</i> sp.	nightshade	CSS	N
TAMARICACEAE	TAMARISK FAMILY		
<i>Tamarix ramosissima</i> Ledeb.	saltcedar	SCWR	I
VITACEAE	GRAPE FAMILY		
<i>Vitis girdiana</i> Munson	desert wild grape	SRW, SCLO, DCWR, SCWR	N

Notes: Scientific and common names were primarily derived from the Jepson Online Interchange (Jepson Flora Project 2020). In instances where common names were not provided in this resource, common names were obtained from Rebman and Simpson (2014). Additional common names were obtained from the USDA maintained database (USDA 2020a) or the Sunset Western Garden Book (Brenzel 2001) for ornamental/horticultural plants.

HABITATS

ADR = Arundo-dominated riparian
 CSS = Diegan coastal sage scrub
 CVFM= Coastal and valley freshwater marsh
 DCSS = Disturbed coastal sage scrub
 DL = Disturbed land
 DSRW= Disturbed southern riparian woodland
 EW = Eucalyptus woodland
 NNG = Non-native grassland
 SCLO = Southern coast live oak riparian forest
 SCWR = Southern cottonwood-willow riparian forest
 SOC = Scrub oak chaparral
 SRW = Southern riparian woodland
 U/D = Urban/developed land

ORIGIN

N = Native to locality
 I = Introduced species from outside locality

APPENDIX M

Wildlife Species Observed/Detected at the El Capitan Dam Spillway Vegetation Removal Project Site

Appendix M
Wildlife Species Observed/Detected at the El Capitan Dam Spillway Vegetation Removal Project Site

Scientific Name	Common Name	Occupied Habitat	On-Site Abundance/ Seasonality (Birds Only)	Evidence of Occurrence
INVERTEBRATES (Nomenclature for butterflies from San Diego Natural History Museum 2002)				
HESPERIIDAE	SKIPPERS			
<i>Erynnis</i> sp.	duskywing	CSS, DL		0
<i>Erynnis funeralis</i>	funereal duskywing	CSS, DL		0
<i>Pyrgus communis</i>	common checkered skipper	CSS, DL, NNG		0
PAPILIONIDAE	PARNASSIANS & SWALLOWTAILS			
<i>Papilio eurymedon</i>	pale swallowtail	RW		0
<i>Papilio rutulus</i>	western tiger swallowtail	CSS, ORF		0
<i>Papilio zelicaon</i>	anise swallowtail	RW		0
PIERIDAE	WHITES & SULPHURS			
<i>Anthocharis sara sara</i>	Pacific Sara orangetip	CSS, DL, NNG		0
<i>Colias eurytheme</i>	orange [=alfalfa] sulphur	CSS, NNG		0
<i>Eurema nicippe</i>	sleepy orange	CSS		0
<i>Pontia protodice</i>	checkered [=common] white	CSS, NNG		0
<i>Pieris rapae</i>	cabbage white (I)	CSS, NNG, DL		0
LYCAENIDAE	BLUES, COPPERS, & HAIRSTREAKS			
<i>Callophrys augustinus</i>	brown elfin	CSS		0
<i>Callophrys dumetorum affinis</i>	immaculate bramble [=green; perplexing] hairstreak	CSS		0
<i>Celastrina ladon</i> [=argiolus] <i>echo</i>	echo blue [=spring azure]	CSS		0
<i>Euphilotes bernardino</i>	Bernardino blue	CSS		0
<i>Everes amyntula</i>	western tailed-blue	CSS		0
<i>Glaucopsyche lygdamus australis</i>	southern [=silvery] blue	CSS, DL		0
<i>Icaricia acmon acmon</i>	Acmon blue	CSS, DL, NNG		0
<i>Leptotes marina</i>	marine blue	CSS		0
<i>Strymon melinus pudica</i>	gray [=common] hairstreak	CSS		0
RIODINIDAE	METALMARKS			
<i>Apodemia mormo virgulti</i>	Behr's metalmark	CSS, DL, NNG		0

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Scientific Name	Common Name	Occupied Habitat	On-Site Abundance/ Seasonality (Birds Only)	Evidence of Occurrence
<i>Calephelis wrighti</i>	Wright's metalmark	CSS		O
NYMPHALIDAE	BRUSH-FOOTED BUTTERFLIES			
<i>Adelpha bredowii californica</i>	California sister	RW		O
<i>Danaus plexippus</i>	monarch	WRF, EW		O
<i>Junonia coenia grisea</i>	common buckeye	CSS		O
<i>Nymphalis antiopa</i>	mourning cloak	CSS		O
<i>Vanessa annabella</i>	west coast lady	CSS		O
<i>Vanessa cardui</i>	painted lady	CSS, DL, NNG		O
AMPHIBIANS (Nomenclature from Crother et al. 2012)				
PELOBATIDAE	SPADEFOOT TOADS			
<i>Spea hammondi</i>	western spadefoot	O, CSS,		O, V
BUFONIDAE	TRUE TOADS			
<i>Anaxyrus boreas</i>	western toad	O		O
HYLIDAE	TREE FROGS			
<i>Pseudacris hypochondriaca</i>	Baja California treefrog	OW		O, V
RANIDAE	TRUE FROGS			
<i>Lithobates catesbeiana</i>	American bullfrog (I)	OW		O, V
REPTILES (Nomenclature from Crother et al. 2012)				
CROTALIDAE	RATTLESNAKES			
<i>Crotalus ruber</i>	red diamond rattlesnake	CSS		O
PHRYNOSOMATIDAE	SPINY LIZARDS			
<i>Sceloporus orcutti</i>	granite spiny lizard	CSS		O
TEIIDAE	WHIPTAIL LIZARDS			
<i>Aspidoscelis hyperythra beldingi</i>	Belding's orange-throated whiptail	CSS		O
<i>Aspidoscelis tigris stejnegeri</i>	San Diegan tiger whiptail	O		O

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Scientific Name	Common Name	Occupied Habitat	On-Site Abundance/ Seasonality (Birds Only)	Evidence of Occurrence
BIRDS (Nomenclature from Chesser et al. 2018 and Unitt 2004)				
ODONTOPHORIDAE	NEW WORLD QUAIL			
<i>Callipepla californica californica</i>	California quail	CSS	F / Y	O, V
ARDEIDAE	HERONS & BITTERNS			
<i>Ardea alba</i>	great egret	F	F / W	O
<i>Ardea herodias</i>	great blue heron	F	U / Y	O
CATHARTIDAE	NEW WORLD VULTURES			
<i>Cathartes aura</i>	turkey vulture	F	F / M, S	O
ACCIPITRIDAE	HAWKS, KITES, & EAGLES			
<i>Accipiter cooperii</i>	Cooper's hawk	F	U / Y	O, V
<i>Buteo jamaicensis</i>	red-tailed hawk	F	F / Y	O, V
<i>Haliaeetus leucocephalus</i>	bald eagle	F	U / W	O
FALCONIDAE	FALCONS & CARACARAS			
<i>Falco peregrinus anatum</i>	American peregrine falcon	F	U / W	O
<i>Falco sparverius sparverius</i>	American kestrel	F	U / Y	O
COLUMBIDAE	PIGEONS & DOVES			
<i>Streptopelia decaocto</i>	Eurasian collared-dove (I)	WRF, RW	C / Y	O, V
<i>Zenaida macroura marginella</i>	mourning dove	CSS, DL, EW, WRF	C / Y	O, V
CUCULIDAE	CUCKOOS & ROADRUNNERS			
<i>Geococcyx californianus</i>	greater roadrunner	CSS	F / Y	O
TYTONIDAE	BARN OWLS			
<i>Tyto alba pratincola</i>	common barn owl	WRF	U / Y	O
STRIGIDAE	TYPICAL OWLS			
<i>Bubo virginianus</i>	great horned owl	WRF	U / Y	O
APODIDAE	SWIFTS			
<i>Aeronautes saxatalis</i>	white-throated swift	CSS	F / Y	O, V

