Appendix D

Biological Resources Report for the Alpine County Park Project

BIOLOGICAL RESOURCES REPORT FOR THE ALPINE COUNTY PARK PROJECT

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Acronyms and Abbreviations

°F	degrees Fahrenheit
APM	applicant-proposed measure
BMO	Biological Mitigation Ordinance
BRCA	Biological Resource Core Area
BSA	Biological Study Area
CAGN	California gnatcatcher
CAL FIRE	California Department of Forestry and Fire Protection
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFWO	Carlsbad Fish and Wildlife Office
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
County	County of San Diego
CRPR	California Rare Plant Rank
CWA	Clean Water Act
DPR	Department of Parks and Recreation
FEOA	Fire and Emergency Operational Assessment
FESA	federal Endangered Species Act
FGC	Fish and Game Code
FS	fairy shrimp
FS Guidelines	*Survey Guidelines for the Listed Large Branchiopods*
GPS	global positioning system
HCB	Hermes copper butterfly
HCP	habitat conservation plan
HREP	Habitat Restoration and Enhancement Plan
ITP	incidental take permit
MBTA	Migratory Bird Treaty Act
MSCP	San Diego Multiple Species Conservation Program
NCCP	natural community conservation plan
NPPA	Native Plant Protection Act
NWI	National Wetlands Inventory
Project	Alpine Park Project
QCB	Quino checkerspot butterfly
QCB Guidelines	*Quino Checkerspot Butterfly Survey Guidelines*
RWQCB	Regional Water Quality Control Board

SanGIS	San Diego Geographic Information Source
USACE	U.S. Army Corps of Engineers
USDA/NRCS	U.S. Department of Agriculture, Natural Resources Conservation Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

Chapter 1
Introduction

1.1 Purpose of the Report

The County of San Diego (County) Department of Parks and Recreation (DPR) is proposing to construct the approximately 23-acre Alpine Park Project (Project) in the community of Alpine, California. This Biological Resources Report documents the biological resources present and potentially present in and around the Project site; identifies impacts on biological resources resulting from the Project; and recommends measures to avoid, minimize, and mitigate significant impacts consistent with federal, state, and local regulations, including the California Environmental Quality Act (CEQA) and the San Diego Multiple Species Conservation Program (MSCP). This Biological Resources Report completely replaces the prior version, which can be found at https://ceqanet.opr.ca.gov/2021030196/3. Because of the extensive changes in this Biological Resources Report, it was not conducive to cross out/underline changes. The original version is available at the aforementioned link. The Biological Survey Area (BSA) includes the entirety of the approximately 96.6-acre Project site. Note that only 94.2 net acres required surveys because 2.4 acres of the parcel is within the public right-of-way along South Grade Road.

This document will show conformance with the County's Biological Mitigation Ordinance (BMO), the implementing document for the MSCP County of San Diego Subarea Plan (County 1997), although DPR is exempt from the BMO. Furthermore, the environmental conditions described herein have been used to demonstrate compliance with other federal, state, and local regulations, such as the federal Clean Water Act (CWA) and state Streambed Alteration Program.

The County acquired the 96.6-acre Project site in early 2019—specifically, to build a County-owned public park and establish preserve land within the remainder of the area outside of the Alpine County Park. The County would manage the approximately 67.5-acre Alpine Park Preserve in perpetuity to support the preserve assembly envisioned under the MSCP. Intensive biological surveys occurred on the Project site in 2019, as further described below.

1.2 Project Location and Description

The Project site is in the community of Alpine, California, in south-central San Diego County, approximately 1.3 miles south of the Tavern Road and Interstate 8 intersection (Figure 1, Regional Vicinity Map [all figures are included in Appendix A, Figures]). Specifically, the Project site is along South Grade Road, approximately 1 mile east of the intersection of Tavern Road and South Grade Road. The Project occurs within the U.S. Geological Survey (USGS) Alpine 7.5-minute topographical quadrangle maps (Esri 2020; Figure 2, Project Vicinity). The approximate center coordinates for the Project in decimal degree format (NAD 83) are 32.82058°N and -116.75918°W. The Project site is currently an undeveloped grassy field with multiple informal use trails but no permanent structures or infrastructure.

1.3 Survey Methods

1.3.1 Literature and Records Search

A literature and records search was conducted to establish the existence or potential occurrence of sensitive biological resources (e.g., plant or animal species) or water resources within the BSA.