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Scientific Name	Common Name	Occupied Habitat	On-Site Abundance/ Seasonality (Birds Only)	Evidence of Occurrence
TROCHILIDAE	HUMMINGBIRDS			
<i>Calypte anna</i>	Anna's hummingbird	CSS, WRF	C / Y	O, V
<i>Calypte costae</i>	Costa's hummingbird	CSS	F / S	O, V
PICIDAE	WOODPECKERS & SAPSUCKERS			
<i>Colaptes auratus</i>	northern flicker	ORF, WRF	F / Y	V
<i>Melanerpes formicivorus bairdi</i>	acorn woodpecker	ORF	C / Y	V
<i>Dryobates [=Picoides] nuttallii</i>	Nuttall's woodpecker	ORF, CSS	C / Y	O, V
TYRANNIDAE	TYRANT FLYCATCHERS			
<i>Contopus cooperi</i>	olive-sided flycatcher	RW	U / S	O, V
<i>Contopus sordidulus</i>	western wood-pewee	WRF	U / S	O, V
<i>Empidonax difficilis</i>	Pacific-slope flycatcher	WRF	F / S	O, V
<i>Myiarchus cinerascens cinerascens</i>	ash-throated flycatcher	WRF	F / S	O, V
<i>Sayornis nigricans semiatra</i>	black phoebe	CSS, DL, ORF	C / Y	O, V
<i>Tyrannus verticalis</i>	western kingbird	CSS, NNG	F / S	O, V
<i>Tyrannus vociferans vociferans</i>	Cassin's kingbird	NNG, DL, CSS	C / Y	O, V
VIREONIDAE	VIREOS			
<i>Vireo bellii pusillus</i>	least Bell's vireo	WRF	U / S	V
<i>Vireo gilvus swainsonii</i>	warbling vireo	WRF	U / S	O
<i>Vireo huttoni huttoni</i>	Hutton's vireo	WRF	U / Y	O, V
CORVIDAE	CROWS, JAYS, & MAGPIES			
<i>Aphelocoma californica</i>	California [=western] scrub-jay	CSS, SOC	C / Y	O, V
<i>Corvus corax clarionensis</i>	common raven	F, ORF, WRF, DL	C / Y	O, V
HIRUNDINIDAE	SWALLOWS			
<i>Petrochelidon pyrrhonota tachina</i>	cliff swallow	CSS	C / S	O, V
<i>Stelgidopteryx serripennis</i>	northern rough-winged swallow	CSS	F / S	O, V
AEGITHALIDAE	BUSHTIT			
<i>Psaltriparus minimus melanurus</i>	bushtit	EW, WRF, ORF	F / Y	O, V
TROGLODYTIDAE	WRENS			
<i>Catherpes mexicanus conspersus</i>	canyon wren	CSS	F / Y	O, V

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Scientific Name	Common Name	Occupied Habitat	On-Site Abundance/ Seasonality (Birds Only)	Evidence of Occurrence
<i>Salpinctes obsoletus obsoletus</i>	rock wren	CSS	F / Y	O, V
<i>Thryomanes bewickii</i>	Bewick's wren	CSS, SOC, ORF	F / Y	O, V
<i>Troglodytes aedon parkmanii</i>	house wren	WRF	F / Y	O, V, N
POLIOPTILIDAE	GNATCATCHERS			
<i>Polioptila caerulea</i>	blue-gray gnatcatcher	WRF	U / Y	O, V
SYLVIIDAE	BABLERS			
<i>Chamaea fasciata henshawi</i>	wrentit	CSS, SOC	C / Y	O, V
MIMIDAE	MOCKINGBIRDS & THRASHERS			
<i>Mimus polyglottos polyglottos</i>	northern mockingbird	CSS, DL, NNG	C / Y	O, V
STURNIDAE	STARLINGS & MYNAS			
<i>Sturnus vulgaris</i>	European starling (I)	WRF	C / Y	O, V
PTILOGONATIDAE	SILKY FLYCATCHERS			
<i>Phainopepla nitens lepida</i>	phainopepla	WRF, ORF	F / Y	O, V
PARULIDAE	WOOD WARBLERS			
<i>Setophaga [=Dendroica] petechia</i>	yellow warbler	FM, W, RW	U / S	O, V
<i>Geothlypis trichas</i>	common yellowthroat	WRF	U / Y	V
<i>Leiothlypis [=Vermivora, Oreothlypis] celata</i>	orange-crowned warbler	WRF	U / Y	O, V
<i>Icteria virens</i>	yellow-breasted chat	WRF	U / Y	V
PASSERELLIDAE	NEW WORLD PASSERINES			
<i>Aimophila ruficeps canescens</i>	southern California rufous-crowned sparrow	CSS	U / Y	O, V
<i>Melospiza melodia</i>	song sparrow	CSS, RW	C / Y	O, V
<i>Melozona [=Pipilo] crissalis</i>	California towhee	CSS	C / Y	O, V
<i>Pipilo maculatus</i>	spotted towhee	CSS, WRF	C / Y	O, V
<i>Spizella atrogularis cana</i>	black-chinned sparrow	CSS	U / S	O, V
CARDINALIDAE	CARDINALS & GROSBEAKS			
<i>Passerina caerulea salicaria</i>	blue grosbeak	WRF	U / S	O, V
<i>Passerina amoena</i>	lazuli bunting	WRF	U / S	O, V

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Scientific Name	Common Name	Occupied Habitat	On-Site Abundance/ Seasonality (Birds Only)	Evidence of Occurrence
<i>Pheucticus melanocephalus maculatus</i>	black-headed grosbeak	WRF	U / S	O, V
ICTERIDAE	BLACKBIRDS & NEW WORLD ORIOLES			
<i>Icterus bullockii</i>	Bullock's oriole	WRF	U / S	O, V
<i>Icterus cucullatus nelsoni</i>	hooded oriole	WRF, EW	F / S	O, V
<i>Molothrus ater</i>	brown-headed cowbird	RW	F / Y	O, V
FRINGILLIDAE	FINCHES			
<i>Spinus [=Carduelis] psaltria hesperophilus</i>	lesser goldfinch	CSS, WRF, EW	C / Y	O, V
<i>Haemorhous [=Carpodacus] mexicanus frontalis</i>	house finch	EW, NNG, RW	C / Y	O, V
MAMMALS (Nomenclature from Bradley et al. 2014)				
LEPORIDAE	RABBITS & HARES			
<i>Sylvilagus audubonii</i>	desert cottontail	CSS		S
MURIDAE	MICE & RATS			
<i>Neotoma</i> sp.	woodrat	CSS		T
CANIDAE	CANIDS			
<i>Canis latrans</i>	coyote	CSS, DL		S, T
MEPHITIDAE	SKUNKS			
<i>Mephitis mephitis</i>	striped skunk	ORF		T
FELIDAE	CATS			
<i>Lynx rufus</i>	bobcat	CSS		V
CERVIDAE	DEER			
<i>Odocoileus hemionus fuliginata</i>	southern mule deer	CSS		O, T, S

Attachment 2

Wildlife Species Observed/Detected at the El Capitan Dam Spillway Vegetation Removal Project Site

(I) = Introduced species

HABITATS

- CSS = Diegan coastal sage scrub
- DL = Disturbed land
- EW = Eucalyptus woodland
- F = Flying overhead
- NNG = Non-native grassland
- ORF = Southern coast live oak riparian forest
- RW = Southern riparian woodland
- SOC = scrub oak chaparral
- W = Fresh water
- WRF = Southern cottonwood-willow riparian forest

ABUNDANCE (birds only; based on Garrett and Dunn 1981)

- C = Common to abundant; almost always encountered in proper habitat, usually in moderate to large numbers
- F = Fairly common; usually encountered in proper habitat, generally not in large numbers
- U = Uncommon; occurs in small numbers or only locally

SEASONALITY (birds only)

- M = Migrant; uses site for brief periods of time, primarily during spring and fall months
- S = Spring/summer resident; probable breeder on-site or in vicinity
- W = Winter visitor; does not breed locally
- Y = Year-round resident; probable breeder on-site or in vicinity

EVIDENCE OF OCCURRENCE

- N = Nest
- O = Observed
- S = Scat
- T = Track
- V = Vocalization

APPENDIX N

Sensitive Plant Species Observed or with the Potential for Occurrence at the El Capitan Dam Spillway Vegetation Removal Project Site

Appendix N
Sensitive Plant Species Observed or with the Potential for Occurrence
at the El Capitan Dam Spillway Vegetation Removal Project Site

Species' <i>Scientific Name</i> Common Name	State/Federal Status	CNPS Rank	City of San Diego	Habitat/ Preference/Requirements/ Blooming Period	Observed?	Basis for Determination of Occurrence Potential
LYCOPODS						
SELAGINELLACEAE SPIKE-MOSS FAMILY						
<i>Selaginella cinerascens</i> ashy spike-moss	--	4.1	-	Perennial rhizomatous herb; chaparral, coastal scrub; elevation 65–2,100 feet.	No	There is a low potential for this species to occur within the survey area. Although areas of potentially suitable undisturbed soil crust occur within coastal sage scrub, this conspicuous species would have been apparent during the surveys, if present.
FERNS						
ASPLENIACEAE SPLEENWORT FAMILY						
<i>Asplenium vespertinum</i> western spleenwort	--	4.2	-	Perennial herb; chaparral, cismontane woodland, coastal sage scrub; rocky habitat; blooms February–June; elevation 500–3,300 feet.	No	There is a low potential for this species to occur within the survey area. Although areas of potentially suitable rocky and mesic locales occur, focused surveys were conducted during a time when this species would have been apparent, if present.