The following databases/resources were reviewed:

- California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB) (CDFW 2020), including occurrences within 5 miles of the BSA.
- California Native Plant Society's (CNPS's) Online Inventory of Rare and Endangered Plants, eighth edition (CNPS 2019).
- U.S. Fish and Wildlife Service (USFWS) Carlsbad Fish and Wildlife Office (CFWO) species occurrence data (USFWS CFWO 2019).
- SanBIOS sensitive species sightings (San Diego Association of Governments [SANDAG] 2019).
- National Wetlands Inventory (NWI) database (USFWS 2019).
- U.S. Department of Agriculture, Natural Resources Conservation Service, soil survey maps (USDA/NRCS 2019).

For the purposes of this report, species are considered to be sensitive or have special status if they meet at least one of the following criteria:

- Species listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (FESA) (Title 50, Code of Federal Regulations, Part 17.12 [listed plants]); 50 Code of Federal Regulations, Part 17.11 (listed animals); and various notices in the *Federal Register* (proposed species).
- Species that are candidates for possible future listing as threatened or endangered under the FESA.
- Species listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act (CESA) (14 California Code of Regulations 670.5).
- Plant species listed as rare under the California Native Plant Protection Act (NPPA) (California Fish and Game Code [FGC] 1900 et seq.).
- Species that meet the definitions of "rare" or "endangered" under CEQA (CEQA Guidelines Sections 15380 and 15125).
- Animal species designated by CDFW as Species of Special Concern.
- Animals that are "fully protected" in California (California FGC Sections 3511 [birds], 4700 [mammals], 5050 [amphibians and reptiles], and 5515 [fish]).
- Species listed as having a California Rare Plant Rank (CRPR) of 1A (presumed extinct in California), 1B (rare, threatened, and endangered in California and elsewhere), or 2 (rare, threatened, or endangered in California but more common elsewhere). All of the plants constituting CRPR 1A, 1B, and 2 are eligible for state listing and meet the definition of rare or endangered under CEQA Section 15125 (c) and/or Section 15380.

- Many of the species listed as having a CRPR of 3 (review list). Nearly all of the CRPR 3 species are taxonomically problematic (CNPS 2020a). Many of the plants constituting CRPR 3 meet the definitions of threatened or endangered under the CESA and are eligible for state listing. These species are considered special status because they may meet the definition of rare or endangered under CEQA Guidelines Section 15125 (c) and/or Section 15380 (CNPS 2020a).
- CRPR List 4 species may meet the definitions of special status, as defined in the NPPA, California FGC Section 1901, or the CESA, California FGC Sections 2050 through 2098, if there are unique occurrences such as plants at the extreme limits of their range, taxa occurring on unusual substrates, unique occurrences, or individuals with unusual morphology (CNPS 2020b).
- Plant species included in the County Sensitive Plant List and animal species included in the County Sensitive Animal List, both contained within the County's *Guidelines for Determining Significance Biological Resources* (County of San Diego 2010b).

1.3.2 Survey Methodology

The BSA includes the approximately 94.2-acre Project site in the unincorporated community of Alpine in San Diego County, adjacent to Wright's Field and South Grade Road, south of the Alpine community center. ICF biologists conducted the following surveys in the BSA: (1) vegetation surveys with habitat community, special-status plant, and California Invasive Plant Council invasive plant species mapping components; (2) special-status plant surveys; and (3) special-status wildlife surveys.

The following sources were followed for taxonomy and nomenclature:

- Plant scientific names: Baldwin et al. (2012) and corresponding updates in Jepson Herbarium eFlora (2021).
- Plant common names: Rebman and Simpson (2014) and Jepson eFlora (as applicable).
- Special-status plant names: CNPS Rare Plant Inventory (CNPS 2019).
- Higher taxonomic categories of invertebrate animals: Arnett (2000) and North American Butterfly Association (2016), Opler and Wright (1999), or Hogue (1993) for invertebrate species.
- Amphibians and reptiles: Society for the Study of Amphibians and Reptiles (2021).
- Avian species: American Ornithological Society for birds (Chesser et al. 2020).
- Mammal species: Bradley et al. (2014).

Special-status wildlife whose names differ from the references listed above will conform to the CDFW Special Animals List (CDFW 2020) to ensure proper attribution of rarity status for that specific taxon. The scientific binomial from the cited reference is included with the first mention of a species in the body of this report.

1.3.2.1 Habitat Assessment and Vegetation Mapping

Vegetation mapping within the BSA was conducted by ICF biologists in February and March 2019 by walking meandering transects and observing from selected vantage points that allowed an expansive view of the BSA. An additional vegetation survey was conducted in June and July 2022 to

update vegetation conditions within the BSA as well as confirm that mapping met a 0.10-acre minimum mapping unit requirement. Vegetation communities were mapped pursuant to County guidelines (County 2010a). Vegetation communities were classified according to the dominant and characteristic plant species, in accordance with the Holland classification system (1986), as modified by Oberbauer et al. (2008).

All plants observed within the BSA were identified to the species level, including subspecies or variety, as applicable, using *The Jepson Manual: Vascular Plants of California, Second Edition* (Baldwin et al. 2012), and recorded in a species compendium. Plant common names followed the *Checklist of The Vascular Plants of San Diego County, Fifth Edition* (Rebman and Simpson 2014), if the common names were not provided in Baldwin et al. (2012).

Concurrently with vegetation mapping, the biologists conducted a habitat assessment to determine the potential for special-status species to occur on-site and assessed the need for any additional protocol wildlife surveys to be conducted. Biologists also determined if there are any potentially jurisdictional aquatic features that would require an aquatic resources delineation.

1.3.2.2 Special-Status Plant Surveys

Special-status plant surveys were conducted within the BSA between April and August 2019 (Table 1). Special-status plant survey priority areas included unique features within the BSA that have high potential to support special-status plant species. ICF botanists traversed the BSA from meandering transects to identify the locations of special-status plants. The special-status plants surveys included three site visits, one in mid-April, a second in May, and a third in July, to assess the potential for late-blooming species. Surveys were conducted in accordance with the *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants* (USFWS 2000); *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFW 2018), and *CNPS Botanical Survey Guidelines* (CNPS 2001). All plant species observed were documented, and plants that could not be identified in the field were identified later using taxonomic keys, including Baldwin et al. (2012). A specialized survey for chocolate lily (*Fritillaria biflora*) was conducted in 2021 in late March, during the peak time for this species bloom, throughout the BSA.

Table 1. Special-Status Plant Survey Dates

Survey Personnel	Date	Survey Personnel	Date
Ritenour, Dale	04/12/2019	Johnston, Shawn	08/09/2019
Dix, Kelsey	04/12/2019	Dix, Kelsey	08/09/2019
Estes, Camilla	04/12/2019	Estes, Camilla	08/09/2019
Johnston, Shawn	05/10/2019	Johnston, Shawn	03/23/2021*
Dix, Kelsey	05/10/2019	Cropper, Brian	03/23/2021*
Estes, Camilla	05/10/2019		

* Focused survey for chocolate lily (*Fritillaria biflora*).

1.3.3 Survey Limitations

There are inherent limitations to field surveys that affect species detections. These limitations may result in species not being detected that may, in fact, occur within the site. Survey limitations include the time of day, season, duration of survey, weather conditions, and surveyor experience. All reasonable efforts have been made by the County to reduce the possibility of species being omitted from the analysis in this report. Specifically, the analysis presented in this report regarding the potential for a species to occur on-site relies on a variety of factors, including an extensive literature and database review (see Section 1.3.1) and discussions with state and local biological resource experts, including the Back Country Land Trust and staff members from USFWS and CDFW.

1.3.3.1 Englemann Oak Surveys

To ensure the maximum avoidance possible within Engelmann oak (*Quercus engelmannii*) stands, two additional surveys were conducted within the Engelmann oak woodland mapped in and adjacent to the proposed Alpine County Park. The first survey was conducted on July 8, 2020, by ICF vegetation ecologist Makela Mangrich and biologist Sara Galindo, who mapped the locations of all Engelmann oak trees in this area as point data using a global positioning system (GPS) unit with sub-meter accuracy and recorded general data on the health and size of the oaks. A second survey was conducted on September 1, 2020, by the County's arborist, Dario Lombardo, and Makela Mangrich to confirm health and size of the oaks. Based on these surveys, additional refinements were made to the vegetation mapping for the Open Engelmann Oak Woodland polygons in this area. Section 3.5.5, Oak Woodlands, of the County's *Report Format and Content Requirements* document stipulates, "For oak woodland habitats, the edge of the canopy defines the woodland boundary…" Using both the SANDAG 2017 and 2019 full-color aerial images as well as the field point data, ICF was able to delineate the edge of the canopy for the Engelmann oaks within and adjacent to the proposed impact area. This level of detail was restricted to only those oaks adjacent to proposed impact areas; this secondary refinement was not conducted on all oaks throughout the BSA.