Appendix N
Sensitive Plant Species Observed or with the Potential for Occurrence
at the El Capitan Dam Spillway Vegetation Removal Project Site

Species' <i>Scientific Name</i> Common Name	State/Federal Status	CNPS Rank	City of San Diego	Habitat/ Preference/Requirements/ Blooming Period	Observed?	Basis for Determination of Occurrence Potential
ANGIOSPERMS: DICOTS						
ASTERACEAE SUNFLOWER FAMILY						
<i>Artemisia palmeri</i> San Diego sagewort	--	4.2	-	Perennial deciduous shrub; coastal sage scrub, chaparral, riparian, mesic, sandy areas; blooms May–September; elevation less than 3,000 feet.	No	This species is not expected to occur. Although areas of potentially suitable mesic and riparian habitat occur, this perennial shrub would have been apparent during the surveys, if present.
<i>Ambrosia pumila</i> San Diego ambrosia	-/FE	1B.1	NE, MSCP	Perennial herb (rhizomatous); chaparral, coastal sage scrub, valley and foothill grasslands, creek beds, vernal pools, often in disturbed areas; blooms May–September; elevation less than 1,400 feet. Many occurrences extirpated in San Diego County.	No	There is a low potential for this species to occur within the survey area. Although areas of potentially suitable floodplain and coastal sage scrub habitats occur, focused surveys were conducted during a time when this species would have been apparent, if present.
<i>Baccharis vanessae</i> Encinitas baccharis [=Encinitas coyote brush]	CE/FT	1B.1	NE, MSCP	Perennial deciduous shrub; chaparral; maritime; sandstone; blooms August–November; elevation less than 2,500 feet. San Diego County endemic. Known from fewer than 20 occurrences. Extirpated from Encinitas area.	No	This species is not expected to occur because the survey area is outside the known range of this species and lacks suitable chaparral on sandstone soil. Also, this species would have been apparent during surveys.

Appendix N
Sensitive Plant Species Observed or with the Potential for Occurrence
at the El Capitan Dam Spillway Vegetation Removal Project Site

Species' <i>Scientific Name</i> Common Name	State/Federal Status	CNPS Rank	City of San Diego	Habitat/ Preference/Requirements/ Blooming Period	Observed?	Basis for Determination of Occurrence Potential
<i>Bahiopsis</i> [=Viguiera] <i>laciniata</i> San Diego viguiera [=San Diego County viguiera]	–/–	4.3	–	Perennial shrub; chaparral, coastal sage scrub; blooms February–June; elevation less than 2,500 feet.	No	This species is not expected to occur. Although the survey area contains potentially suitable sage scrub habitat, and this species has been recorded within 2 miles of the project (County of San Diego 2020), this perennial shrub would have been detected during the surveys, if present.
<i>Deinandra</i> [=Hemizonia] <i>conjugens</i> Otay tarplant	CE/FT	1B.1	NE, MSCP	Annual herb; clayey soils of coastal scrub openings, valley and foothill grassland; blooms April–June, elevation less than 1,000 feet.	No	This species is not expected due to the lack of suitable clay soils and the survey area occurs outside the known range of this species.
<i>Hulsea californica</i> San Diego sunflower	–/–	1B.3	–	Perennial herb; openings in coniferous forest and chaparral; blooms April– June; elevation 3,000–10,000 feet. California endemic. Known from San Diego and Riverside counties.	No	Although the nearest record of this species is from approximately 1 mile northwest of the site (County of San Diego 2020), the survey area contains few areas of suitably open chaparral. Additionally, this species would have been apparent during the surveys, if present.

Appendix N
Sensitive Plant Species Observed or with the Potential for Occurrence
at the El Capitan Dam Spillway Vegetation Removal Project Site

Species' <i>Scientific Name</i> Common Name	State/Federal Status	CNPS Rank	City of San Diego	Habitat/ Preference/Requirements/ Blooming Period	Observed?	Basis for Determination of Occurrence Potential
<i>Iva hayesiana</i> San Diego marsh-elder	--	2B.2	-	Perennial herb; marshes and swamps, playas, riparian areas; blooms April–September; elevation below 1,700 feet.	No	This species is not expected to occur. Although the survey area contains potentially suitable marsh and riparian habitat, and this species has been recorded within 2 miles of the project (CDFW 2020a), this perennial shrub would have been detected during the surveys, if present.
<i>Xanthisma junceum</i> [= <i>Machaerantha juncea</i>] rush-like bristleweed	--	4.3	-	Perennial herb; chaparral, coastal sage scrub; blooms June–January; elevation 800–3,300 feet.	Yes	A total of 41 individuals were observed within the survey area, mostly within coastal sage scrub on the large hillside north of a dirt access road in the northern portion and often in small groups, seeming to prefer areas with low non-native vegetation cover.

Appendix N
Sensitive Plant Species Observed or with the Potential for Occurrence
at the El Capitan Dam Spillway Vegetation Removal Project Site

Species' <i>Scientific Name</i> Common Name	State/Federal Status	CNPS Rank	City of San Diego	Habitat/ Preference/Requirements/ Blooming Period	Observed?	Basis for Determination of Occurrence Potential
BORAGINACEAE BORAGE FAMILY						
<i>Harpagonella palmeri</i> Palmer's grapplinghook	--	4.2	-	Annual herb; chaparral, coastal sage scrub, valley and foothill grasslands; clay soils; blooms March–May; elevation less than 3,200 feet. Inconspicuous and easily overlooked.	No	Although this species has been recorded in clay soils within 2 miles of the project site (CDFW 2020a), there is a low potential for this species to occur due to the lack of suitable clay soils within the survey area. Additionally, focused surveys were conducted during a time when this species would have been apparent, if present
BRASSICACEAE MUSTARD FAMILY						
<i>Caulanthus heterophyllus</i> [= <i>Caulanthus heterophyllus</i> var. <i>heterophyllus</i> and <i>Caulanthus stenocarpus</i>] slender-pod jewelflower	--	CBR	MSCP	Annual herb; dry, open scrub, chaparral, especially after fire, disturbance; rocky sandy loam; blooms March–May; elevation less than 4,600 feet.	No	There is a low potential for this species to occur within the survey area. Although areas of potentially suitable open coastal sage scrub habitat occurs, focused surveys were conducted during this species blooming period. Although no recent fires have occurred on-site, this species does not require fire to germinate and would have been apparent during surveys, if present.

Appendix N
Sensitive Plant Species Observed or with the Potential for Occurrence
at the El Capitan Dam Spillway Vegetation Removal Project Site

Species' <i>Scientific Name</i> Common Name	State/Federal Status	CNPS Rank	City of San Diego	Habitat/ Preference/Requirements/ Blooming Period	Observed?	Basis for Determination of Occurrence Potential
<i>Caulanthus simulans</i> Payson's jewelflower	—/—	4.2	—	Annual herb; chaparral, coastal sage scrub; sandy, granitic substrate; blooms March–June; elevation between 300 and 7,300 feet. California endemic. Known from San Diego and Riverside counties.	No	There is a low potential for this species to occur within the survey area. Although areas of potentially suitable coastal sage scrub with granitic substrate occurs, focused surveys were conducted during a time when this species would have been apparent, if present.
<i>Lepidium virginicum</i> var. <i>robinsonii</i> Robinson's peppergrass	—/—	4.3	—	Annual herb; coastal sage scrub, chaparral; blooms January–July; elevation less than 2,900 feet.	No	There is a low potential for this species to occur on-site. Although this species has been recorded in chaparral within 2 miles of the site (CDFW 2020a) and potentially suitable coastal sage scrub occurs, focused surveys were conducted during a time when this species would have been apparent, if present.
CACTACEAE CACTUS FAMILY						
<i>Cylindropuntia californica</i> var. <i>californica</i> [= <i>Opuntia</i> <i>parryi</i> var. <i>serpentina</i>] snake cholla	—/—	1B.1	NE, MSCP	Perennial stem succulent; chaparral, coastal sage scrub; blooms April–May; elevation 100–500 feet.	No	This species is not expected to occur because the survey area lacks suitable maritime habitat and it occurs outside the known range of this species.

Appendix N
Sensitive Plant Species Observed or with the Potential for Occurrence
at the El Capitan Dam Spillway Vegetation Removal Project Site

Species' <i>Scientific Name</i> Common Name	State/Federal Status	CNPS Rank	City of San Diego	Habitat/ Preference/Requirements/ Blooming Period	Observed?	Basis for Determination of Occurrence Potential
CHENOPODIACEAE GOOSEFOOT FAMILY						
<i>Aphanisma blitoides</i> aphanisma	--	1B.2	NE, MSCP	Annual herb; coastal bluff scrub, coastal sage scrub; sandy soils; blooms March–June; elevation less than 1,000 feet.	No	This species is not expected to occur because the survey area lacks suitable coastal bluff scrub and is outside the known range for this species.
CONVOLVULACEAE MORNING-GLORY FAMILY						
<i>Dichondra occidentalis</i> western dichondra	--	4.2	–	Perennial herb (rhizomatous); chaparral, cismontane woodland, coastal sage scrub, valley and foothill grasslands; blooms March–July; elevation less than 200–1,650 feet.	No	There is a low potential for this species to occur within the survey area. Although areas of potentially suitable mesic chaparral and coastal sage scrub habitats occur, focused surveys were conducted during a time when this species would have been apparent, if present.
CRASSULACEAE STONECROP FAMILY						
<i>Dudleya brevifolia</i> [= <i>D.</i> <i>blochmaniae</i> ssp. <i>brevifolia</i>] short-leaved dudleya [short- leaved live-forever]	CE/--	1B.1	NE, MSCP	Perennial herb; southern maritime chaparral, coastal sage scrub on Torrey sandstone; blooms in April; elevation less than 1,000 feet. San Diego County endemic. Known from fewer than five occurrences in the Del Mar and La Jolla areas.	No	This species is not expected to occur because the survey area lacks maritime chaparral or scrub habitats and is outside the known range of this species.