1.3.3.2 Fairy Shrimp Wet and Dry Season Surveys

Wet Season

ICF biologists performed surveys for listed large branchiopods (fairy shrimp [FS]) in accordance with USFWS *Survey Guidelines for the Listed Large Branchiopods* (FS Guidelines) (USFWS 2017). Wet-season surveys conducted in accordance with the FS Guidelines included hydrology verification visits after storm events to determine when features were inundated. Sampling surveys began no later than 7 days following the initial inundation and continued once every week until the features were no longer inundated or until 120 days of continuous inundation. If the features dried and refilled during the season, each feature was sampled no later than 7 days after refilling. A full sampling survey schedule and detailed methods for the wet-season survey are provided in Appendix B.

Dry Season

On September 13, 2019, FS biologist Brian Lohstroh (Permit# TE-063608-6), assisted by Ryan Layden (TE-12069D-0), collected soil samples for the dry-season survey. The survey area was an approximately 35-acre area of the property that had appropriate topography and clay soils to allow for development of road pools. Soil samples were collected when seasonally inundated depressions

were dry. A hand trowel was used to collect soil samples from the top 1 to 3 centimeters of depression soil. Whenever possible, soil samples were collected in chunks; the trowel was used to pry up intact chunks of sediment. Loosening the soil by raking or shoveling was avoided because such methods can damage cysts. For each of the 28 seasonally inundated depressions, two perpendicular transects were visually estimated, with one transect passing along the depressions' lowest point and the second transect passing through the depressions' second-lowest point. Ten samples of approximately 100-milliliter aliquots were removed at each sub-sample site (for a total of 1 liter per ponded area), ensuring that no more than 10 percent of the sampled vernal pool's surface area was disturbed. Soil samples were taken as follows: two in the pool's lowest point, one at the pool's second-lowest point, and two radiating in each of the four directions on the transect lines, at least 1 meter from the pool center. Each label included the information necessary to identify the collection date, location of feature, and name of collector for each sample.

Soil samples were processed by ICF FS biologist and USFWS permitted cyst identifier Dale Ritenour (Permit# TE-58888A-2.1), in accordance with the FS Guidelines. The soil samples were measured and placed in 10 individual plastic containers. The samples were hydrated in tap water, then washed through a set of sieves. Material passing through a Number 45 (355-micrometer) USA Standard Testing Sieve, A.S.T.M.E.-11 specification, was caught on a Number 70 (212-micrometer) sieve. The 355-micrometer sieve allows the passage of cysts; the 212-micrometer sieve was selected as the appropriate size for collecting cysts from large branchiopods whose ranges include the BSA in San Diego County, including San Diego FS (*Branchinecta sandiegonensis*), Lindahl's FS (*Branchinecta lindahli*), and Riverside FS (*Streptocephalus woottoni*). The 212-micrometer sample material was rinsed in a container with approximately 300 milliliters of a saturated brine solution to float organic material, including FS cysts. The material floating on the brine was decanted onto a paper filter. The organic material collected on the paper was examined under a stereo zoom microscope. Distinctive FS cysts were counted if present. All sieves were soaked in a bleach solution and then thoroughly cleaned after completion of the procedure for each depression to ensure that no cysts adhered to the surfaces of the sieves.

1.3.3.3 Quino Checkerspot Butterfly (*Euphydryas editha quino*) Surveys

Protocol surveys for the Quino checkerspot butterfly (QCB) (*Euphydryas editha quino*) were performed over two consecutive years, 2019 and 2020. For both years, the survey methodology followed the December 15, 2014, USFWS *Quino Checkerspot Butterfly Survey Guidelines* (QCB Guidelines) (USFWS 2014). In 2019, surveys were conducted only within the 94.2-acre County-owned parcels, of which approximately 83 acres were determined to be potential habitat for QCB and therefore surveyed in accordance with the QCB Guidelines. In 2020, surveys were repeated within the 83 acres of suitable habitat on the County-owned parcels and within suitable habitat on the 231-acre Wright's Field property, directly adjacent to the west of the County property.

For both 2019 and 2020 surveys, biologists surveyed at a rate of no more than 15 acres per hour, in accordance with the QCB Guidelines. Each survey involved walking transects throughout all non-excluded (i.e., areas with suitable habitat for QCB) portions of the survey area. The surveyors stopped periodically to scan adjacent areas for moving butterflies. Butterflies were identified by sight with the aid of close-focus binoculars. All butterfly species observed were recorded. Plant species flowering during the survey period were recorded and assessed as potential QCB nectar and/or larval host plants. A list of potential QCB nectar sources and larval host plants identified during surveys is presented in Appendix C. Butterfly identification and nomenclature is based on Shiraiwa (2009) and North American Butterfly Association (2016).

Vegetation communities are mapped based on Holland (1986) and Oberbauer et al. (2008), and plant nomenclature is based on Baldwin et al. (2012). Survey conditions and survey schedules for both the 2019 and 2020 surveys are provided in Appendix C.

2019 QCB Surveys

A site assessment was conducted by ICF biologist Brian Lohstroh (TE-063608-6) on February 8, 2019, before the first QCB survey. Brian conducted a general field survey of the site and mapped excluded areas (i.e., areas without suitable QCB habitat). Brian Lohstroh, James Hickman (TE-60218B-0), and Dale Ritenour (TE-58888A-2.1) conducted the surveys on a weekly basis under acceptable weather conditions, as defined in the QCB Guidelines (Table 3) (USFWS 2014). A total of 11 protocol surveys for adult QCB were conducted by ICF biologists between February 27 and May 3, 2019. In rainy weeks without appropriate weather conditions, two surveys were conducted in the following week, with at least one day between surveys. During the last week of the survey window, no survey days met the required weather conditions. Because surveys cannot be made up after the survey window ends, no surveys were conducted during the last week. As described in Chapter 3, QCB was observed during the seventh week of surveys. Page 2 of the QCB Guidelines states that surveys shall continue "until a Quino is detected." As a result, the surveys could have stopped after the seventh week, but the four additional surveys were conducted to provide additional depth and understanding of the degree to which QCB utilizes the site.

A portion of the northern survey area initially included in the survey was determined, upon closer examination in the field, to be too dense to support QCB and thus was determined to be a "closed canopy woody vegetation" stand, as identified in the "excluded areas" definition on page 1 of the QCB Guidelines.

2020 QCB Surveys

During 2020, the following USFWS-permitted QCB biologists performed protocol surveys for QCB within both Wright's Field and County-owned parcels: Brian Lohstroh (TE-063608-6), Korey Klutz (TE-036065-3), Brenda Bennett (TE-063230-5.4), Ian Hirschler (TE-063230-5.4), Melanie Rocks (TE-082908-2), and Ryan Meszaros (TE-20186A-3.1). Protocol surveys ceased after the third weekly survey because QCB was observed on both Wright's Field and County-owned parcels that week. However, additional QCB surveys and refinements to host plant mapping occurred after that date, from approximately March 9 to March 30, 2020.

Host Plant Mapping

In 2020, biologists mapped QCB host plants on both the County-owned parcels and Wright's Field as either a polygon or as a point (when occurrences of host plants were small) using GPS units with sub-meter accuracy. Host plant population counts were also made during the peak phenological conditions for the host plant, which occurred in March 2020. Estimates were made for host plant occurrences larger than approximately 200 to 300 plants using accepted practices (e.g., 1-meter sample plots extrapolated to the larger occurrence or other ocular estimates made after sampling a smaller subset). Multiple passes of the host plant mapping were made using the Esri Collector application to ensure accuracy in the mapping beginning in early February and ending in late March 2020.

1.3.3.4 Hermes Copper Butterfly (*Lycaena hermes*) Surveys

Presence/absence surveys for the Hermes copper butterfly (HCB) (*Lycaena hermes*) were performed over two consecutive years, 2019 and 2020. In 2019, surveys were conducted only within the 94.2-acre BSA. In 2020, surveys were repeated within the County-owned parcels and within suitable habitat on the 231-acre Wright's Field property, directly adjacent to the west of the County property. For both years, the survey methodology followed a modified version of the guidelines prepared by the County for evaluating the potential impacts within its jurisdiction (County 2010a), combined with relevant portions of the USFWS QCB Guidelines (2014). Although the County guidelines call for four surveys for HCB, the consensus among HCB biologists is that weekly surveys for this species should be conducted during its flight period, as is the practice for QCB. This modified approach maximizes the detection of the HCB and is based on recent updates to the biology of the species. In addition, the County guidelines indicate that surveys for HCB need only be conducted in areas where their larval host plant, spiny redberry (*Rhamnus crocea*), occurs in proximity (within 15 feet) to California buckwheat (*Eriogonum fasciculatum*), their primary nectar plant (i.e., suitable habitat). It should be noted that HCB has been observed using various other species as a nectar source (USFWS 2020); therefore, suitable habitat for HCB has been modified to include areas where the HCB's host plant occurs, regardless of whether it is found in proximity to California buckwheat.