Appendix N
Sensitive Plant Species Observed or with the Potential for Occurrence
at the El Capitan Dam Spillway Vegetation Removal Project Site

Species' <i>Scientific Name</i> Common Name	State/Federal Status	CNPS Rank	City of San Diego	Habitat/ Preference/Requirements/ Blooming Period	Observed?	Basis for Determination of Occurrence Potential
<i>Dudleya variegata</i> variegated dudleya	--	1B.2	NE, MSCP	Perennial herb; openings in chaparral, coastal sage scrub, grasslands, vernal pools; blooms May–June; elevation less than 1,900 feet.	No	This species is not expected to occur because the survey area lacks suitable soil crusts or vernal pool habitats to support this species, and the survey area is outside the known range of this species.
FABACEAE LEGUME FAMILY						
<i>Astragalus deanei</i> Dean's milkvetch	--	1B.1	–	Perennial herb; chaparral, coastal sage scrub, riparian, blooms February–May, elevation 250–2,300 feet. San Diego County endemic. Known from fewer than 15 occurrences within tributaries to Otay and Sweetwater rivers.	Yes	A total of 312 individuals were mapped within the survey area throughout the coastal sage scrub on the large hillside in the northeastern portion, in small groups clustered within small swales and washes, and on the manufactured terraces north and south of the concrete spillway.

Appendix N
Sensitive Plant Species Observed or with the Potential for Occurrence
at the El Capitan Dam Spillway Vegetation Removal Project Site

Species' <i>Scientific Name</i> Common Name	State/Federal Status	CNPS Rank	City of San Diego	Habitat/ Preference/Requirements/ Blooming Period	Observed?	Basis for Determination of Occurrence Potential
<i>Astragalus oocarpus</i> San Diego milkvetch	--	1B.2	-	Perennial herb; chaparral, cismontane woodland; blooms May–August; elevation 1,000–5,000 feet. San Diego County endemic. Known from approximately 40 occurrences.	No	There is a low potential for this species to occur on-site. Although this species has been recorded in chaparral within 2 miles of the site (CDFW 2020a), areas of suitable chaparral are limited on-site. Additionally, focused surveys were conducted during a time when this species would have been apparent, if present.
<i>Astragalus tener</i> var. <i>titi</i> coastal dunes milkvetch	CE/FE	1B.1	NE, MSCP	Annual herb; coastal bluff scrub, coastal dunes, sandy soils, mesic coastal prairie; blooms March–May; elevation less than 200 feet. California endemic. Known from fewer than 10 occurrences in San Diego (presumed extirpated), Los Angeles (presumed extirpated), and Monterey counties.	No	This species is not expected to occur because the survey area lacks suitable coastal bluff scrub and occurs outside the known range of this species.
FAGACEAE OAK FAMILY						
<i>Quercus engelmannii</i> Engelmann oak	--	4.2	-	Perennial deciduous tree; cismontane and riparian woodland, valley and foothill grasslands, chaparral; blooms March–May; elevation 150–4,300 feet.	Yes	A total of 20 individuals were observed within the survey area: four large individuals were observed in the southern portion of the survey area along a dirt access road in areas mapped as southern coast live oak riparian woodland and Diegan coastal sage scrub; a solitary

Appendix N
Sensitive Plant Species Observed or with the Potential for Occurrence
at the El Capitan Dam Spillway Vegetation Removal Project Site

Species' <i>Scientific Name</i> Common Name	State/Federal Status	CNPS Rank	City of San Diego	Habitat/ Preference/Requirements/ Blooming Period	Observed?	Basis for Determination of Occurrence Potential
						Engelmann oak was observed on a terrace hanging over the southern edge of the concrete spillway; in the western portion of the survey area, six immature individuals were observed near a dirt access road, with four of these grouped together; and one large individual was observed and contained eight Engelmann oak saplings beneath the canopy.
GERANIACEAE GERANIUM FAMILY						
<i>California macrophylla</i> round-leaved filaree	--	1B.2	-	Annual herb; cismontane woodland, grassland; clay soils; blooms March–May; elevation less than 4,000 feet.	No	This species is not expected to occur due to the lack of suitable clay soils. Although this species has been recorded in the vicinity of El Capitan Reservoir, this record is not current (from 1941) and the exact location is unknown (CDFW 2020a).

Appendix N
Sensitive Plant Species Observed or with the Potential for Occurrence
at the El Capitan Dam Spillway Vegetation Removal Project Site

Species' <i>Scientific Name</i> Common Name	State/Federal Status	CNPS Rank	City of San Diego	Habitat/ Preference/Requirements/ Blooming Period	Observed?	Basis for Determination of Occurrence Potential
GROSSULARIACEAE GOOSEBERRY FAMILY						
<i>Ribes canthariforme</i> Moreno currant	--	1B.3	-	Perennial deciduous shrub; chaparral; blooms February–April; elevation 1,100–4,000 feet. San Diego County endemic.	No	There is a low potential for this species to occur on-site. Although this species has been observed in chaparral within 2 miles of the site (A. Smisek, pers. obs.), areas of suitable chaparral are limited on-site. Additionally, focused surveys were conducted during a time when this species would have been apparent, if present.
LAMIACEAE MINT FAMILY						
<i>Acanthomintha ilicifolia</i> San Diego thornmint	CE/FT	1B.1	NE, MSCP	Annual herb; chaparral, coastal sage scrub, and grasslands; friable or broken clay soils; blooms April–June; elevation less than 3,200 feet.	No	This species is not expected to occur because the survey area lacks suitable clay soil lenses.

Appendix N
Sensitive Plant Species Observed or with the Potential for Occurrence
at the El Capitan Dam Spillway Vegetation Removal Project Site

Species' <i>Scientific Name</i> Common Name	State/Federal Status	CNPS Rank	City of San Diego	Habitat/ Preference/Requirements/ Blooming Period	Observed?	Basis for Determination of Occurrence Potential
ONAGRACEAE EVENING-PRIMROSE FAMILY						
<i>Clarkia delicata</i> delicate clarkia	--	1B.2	-	Annual herb; cismontane woodland; blooms April–June; elevation 780–3,300 feet.	Yes	A total of 381 individuals were observed within the survey area in groups in the southern portion of the survey area within areas mapped as southern coast live oak riparian forest, coastal sage scrub, or scrub oak chaparral. Groups of this species mostly occur either on a north-facing slope just south of a dirt access road or within the shoulder of the road.
POLYGALACEAE MILKWORT FAMILY						
<i>Polygala cornuta</i> var. <i>fishiae</i> Fish's milkwort	--	4.3	-	Perennial deciduous shrub; cismontane woodland, riparian woodland, chaparral; blooms May–August; elevation 330–3,300 feet.	No	There is a low potential for this species to occur on-site. Although the survey area contains potentially suitable riparian habitat, focused surveys were conducted during a time when this species would have been apparent, if present.

Appendix N
Sensitive Plant Species Observed or with the Potential for Occurrence
at the El Capitan Dam Spillway Vegetation Removal Project Site

Species' <i>Scientific Name</i> Common Name	State/Federal Status	CNPS Rank	City of San Diego	Habitat/ Preference/Requirements/ Blooming Period	Observed?	Basis for Determination of Occurrence Potential
POLYGONACEAE BUCKWHEAT FAMILY						
<i>Chorizanthe leptotheca</i> peninsular spineflower	--	4.2	-	Annual herb; chaparral, coastal sage scrub, lower montane coniferous forest; alluvial fan or granitic substrate; blooms May–August; elevation 1,000–6,300 feet.	No	There is a low potential for this species to occur on site. Although the survey area contains potentially suitable scrub and herbaceous habitat with granitic substrate, focused surveys were conducted during a time when this species would have been apparent, if present.
RHAMNACEAE BUCKTHORN FAMILY						
<i>Ceanothus cyaneus</i> Lakeside ceanothus	--	1B.2	MSCP	Perennial evergreen shrub; closed-cone coniferous forest, chaparral; acid igneous or very rocky soil types; blooms April–June; elevation 800–2,500 feet.	No	This species is not expected to occur. Although this species is known to occur within 2 miles of the site (CDFW 2020a), no portions of the survey area contain suitable bouldery chaparral and acid igneous or very rocky soil types. Additionally, this species would have been apparent during the surveys, if present.

Appendix N
Sensitive Plant Species Observed or with the Potential for Occurrence
at the El Capitan Dam Spillway Vegetation Removal Project Site

Species' <i>Scientific Name</i> Common Name	State/Federal Status	CNPS Rank	City of San Diego	Habitat/ Preference/Requirements/ Blooming Period	Observed?	Basis for Determination of Occurrence Potential
ANGIOSPERMS: MONOCOTS						
AGAVACEAE AGAVE FAMILY						
<i>Agave shawii</i> var. <i>shawii</i> Shaw's agave	--	2B.1	NE, MSCP	Perennial leaf succulent; coastal bluff scrub, coastal sage scrub, maritime succulent scrub; blooms September–May; elevation less than 400 feet.	No	This species is not expected to occur because the survey area lacks suitable coastal bluff scrub and occurs outside the known range of this species.
JUNCACEAE RUSH FAMILY						
<i>Juncus acutus</i> ssp. <i>leopoldii</i> southwestern spiny rush	--	4.2	–	Perennial herb (rhizomatous); coastal dunes, meadows and seeps, coastal salt marsh, riparian; blooms May–June; elevation less than 3,000 feet.	No	This species is not expected to occur on site. Although the survey area contains potentially suitable wetland habitats, this species would have been apparent during the surveys, if present.
POACEAE GRASS FAMILY						
<i>Stipa diegoensis</i> [= <i>Achnatherum diegoense</i>] San Diego needle grass	--	4.2	–	Perennial herb; rocky soils, chaparral, coastal sage scrub, often near streams; blooms February–June; elevation less than 2,600 feet.	No	This species is not expected to occur on site. Although the survey area contains potentially suitable rocky soils with coastal sage scrub and chaparral, this species would have been apparent during the surveys, if present.

Appendix N
Sensitive Plant Species Observed or with the Potential for Occurrence
at the El Capitan Dam Spillway Vegetation Removal Project Site

Species' <i>Scientific Name</i> Common Name	State/Federal Status	CNPS Rank	City of San Diego	Habitat/ Preference/Requirements/ Blooming Period	Observed?	Basis for Determination of Occurrence Potential
THEMIDACEAE BRODIAEA FAMILY						
<i>Brodiaea filifolia</i> thread-leaved brodiaea [=thread-leaf brodiaea]	CE/FT	1B.1	NE, MSCP	Perennial herb (bulbiferous); cismontane woodland, coastal sage scrub, playas, valley and foothill grassland, vernal pools; often clay soils; blooms March–June; elevation less than 2,850 feet. California endemic. Known from San Diego, Riverside, Orange, Los Angeles, and San Bernardino counties.	No	This species is not expected to occur because the survey area lacks undisturbed clay soils and vernal pool habitats to support this species.
<i>Brodiaea orcuttii</i> Orcutt's brodiaea	--	1B.1	MSCP	Perennial herb (bulbiferous); closed cone coniferous forest, chaparral, meadows and seeps, valley and foothill grassland, vernal pools; mesic, clay soil; blooms May–July; elevation less than 5,600 feet.	No	There is a low potential for this species to occur on site due to the lack of suitably mesic grassland or vernal pool habitat, or areas of clay soil. This species is known to occur within 2 miles of the project site within seeps on a plateau of El Cajon Mountain (CDFW 2020a).

Attachment 3
Sensitive Plant Species Observed or with the Potential for Occurrence
at the El Capitan Dam Spillway Vegetation Removal Project Site

FEDERAL CANDIDATES AND LISTED PLANTS

FE = Federally listed endangered

CALIFORNIA NATIVE PLANT SOCIETY (CNPS): CALIFORNIA RARE PLANT RANKS (CRPR)

1B = Species rare, threatened, or endangered in California and elsewhere. These species are eligible for state listing.

2B = Species rare, threatened, or endangered in California but more common elsewhere. These species are eligible for state listing.

4 = A watch list of species of limited distribution. These species need to be monitored for changes in the status of their populations.

.1 = Species seriously threatened in California (over 80% of occurrences threatened; high degree and immediacy of threat).

.2 = Species fairly threatened in California (20-80% occurrences threatened; moderate degree and immediacy of threat).

.3 = Species not very threatened in California (<20% of occurrences threatened; low degree and immediacy of threat or no current threats known).

CBR = Considered but rejected

CITY OF SAN DIEGO

NE = Narrow endemic

MSCP = Multiple Species Conservation Program covered species

APPENDIX O

Sensitive Wildlife Species Occurring or with the Potential to Occur on the El Capitan Dam Spillway Vegetation Removal Project Site

Appendix O
Sensitive Wildlife Species Occurring or with the Potential to Occur
at the El Capitan Dam Spillway Vegetation Removal Project Site

Species' Common Name/ Scientific Name	Listing Status	Habitat Preference/ Requirements	Detected On-Site?	Potential to Occur On-Site?	Basis for Determination of Occurrence Potential
INVERTEBRATES (Nomenclature from Eriksen and Belk 1999; San Diego Natural History Museum 2002)					
HESPERIIDAE SKIPPERS					
Dun [=Harbison dun] skipper <i>Euphyes vestris harbisoni</i>	*	Woodland meadows, bogs, grasslands. Host plant <i>Carex spissa</i> . Adult emergence late May–early July.	No	Low	Although the host plant of this species, San Diego sedge (<i>Carex spissa</i>), was observed on-site within a small area of freshwater marsh, only a handful of host plant individuals occur here and the surrounding wetland areas do not support meadow or bog habitats preferred by this species.
NYPHALIDAE BRUSH-FOOTED BUTTERFLIES					
Quino checkerspot <i>Euphydryas editha quino</i>	FE	Open, dry areas in foothills, mesas, lake margins. Larval host plant <i>Plantago erecta</i> . Adult emergence mid-January through April.	No	Low	Although suitable habitat and host plant for this species, dot-seed plantain, occurs in many areas of scrub habitat within the survey area, no Quino were detected during the protocol-level surveys in 2018 or 2020.

Appendix O
Sensitive Wildlife Species Occurring or with the Potential to Occur
at the El Capitan Dam Spillway Vegetation Removal Project Site

Species' Common Name/ Scientific Name	Listing Status	Habitat Preference/ Requirements	Detected On-Site?	Potential to Occur On-Site?	Basis for Determination of Occurrence Potential
FISHES (Nomenclature from Page et al. 2013)					
SALMONIDAE SALMON & TROUT					
Southern steelhead - southern California Distinct Population Segment <i>Oncorhynchus mykiss irideus</i>	FE	Freshwater streams and rivers.	No	Not expected	Although the survey area includes a portion of the active floodplain of the San Diego River, water flow within this portion is ephemeral and partially regulated by outflows from the dam. No portion of the survey area contains suitably perennial flowing water.
AMPHIBIANS (Nomenclature from Crother et al. 2017)					
SALAMANDRIDAE NEWT					
California newt <i>Taricha torosa</i>	CSC	Under rocks, in or under logs, in rodent burrows. In or near streams, ponds, and reservoirs.	No	Low	Although the survey area contains suitably wet riparian habitats with occasional structural diversity (logs and rocks), these areas are likely too disturbed to support this species and lack connectivity to areas of suitable habitat and/or known occurrences of this species. This species was not detected on-site and no nearby occurrences have been recorded.

Appendix O
Sensitive Wildlife Species Occurring or with the Potential to Occur
at the El Capitan Dam Spillway Vegetation Removal Project Site

Species' Common Name/ Scientific Name	Listing Status	Habitat Preference/ Requirements	Detected On-Site?	Potential to Occur On-Site?	Basis for Determination of Occurrence Potential
PELOBATIDAE SPADEFOOT TOADS					
Western spadefoot <i>Spea hammondi</i>	CSC	Vernal pools, floodplains, and alkali flats within areas of open vegetation.	Yes	Observed, Moderate potential to breed	Three individuals of this species were observed in the central portion of the survey area in disturbed land during the 2018 surveys and five to ten individuals were heard calling within a pond at the eastern end of the southern cottonwood-willow riparian forest within the survey area during the 2020 surveys. This species may utilize the portions of the survey area that pond, including portions of the project impact area, for breeding. Water ponding is limited to small portions of the site. Other lands within and surrounding the San Diego River floodplain are likely utilized by this species for foraging.
BUFONIDAE TRUE TOADS					
Arroyo toad <i>Anaxyrus californicus</i>	FE, CSC, MSCP	Open streamside sand/gravel flats. Quiet, shallow pools along stream edges are breeding habitat. Nocturnal except during breeding season (March–July).	No	Low	The survey area mostly lacks the open sand or gravel floodplain habitats to support this species. Additionally, protocol-level surveys were conducted for this species in 2018 and 2020 and none were detected.

Appendix O
Sensitive Wildlife Species Occurring or with the Potential to Occur
at the El Capitan Dam Spillway Vegetation Removal Project Site

Species' Common Name/ Scientific Name	Listing Status	Habitat Preference/ Requirements	Detected On-Site?	Potential to Occur On-Site?	Basis for Determination of Occurrence Potential
RANIDAE TRUE FROGS					
California red-legged frog <i>Rana draytonii</i>	FT, CSC, MSCP	Slow-moving streams, ponds, etc., with dense vegetation cover providing shade over water surface.	No	Not expected	The survey area lacks perennial streams or ponded areas to support this species. The perennial water of the El Capitan Reservoir lacks areas of dense vegetation.
REPTILES (Nomenclature from Crother et al. 2017)					
EMYDIDAE BOX & WATER TURTLES					
Southwestern pond turtle <i>Actinemys pallida</i>	CSC, MSCP	Ponds, small lakes, marshes, slow-moving, sometimes brackish water.	No	Not expected	The portions of the survey area that pond for a suitable amount of time are limited and this species is unlikely to use the open water within the El Capitan Reservoir due to the lack of suitable shoreline habitat.
GEKKONIDAE GECKOS					
San Diego banded gecko <i>Coleonyx variegatus abbotti</i>	CSC	Granite and rocky outcrops in coastal sage scrub and chaparral.	No	Moderate	Portions of the scrub habitat within the survey area contain suitably rocky granitic outcrops to support this species. However, this species is unlikely to occur within the project impact area because the scrub habitats lack granitic outcrops and the riparian vegetation is not suitable for this species.