The HCB surveys in 2019 and 2020 were conducted by QCB-permitted biologists because of their familiarity with the QCB Guidelines as well as the local butterfly species. The HCB surveys followed the same survey frequency and weather requirements as the USFWS 2014 QCB Guidelines (e.g., weekly surveys, air temperature at least 60 degrees Fahrenheit [°F] on clear days and 70°F on cloudy days, winds below 15 miles per hour). Surveys were conducted during the HCB flight season, which spans from the third full week of May to the first full week of July.

In 2019, a total of eight surveys for HCB were conducted by ICF biologists Brian Lohstroh (QCB permit #TE-063608-6) and James Hickman (QCB permit #TE-60218B-0). An additional survey was conducted at the site with approval of the Project proponent due to an observed extension of suitable phenological conditions and the relatively late emergence of HCB at reference sites. In 2020, a total of eight surveys for HCB were conducted by ICF biologists Brian Lohstroh (permit #TE-063608-6) and Antonette Gutierrez (permit #50992B-1). Survey conditions and survey schedules for both 2019 and 2020 surveys are provided in Appendix D.

1.3.3.5 Burrowing Owl (*Athene cunicularia*) Surveys

Due to the presence of suitable habitat within the BSA, a habitat assessment and protocol surveys were conducted for burrowing owls (*Athene cunicularia*), in accordance with the *Staff Report on Burrowing Owl Mitigation* (California Department of Fish and Game 2012).

Habitat Assessment

An evaluation of the BSA was performed to identify suitable habitat for burrowing owl. The entire proposed Alpine County Park and all trails were surveyed by walking 10-meter transects to ensure that all burrows were detected. As burrows were encountered, they were inspected for any burrowing owl sign (e.g., tracks, pellets, white-wash, feathers, prey parts). The locations of all potential burrows or burrow complexes were recorded and mapped as GPS point locations; these burrows were later checked during the breeding season surveys.

Protocol Surveys

Protocol surveys for burrowing owl were performed in areas determined to be potentially suitable habitat. Because burrowing owls require suitable burrows to live in year-round, only those areas with suitable burrows were considered. Areas that did not contain burrows, or did not contain burrows that would be suitable for owls to live in, were excluded from future surveys. Burrows within the study area that were identified as suitable were given an individual 500-foot buffer. These suitable burrows and 500-foot buffers composed the final burrowing owl survey area and were revisited during focused protocol surveys. Transects were walked throughout all areas within 500 feet of a suitable burrow. Each suitable burrow was also checked during each survey for any sign of burrowing owl use.

The CDFW protocol for focused burrowing owl surveys requires the first of the four required site visits to occur between February 15 and April 15 and the last three site visits to occur between April 15 and July 15, with at least one visit between June 15 and July 15 (California Department of Fish and Game 2012). The protocol surveys were conducted during weather that was conducive to observing burrowing owls outside burrows and detecting sign. These were performed in the morning (between 0600 and 1000) and/or at dusk (between 1800 and 2020). Survey dates, times, and weather conditions during the burrowing owl protocol surveys are provided in Table 2.

Table 2. Burrowing Owl Survey Dates and Conditions

Date	Survey Personnel	Weather	Time On-Site
04/06/2019	James Hickman	Overcast, 64°F–70°F	3 hours, 45 minutes
05/24/2019	James Hickman	Partly Cloudy, 42°F–59°F	3 hours
06/18/2019	James Hickman	Partly Cloudy, 54°F–64°F	3 hours, 30 minutes
07/13/2019	James Hickman	Partly Cloudy, 70°F–80°F	3 hours 30 minutes

1.3.3.6 Coastal California Gnatcatcher (*Polioptila californica californica*) Protocol Surveys

The BSA contains coastal sage scrub habitats that have potential to support coastal California gnatcatcher (CAGN), which is federally listed as threatened. The BSA exists within an approved habitat conservation plan (HCP)/natural community conservation plan (NCCP) area, the County's approved MSCP County of San Diego Subarea Plan (County 1997); therefore, in accordance with USFWS *Coastal California Gnatcatcher Survey Guidelines* (USFWS 1997), three surveys were conducted for the Project in 2019 (Table 3). The presence/absence focused surveys for CAGN were conducted for the Project between July 10 and July 24, 2019, under the authorization of USFWS permit holder and ICF biologist Brian Lohstroh (TE-063608-6). Recorded CAGN vocalizations were broadcast only to initially locate CAGN. The surveys were conducted on foot with the aid of binoculars. A full description of the survey methods is provided in Appendix F.