Appendix O
Sensitive Wildlife Species Occurring or with the Potential to Occur
at the El Capitan Dam Spillway Vegetation Removal Project Site

Species' Common Name/ Scientific Name	Listing Status	Habitat Preference/ Requirements	Detected On-Site?	Potential to Occur On-Site?	Basis for Determination of Occurrence Potential
IGUANIDAE IGUANID LIZARDS					
Blainville's horned lizard <i>Phrynosoma blainvillii</i> [= <i>P. coronatum</i> coastal population]	CSC, MSCP, *	Chaparral, coastal sage scrub with fine, loose soil. Partially dependent on harvester ants for forage.	No	Moderate	The coastal sage scrub and scrub oak chaparral within the survey area contain loose soils and would be suitable for this species. However, there is a low potential for this species to occur in the project impact area due to the disturbed and compacted soil. The nearest record of this species is from approximately 0.7 mile south of the site in similar scrub habitat (County of San Diego 2020).
SCINCIDAE SKINKS					
Coronado skink <i>Plestiodon</i> [= <i>Eumeces</i>] <i>skiltonianus</i> <i>interparietalis</i>	CSC	Grasslands, open woodlands and forest, broken chaparral. Rocky habitats near streams.	No	Moderate	The riparian woodland and forest habitats within the survey area, including the project impact area, provide suitable habitat for this species, which has been recorded within 2 miles of the site in nearby Chocolate Canyon (County of San Diego 2020). This species is not expected within the scrub habitat within the project impact area.

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Sensitive Wildlife Species Occurring or with the Potential to Occur
at the El Capitan Dam Spillway Vegetation Removal Project Site

Species' Common Name/ Scientific Name	Listing Status	Habitat Preference/ Requirements	Detected On-Site?	Potential to Occur On-Site?	Basis for Determination of Occurrence Potential
TEIIDAE WHIPTAIL LIZARDS					
Belding's orange-throated whiptail <i>Aspidoscelis hyperythra beldingi</i>	CSC, MSCP	Chaparral, coastal sage scrub with coarse sandy soils and scattered brush.	Yes	Observed	Four individuals were observed within coastal sage scrub in the northern and southern portions of the survey area. This species has a moderate potential to occur in a variety of habitats within the project impact area.
San Diegan tiger whiptail <i>Aspidoscelis tigris stejnegeri</i>	CSC	Coastal sage scrub, chaparral, woodlands, and streamsides where plants are sparsely distributed.	No	Observed	One individual was observed within disturbed land in the southern portion of the survey area. This species has a moderate potential to occur in a variety of habitats within the project impact area.
ANNIELLIDAE LEGLESS LIZARDS					
San Diegan legless lizard <i>Anniella stebbinsi</i> [<i>A. pulchra pulchra</i>]	CSC	Herbaceous layers with loose soil in coastal scrub, chaparral, and open riparian. Prefers dunes and sandy washes near moist soil.	No	High	The survey area contains suitable coastal sage scrub and riparian habitats with loose sandy soil to support this species. There is a high potential for this species to occur in the riparian habitat within the project impact area. Additionally, this species has been recorded in similar habitat within 2 miles of the project site (County of San Diego 2020).

Appendix O
Sensitive Wildlife Species Occurring or with the Potential to Occur
at the El Capitan Dam Spillway Vegetation Removal Project Site

Species' Common Name/ Scientific Name	Listing Status	Habitat Preference/ Requirements	Detected On-Site?	Potential to Occur On-Site?	Basis for Determination of Occurrence Potential
BOIDAE BOAS					
Rosy boa <i>Lichanura orcutti</i> [=trivirgata roseofusca]	*	Coastal sage scrub, chaparral in inland and desert locales with rocky soils.	No	Moderate	Although this species has not been recorded in the vicinity of the project or observed during the biological surveys for this project, suitable coastal sage scrub habitat occurs within the survey area. This species has a low potential to occur in the scrub habitat of the project impact area due to the mostly compacted and disturbed soils, and the riparian habitat provides only marginally suitable habitat.
COLUBRIDAE COLUBRID SNAKES					
California glossy snake <i>Arizona elegans occidentalis</i>	CSC	Scrub and grassland habitats, often with loose or sandy soils.	No	High	The survey area contains large areas of suitable scrub habitat with loose soils. However, the project impact area mostly lacks these habitats. The scrub habitat within the project impact area contains mostly disturbed and compacted soils, and the riparian habitat is not preferred by this species. The nearest record of this species is approximately 1 mile northwest of the site (County of San Diego 2020).

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Sensitive Wildlife Species Occurring or with the Potential to Occur
at the El Capitan Dam Spillway Vegetation Removal Project Site

Species' Common Name/ Scientific Name	Listing Status	Habitat Preference/ Requirements	Detected On-Site?	Potential to Occur On-Site?	Basis for Determination of Occurrence Potential
San Diego ring-necked snake <i>Diadophis punctatus similis</i>	*	Rocky areas in wet locales, such as swamps, damp forests, or riparian woodlands.	No-	Moderate	Although this species was not detected on-site, the survey area, including the riparian habitats within the project impact area, contains suitably rocky wet areas to support this species. This species is less likely to occur in the scrub habitat within the project impact area due to the general lack of suitably moist locales.
Coast patch-nosed snake <i>Salvadora hexalepis virgultea</i>	CSC	Grasslands, chaparral, sagebrush, desert scrub. Found in sandy and rocky areas.	No	High	The survey area contains large areas of suitable scrub habitat with sandy and/or rocky soils. However, the project impact area mostly lacks these habitats. This species has been recorded within 2 miles of the project site (County of San Diego 2020).
Two-striped gartersnake <i>Thamnophis hammondi</i>	CSC, *	Permanent freshwater streams with rocky bottoms. Mesic areas.	No	Low	Although this species has been recorded within 2 miles of the project site (County of San Diego 2020), the survey area lacks a permanent stream to support this species.

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Sensitive Wildlife Species Occurring or with the Potential to Occur
at the El Capitan Dam Spillway Vegetation Removal Project Site

Species' Common Name/ Scientific Name	Listing Status	Habitat Preference/ Requirements	Detected On-Site?	Potential to Occur On-Site?	Basis for Determination of Occurrence Potential
CROTALIDAE RATTLESNAKES					
Red diamond rattlesnake <i>Crotalus ruber</i>	CSC	Desert scrub and riparian, coastal sage scrub, open chaparral, grassland, and agricultural fields.	Yes	Observed	One individual was observed within coastal sage scrub in the southern portion of the survey area. This species has a moderate potential to occur in a variety of habitats within the project impact area.
BIRDS (Nomenclature from Chesser et al. 2018 and Unitt 2004)					
ANATIDAE DUCKS, GEESE, & SWANS					
Cackling [=Aleutian Canada] goose (wintering) <i>Branta hutchinsii</i> [=Canadensis] <i>leucopareia</i>	(Fed. delisted)	Large lakes or bodies of fresh water. Localized winter visitor.	No	Low	A small portion of the survey area contains the open water of El Capitan Reservoir, which could be suitable for this species. However, the majority of the survey area does not contain suitable habitat.
PELECANIDAE PELICANS					
American white pelican (nesting colony) <i>Pelecanus erythrorhynchos</i>	CSC	Lagoons, bays, estuaries, freshwater ponds; inland lakes during spring migration. Migrant and winter visitor.	No	Low	A small portion of the survey area contains the open water of El Capitan Reservoir, which could be suitable for this species. However, the majority of the survey area does not contain suitable habitat.

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Sensitive Wildlife Species Occurring or with the Potential to Occur
at the El Capitan Dam Spillway Vegetation Removal Project Site

Species' Common Name/ Scientific Name	Listing Status	Habitat Preference/ Requirements	Detected On-Site?	Potential to Occur On-Site?	Basis for Determination of Occurrence Potential
ARDEIDAE HERONS & BITTERNs					
Great egret (rookery site) <i>Ardea alba</i>	*	Lagoons, bays, estuaries. Ponds and lakes in the coastal lowland. Winter visitor, uncommon in summer.	Yes	Observed, Not expected (rookery site)	One individual of this species was observed flying over the project site. A rookery site has been recorded in a gum tree along the El Capitan Reservoir (Unitt 2004). Although this species is likely to utilize the survey area for foraging, no rookery site is expected to occur as this would have been detected during surveys.
Great blue heron (rookery site) <i>Ardea herodias</i>	*	Bays, lagoons, ponds, lakes. Non-breeding year-round visitor, some localized breeding.	Yes	Observed, Not expected (rookery site)	One individual of this species was observed flying over the project site. Nesting near the El Capitan Reservoir has been recorded (Unitt 2004). Although this species is likely to utilize the survey area for foraging, no rookery site is expected to occur as this would have been detected during surveys.
Green heron (rookery site) <i>Butorides virescens</i>	*	Riparian woodland, lakes, ponds, brackish lagoons.	No	Moderate (foraging), Not expected (rookery site)	The survey area contains suitable riparian and wetland areas for this species to utilize for foraging. However, no rookery site is expected to occur as this would have been detected during surveys.

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Sensitive Wildlife Species Occurring or with the Potential to Occur
at the El Capitan Dam Spillway Vegetation Removal Project Site

Species' Common Name/ Scientific Name	Listing Status	Habitat Preference/ Requirements	Detected On-Site?	Potential to Occur On-Site?	Basis for Determination of Occurrence Potential
Snowy egret (rookery site) <i>Egretta thula</i>	*	Coastal waters and freshwater ponds and lakes. Winter visitor, summer resident. Localized breeding colonies.	No	Moderate (foraging), Not expected (rookery site)	The survey area contains suitable riparian and wetland areas for this species to utilize for foraging. A rookery site has been recorded in a gum tree along the El Capitan Reservoir (Unitt 2004). However, no rookery site is expected to occur as this would have been detected during surveys.
Black-crowned night heron (rookery site) <i>Nycticorax nycticorax</i>	*	Lagoons, estuaries, bayshores, ponds, and lakes. Often roost in trees. Year-round visitor. Localized breeding.	No	Moderate (foraging), Not expected (rookery site)	The survey area contains suitable wetland areas for this species to utilize for foraging. However, there are no recorded rookery sites in the vicinity, and rookeries would have been detected during surveys if present.
ACCIPITRIDAE HAWKS, KITES, & EAGLES					
Cooper's hawk (nesting) <i>Accipiter cooperii</i>	WL, MSCP	Mature forest, open woodlands, wood edges, river groves. Parks and residential areas.	Yes	High (nesting)	A pair of Cooper's hawks were observed flying over the site. This species has a high potential to forage and nest in mature trees within the survey area, including within the project impact area.

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Sensitive Wildlife Species Occurring or with the Potential to Occur
at the El Capitan Dam Spillway Vegetation Removal Project Site

Species' Common Name/ Scientific Name	Listing Status	Habitat Preference/ Requirements	Detected On-Site?	Potential to Occur On-Site?	Basis for Determination of Occurrence Potential
Golden eagle (nesting and wintering) <i>Aquila chrysaetos canadensis</i>	CSC, CFP, BEPA,	Require vast foraging areas in grassland, broken chaparral, or sage scrub. Nest in cliffs and boulders. Uncommon resident.	No	Moderate (foraging), Not expected (nesting/wintering)	An active nesting location for this species is known to occur on the steep and rocky slopes of nearby El Cajon Mountain (CDFW 2020a). Although this species may utilize portions of the survey area for foraging, nesting and wintering are not expected within the survey area.
White-tailed kite (nesting) <i>Elanus leucurus</i>	CFP, *	Nest in riparian woodland, oaks, sycamores. Forage in open, grassy areas. Year-round resident.	No	Moderate	Although this species was not detected during the project biological surveys, the survey area, including the project impact area, contains suitable riparian woodland habitat to support this species nesting and the adjacent areas are suitable for foraging.
Bald eagle <i>Haliaeetus leucocephalus</i>	(Fed. Delisted), SE, CFP, BEPA, MSCP	Rivers, lakes. Rare winter visitor, rare fall migrant. Feed mainly on fish.	Yes	Low (foraging), Not expected (nesting)	This species is known to roost in tall trees and forage around the El Capitan Reservoir and one individual was observed flying overhead during a biological survey. This species is not likely to utilize the survey area for foraging due to the lack of suitable prey and nesting is not expected within the survey area.

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Sensitive Wildlife Species Occurring or with the Potential to Occur
at the El Capitan Dam Spillway Vegetation Removal Project Site

Species' Common Name/ Scientific Name	Listing Status	Habitat Preference/ Requirements	Detected On-Site?	Potential to Occur On-Site?	Basis for Determination of Occurrence Potential
FALCONIDAE FALCONS & CARACARAS					
Peregrine falcon <i>Falco peregrinus anatum</i>	(State Delisted), CFP, MSCP	Open coastal areas, mud flats. Rare inland. Rare fall and winter resident, casual in late spring and early summer. Local breeding populations extirpated.	Yes	Not expected	One individual was observed flying over an area outside the survey area. The survey area is not expected to be used by this species for foraging or nesting.
TYRANNIDAE TYRANT FLYCATCHERS					
Olive-sided flycatcher <i>Contopus cooperi</i>	CSC	Extensive conifer stands in San Diego Mtns.	Yes	Observed (foraging), Not expected (nesting)	One individual was observed in southern riparian woodland in the central portion of the survey area. The survey area may contain suitable areas for this species to use for foraging, but it is not expected to support this species nesting.
Southwestern willow flycatcher <i>Empidonax traillii extimus</i>	FE, SE, MSCP	Nesting restricted to willow thickets. Also occupies other woodlands. Rare spring and fall migrant, rare summer resident. Extremely localized breeding.	No	Not expected	The riparian woodland habitat in the survey area is only marginally suitable and lacks the willow thickets preferred by this species. One male willow flycatcher (<i>Empidonax traillii</i> ; subspecies unknown) was detected on May 16, 2020 but is presumed to be a migratory individual (HELIX 2020c). Nesting and establishment of territories by this species is not expected.

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Sensitive Wildlife Species Occurring or with the Potential to Occur
at the El Capitan Dam Spillway Vegetation Removal Project Site

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VIREONIDAE VIREOS					
Least Bell's vireo (nesting) <i>Vireo bellii pusillus</i>	FE, SE, MSCP	Willow riparian woodlands. Summer resident.	Yes	Observed	A total of five male least Bell's vireo detections were recorded during the 2020 surveys, occurring within the southern cottonwood-willow riparian forest both within the survey area and immediately downstream (west) of the survey area, as well as within the eucalyptus woodland in the northern portion of the survey area (HELIX 2020b). However, no nests or territories were detected during the protocol-level surveys. The southern cottonwood willow riparian forest on-site is suitable to support this species nesting.

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Sensitive Wildlife Species Occurring or with the Potential to Occur
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Species' Common Name/ Scientific Name	Listing Status	Habitat Preference/ Requirements	Detected On-Site?	Potential to Occur On-Site?	Basis for Determination of Occurrence Potential
POLIOPTILIDAE GNATCATCHERS					
Coastal California gnatcatcher <i>Polioptila californica californica</i>	FT, CSC, MSCP	Coastal sage scrub, maritime succulent scrub. Resident.	No	Low	Although there are numerous records of this species within 1 mile of the site (CDFW 2020b), no individuals of this species were detected during protocol-level surveys conducted within the survey area in 2018 or 2020. The sage scrub within the survey area varies in shrub density and dominant shrub species. Small portions provide low to moderate quality habitat for this species. However, the majority of coastal sage scrub provides only low-quality habitat. The project impact area contains very few areas of moderate-quality scrub to support this species.
TURDIDAE THRUSHES					
Western bluebird <i>Sialia mexicana</i>	MSCP	Open woodlands, farmlands, orchards.	No	Low	The survey area contains limited areas of suitably open woodland habitat to support this species. Additionally, this species likely would have been detected during surveys, if present.

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Sensitive Wildlife Species Occurring or with the Potential to Occur
at the El Capitan Dam Spillway Vegetation Removal Project Site

Species' Common Name/ Scientific Name	Listing Status	Habitat Preference/ Requirements	Detected On-Site?	Potential to Occur On-Site?	Basis for Determination of Occurrence Potential
PARULIDAE WOOD WARBLERS					
Yellow warbler (nesting) <i>Setophaga [=Dendroica] petechia</i>	CSC	Breeding restricted to riparian woodland. Spring and fall migrant, localized summer resident, rare winter visitor.	Yes	Observed, High (nesting)	Two individuals of this species were observed in southern cottonwood-willow riparian forest within the project impact area and one was observed in eucalyptus woodland in the northern portion of the survey area. The survey area, including the project impact area, contains suitable riparian forest and woodland habitats for this species to use for foraging and nesting.
Yellow-breasted chat (nesting) <i>Icteria virens</i>	CSC	Dense riparian woodland. Localized summer resident.	Yes	Observed, High (nesting)	One individual of this species was observed in riparian forest habitat approximately 1,000 feet west of the survey area. The survey area, including the project impact area, contains suitable riparian forest and woodland habitats for this species to use for foraging and nesting.

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Sensitive Wildlife Species Occurring or with the Potential to Occur
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Species' Common Name/ Scientific Name	Listing Status	Habitat Preference/ Requirements	Detected On-Site?	Potential to Occur On-Site?	Basis for Determination of Occurrence Potential
PASSERELLIDAE NEW WORLD PASSERINES					
Southern California rufous-crowned sparrow <i>Aimophila ruficeps canescens</i>	WL, MSCP	Coastal sage scrub, chaparral, grassland. Resident.	Yes	Observed, High (nesting)	A total of 23 individuals of this species were observed in the survey area, mostly on the large hillside north of the spillway in open coastal sage scrub. The areas of open coastal sage scrub on the large hillside are highly suitable for this species to use for foraging and nesting. Based on on-site observations, this species may also utilize the coastal sage scrub adjacent to the spillway and within the project impact area. Although nesting adjacent to the spillway is less likely compared to the northern hillside, there is still a moderate potential for nesting within the coastal sage scrub of the project impact area.
ICTERIDAE BLACKBIRDS & NEW WORLD ORIOLES					
Tricolored blackbird <i>Agelaius tricolor</i>	CSC, MSCP	Freshwater marshes, agricultural areas, lakeshores, parks. Localized resident.	No	Low	Although this species has been recorded within 2 miles of the site (County of San Diego 2020), the survey area lacks suitably large stands of freshwater marsh or emergent wetland vegetation.