Table 3. CAGN Survey Dates and Conditions

Date	Survey Personnel	Weather	Time On-Site
07/10/2019	Brian Lohstroh	Sunny, 64°F–72°F	3 hours
07/17/2019	Brian Lohstroh	Sunny, 63°F–77°F	3 hours 15 minutes
07/24/2019	Brian Lohstroh	Partly cloudy, 77°F–85°F	3 hours 30 minutes

1.3.3.7 Bat Surveys (2019)

Passive and active bat surveys were conducted by Drew Stokes of the San Diego Natural History Museum in 2019. Drew used Titley Electronics Anabat bat detectors, the unaided ear, and visual techniques, which included use of a handheld spotlight. Additional methods used during these surveys are provided in Appendix G.

Passive Surveys

Four "Passive Express" Anabat bat detectors were deployed at suitable and representative habitat locations within the BSA (Table 4). The detectors were placed to maximize detections of the entire community of bat species expected in the area. They were run in the summer (July 8–10, 2019) and again in the fall (September 3–5, 2019) to document both resident and migratory bats in the preserve (Table 4). The detectors ran for 3 consecutive nights during each of the two sampling periods. The detectors automatically turned on 30 minutes before sunset and turned off 30 minutes after sunrise. During each nightly monitoring period, bat calls were automatically recorded to a data card. The calls were then downloaded and analyzed in the laboratory after the field surveys. The calls were identified to the species level in as many cases as possible by making comparisons to known bat calls. All bat call identification was carried out manually by Drew Stokes, who has more than 23 years of bat call identification and vetting experience in the Southern California and Baja California, Mexico, region.

Table 4. Passive Bat Survey Dates

Date	Survey Method
07/08/2019	"Passive Express" Anabat detector
07/09/2019	"Passive Express" Anabat detector
07/10/2019	"Passive Express" Anabat detector
09/03/2019	"Passive Express" Anabat detector
09/04/2019	"Passive Express" Anabat detector
09/05/2019	"Passive Express" Anabat detector

Active Surveys

Active Anabat surveys were carried out using a Titley Electronics Anabat "walkabout" bat detector, allowing for real-time bat call observation and identification. The bat calls were also recorded and manually identified in the laboratory after the field surveys were conducted. One active survey was conducted on August 5, 2019, starting at a point in the northern portion of the survey area and then hiking an elliptical transect counterclockwise, covering the northern half of the survey area and ending at the starting point after a 2-hour monitoring period (Table 5). The unaided ears were also used to listen for audible bat echolocation calls, such as those produced by the western mastiff bat (*Eumops perotis*). The second active survey was conducted on August 6, 2019, starting at a point in the southern portion of the preserve. An elliptical transect was hiked counterclockwise, covering the southern rocky/scrubby portion of the survey area and ended at the starting point after a 2-hour monitoring period. When possible, visual observations of bats and other nocturnal wildlife were made using a handheld spotlight.

Table 5. Active Bat Survey Dates

Date	Survey Personnel
08/05/2019	Drew Stokes
08/06/2019	Drew Stokes

1.3.3.8 Bat Surveys (2022)

ICF conducted additional bat surveys in four locations in July 2022 to assess bat usage within the southern grasslands of the BSA. Two Pettersson D500X ultrasound recording units were set up within the areas proposed for preservation lands, and two Pettersson D500X ultrasound recording units were set up within the proposed footprint for the active park. Recordings of bat echolocation calls were downloaded from each monitor and processed using Sonobat version 4.2.2. See Appendix H for additional details on the methods for this survey.

1.3.3.9 Wetlands/Aquatic Resources

During the habitat assessment conducted within the BSA as part of the initial vegetation mapping in February and March 2019, ICF biologists searched the BSA for any indication of surface water flows to determine if a delineation of potentially jurisdictional aquatic features was required. No such surface water features were observed on-site; as a result, no formal delineation of jurisdictional water features was required or conducted.