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Sensitive Wildlife Species Occurring or with the Potential to Occur
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Species' Common Name/ Scientific Name	Listing Status	Habitat Preference/ Requirements	Detected On-Site?	Potential to Occur On-Site?	Basis for Determination of Occurrence Potential
MAMMALS (Nomenclature from Jones et al. 1997 and Hall 1981)					
VESPERTILIONIDAE VESPER BATS					
Townsend's [=western] big-eared bat <i>Corynorhinus townsendii</i>	CSC	Caves, mines, buildings. Found in a variety of habitats, arid and mesic. Individual or colonial. Extremely sensitive to disturbance.	No	Moderate (foraging), Low (roosting)	The survey area contains suitable habitat for this species to forage but lacks suitable isolated mines, caves, or buildings for this species to use for roosting or maternal colonies.
Western red bat <i>Lasiurus blossevillii</i>	CSC	Day-roosts in tall riparian trees, such as cottonwood or sycamore, forages along river or stream courses. In San Diego County, it is typically found roosting and foraging in riparian habitat along major rivers and stream courses, such as the San Diego River.	No	High	The survey area, including the project impact area, contains suitable riparian habitat to support this species foraging and roosting. This species is not expected to utilize the scrub habitats within the project impact area or surrounding survey area.
Western yellow bat <i>Lasiurus xanthinus</i>	CSC	Formerly found exclusively in palm oases in desert habitats but in recent years has been found increasingly in coastal environments.	No	Moderate	Although this species is more common in desert habitats, it may utilize the riparian habitat within the survey area and project impact area for foraging and roosting. This species is not expected to utilize the scrub habitats within the project impact area or surrounding survey area.

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Species' Common Name/ Scientific Name	Listing Status	Habitat Preference/ Requirements	Detected On-Site?	Potential to Occur On-Site?	Basis for Determination of Occurrence Potential
MOLOSSIDAE FREE-TAILED BATS					
Western mastiff bat <i>Eumops perotis californicus</i>	CSC	Woodlands, rocky habitat, arid and semiarid lowlands, cliffs, crevices, buildings, tree hollows. Audible echolocation signal.	No	High	This species was recorded within 2 miles of the site in El Monte County Park, which contains large trees and open areas of non-native grass (CDFW 2020a). Additionally, a possible detection of a maternity colony of this species occurred in 1998 within the cut slope in the northern portion of the survey area (Clark and Stokes 2018). Although the possible detection is old, conditions on the cut slope have changed little. This species may utilize this cut slope for a maternity colony but is not expected to use any portion of the project impact area for a maternity colony. This species may forage within the impact area.

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Sensitive Wildlife Species Occurring or with the Potential to Occur
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Species' Common Name/ Scientific Name	Listing Status	Habitat Preference/ Requirements	Detected On-Site?	Potential to Occur On-Site?	Basis for Determination of Occurrence Potential
Pocketed free-tailed bat <i>Nyctinomops femorosaccus</i>	CSC	Normally roost in crevice in rocks, slopes, cliffs. Lower elevations in San Diego and Imperial Counties. Colonial. Leave roosts well after dark.	No	High	This species was recorded within 2 miles of the site in El Monte County Park, which contains large trees and open areas of non-native grass (CDFW 2020a). Additionally, a possible detection of a maternity colony of this species occurred in 1998 in the cut slope in the northern portion of the survey area (Clark and Stokes 2018). Although the observation is old, conditions on the cut slope have changed little, so this species may utilize this cut slope for a maternity colony but is not expected to use any portion of the project impact area for a maternity colony. This species may forage within the impact area.

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Sensitive Wildlife Species Occurring or with the Potential to Occur
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Species' Common Name/ Scientific Name	Listing Status	Habitat Preference/ Requirements	Detected On-Site?	Potential to Occur On-Site?	Basis for Determination of Occurrence Potential
Big free-tailed bat <i>Nyctinomops macrotis</i>	CSC	Rugged, rocky terrain. Roost in crevices, buildings, caves, tree holes. Very rare in San Diego County. Colonial. Migratory.	No	High	A possible detection of a maternity colony of this species occurred in 1998 within the cut slope in the northern portion of the survey area (Clark and Stokes 2018). Although the observation is old, conditions on the cut slope have changed little. This species may utilize this cut slope for a maternity colony but is not expected to use any portion of the project impact area for a maternity colony. This species may forage within the impact area.

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HETEROMYIDAE POCKET MICE & KANGAROO RATS					
Dulzura pocket mouse <i>Chaetodipus californicus femoralis</i>	CSC	Brushy areas of coastal sage scrub, chamise-redshank & montane chaparral, sagebrush, annual grassland, valley foothill hardwood, valley foothill hardwood-conifer & montane hardwood. Probably most attracted to interface of grassland and brush.	No	High	CNDDDB records indicate that one individual of this species was trapped and identified in the western portion of the survey area in 1993 (CDFW 2020a). Although the record is over 20 years old, conditions on site are assumed to be little changed. This species has a high potential to utilize the scrub habitat within the survey area. However, the similar scrub habitats within the project impact area contain mostly disturbed and compacted soil, decreasing the potential for occurrence to moderate in these areas. This species has a low potential to occur within the riparian habitats on-site.

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Species' Common Name/ Scientific Name	Listing Status	Habitat Preference/ Requirements	Detected On-Site?	Potential to Occur On-Site?	Basis for Determination of Occurrence Potential
MURIDAE OLD WORLD MICE & RATS					
San Diego desert woodrat <i>Neotoma lepida intermedia</i>	CSC	Coastal sage scrub and chaparral.	No	High	Woodrat tracks were observed during the biological surveys. However, they could not be identified to species and no middens were observed. The San Diego desert woodrat has a high potential to utilize the chaparral habitat in the southern portion of the survey area and a moderate potential to utilize areas of dense coastal sage scrub within the survey area. However, this potential is decreased to low for the scrub habitat within the project impact area due to the lack of dense vegetation and rock outcrops. It has a low potential to occur in the riparian habitat within the project impact area.
PROCYONIDAE PROCYONIDS					
Ringtail <i>Bassariscus astutus</i>	CFP	Cliffs, rocky ravines, chaparral communities.	No	Low	Although the northern portion of the survey area contains a steep and rocky cut slope, this area is limited in size and the remainder of the survey area lacks extensive areas of rocky cliffs or ravines preferred by this species.

Appendix O
Sensitive Wildlife Species Occurring or with the Potential to Occur
at the El Capitan Dam Spillway Vegetation Removal Project Site

Species' Common Name/ Scientific Name	Listing Status	Habitat Preference/ Requirements	Detected On-Site?	Potential to Occur On-Site?	Basis for Determination of Occurrence Potential
FELIDAE CATS					
Mountain lion <i>Puma concolor</i>	CFP, MSCP	Many habitats.	No	High	Because the survey area occurs within a large expanse of mostly undeveloped land and within a large wildlife corridor, this species likely occasionally utilizes the habitat in the vicinity of the project site for hunting, mating, and general movement.
CERVIDAE DEER					
Southern mule deer <i>Odocoileus hemionus fuliginata</i>	MSCP	Many habitats.	Yes	Observed	Tracks and scat of this species were observed in sage scrub habitat within the northern portion of the survey area (see Figure 5). The project impact area and surrounding land likely serve as a movement corridor for this species, including the potential for this species to utilize on-site habitats for breeding and/or rearing young.

Appendix O
Sensitive Wildlife Species Occurring or with the Potential to Occur
at the El Capitan Dam Spillway Vegetation Removal Project Site

Species' Common Name/ Scientific Name	Listing Status	Habitat Preference/ Requirements	Detected On-Site?	Potential to Occur On-Site?	Basis for Determination of Occurrence Potential
STATUS CODES					
<u>Listed/Proposed</u>					
FE	=	Listed as endangered by the federal government			
FPE	=	Federally proposed endangered			
FPT	=	Federally proposed threatened			
FT	=	Listed as threatened by the federal government			
SE	=	Listed as endangered by the state of California			
SCE	=	State candidate for listing as Endangered			
<u>Other</u>					
BEPA	=	Bald and Golden Eagle Protection Act			
CFP	=	California fully protected species			
CSC	=	California Department of Fish and Wildlife species of special concern			
WL	=	California Department of Fish and Wildlife watch list species			
MSCP	=	City and County of San Diego Multiple Species Conservation Program covered species			
*	=	Taxa listed with an asterisk fall into one or more of the following categories:			
		• Taxa considered endangered or rare under Section 15380(d) of CEQA guidelines			
		• Taxa that are biologically rare, very restricted in distribution, or declining throughout their range			
		• Population(s) in California that may be peripheral to the major portion of a taxon's range but which are threatened with extirpation within California			
		• Taxa closely associated with a habitat that is declining in California at an alarming rate (e.g., wetlands, riparian, old growth forests, desert aquatic systems, native grasslands)			