1.4 Environmental Setting (Existing Conditions)

1.4.1 Physical Characteristics

The BSA is in the central foothills of San Diego County, within the unincorporated community of Alpine. The natural setting of the BSA to the south consists of relatively flat grasslands, with the lowest point to the southwest and sloping upward slightly, heading both north and east. Terrain is rougher to the north, containing boulders and rock outcrops dominated by scrub, chaparral, and woodland. Hills are steeper than they are to the south; a small hilltop exists just east of the northeast corner of the BSA. Land surrounding the BSA is relatively flat, partially due to grading from developments. Steeper mountains with canyons, ravines, and drainages exist farther south and north, outside of Alpine. Nearby reservoirs include El Capitan Reservoir to the north and Loveland Reservoir to the south. Elevations on the BSA range from approximately 1,900 feet above mean sea level at the southwest corner along South Grade Road to approximately 2,100 feet above mean sea level at the northeast corner of the BSA.

Several dirt trails traverse the BSA, most notably in the northern portion. Trails connect the eastern edge of the property to the west and south, then connect farther west, off the property, and continue into Wright's Field. South Grade Road, a paved two-lane road, borders the BSA to the south and east.

1.4.2 Soil

The preserve is situated atop the Southern California batholith, which consists of Cretaceous granitic rocks. The Natural Resources Conservation Service has mapped the soil series Bosanko stony clay, Cieneba very rocky coarse sandy loam, Cieneba-Fallbrook rocky sandy loam, Cieneba rocky coarse

sandy loam, Cieneba coarse sandy loam, Cieneba-Fallbrook rocky sandy loams, and Fallbrook rocky sandy loam as occurring within the survey area (USDA/NRCS 2019). Most of the site is mapped as Bosanko stony clay (USDA/NRCS 2019).

The **Bosanko** soil series in the BSA is characterized as a stony clay with 20 percent stones and cobblestones in the surface layer; it slopes from 5 to 9 percent. It is 24 to 36 inches deep over decomposed rock and has a 3- to 5-inch water-holding capacity, with slow to medium runoff and slight to moderate erosion hazard (USDA/NRCS 2019). In the BSA, this soil series is found primarily in the southern half of the property on the grasslands and in a smaller area north of the boulder outcrops.

The **Cieneba** soil series in the BSA is characterized as very rocky, coarse sandy loams with slopes from 30 to 75 percent. It is typically very steep and has rock outcrops and large granodioritic boulders on the surface; runoff and erosion hazards are very high. This soil is mapped in a small area along the northern boundary of the property but does extend farther north and east.

The **Cieneba-Fallbrook** soil series in the BSA is characterized as a rocky sandy loam with slopes from 9 to 30 percent, containing about 55 percent Cieneba coarse sandy loam and 40 percent Fallbrook sandy loam. Cieneba coarse sandy loam is excessively drained, with moderately rapid permeability. Fallbrook sandy loam is well drained, with moderately slow permeability in the subsoil. Runoff is medium to rapid, and both soils have moderate to high erosion hazard. These soils are mapped in the center portion of the property amidst rock outcrops and boulders in primarily open Engelmann oak and Diegan coastal sage scrub habitat.

The **Fallbrook** soil series in the BSA is characterized as sandy to rocky sandy loams with slopes from 9 to 30 percent. It has low fertility, medium to rapid runoff, and a moderate to high erosion hazard. This soil is mapped in the northern portion of the property, a little south of the northern border.

1.4.3 Fire

The BSA contains chaparral vegetation, which is naturally maintained by infrequent fires, as well as grasslands, coastal sage scrub, and woodlands. Fire cycles in and surrounding the BSA have very likely been altered by surrounding development and brush management actions associated with the development. The BSA has not burned since the Laguna Fire in 1970 when the northern portion of the BSA was burned (California Department of Forestry and Fire Protection [CAL FIRE] 2019; San Diego Geographic Information Source [SanGIS] 2018). The West Fire in 2018 approached from the northeast but did not burn within the BSA or within the adjacent Wright's Field preserve.

1.4.4 Hydrology

The BSA is split between two watersheds. The northern, rockier half of the BSA is in the El Capitan Hydrologic Area of the San Diego River Watershed (SanGIS 2006). Surface water in this area flows into the San Diego River and, eventually, the Pacific Ocean. The southern half of the BSA is in the San Vicente Hydrologic Area of the Sweetwater River Watershed (SanGIS 2006), with surface waters flowing into the Sweetwater River and eventually to the Pacific Ocean. No surface waters are visible within the BSA.

1.4.5 Existing Land Use

The BSA is not currently open to the public. DPR personnel perform periodic ranger patrols and monitor the property to ensure it is maintained and illegal access does not occur. Access onto the property is likely to occur because of the BSA's proximity to Wright's Field, an open preserve.

1.4.6 Land Ownership in Vicinity

The BSA is bordered to the west and north by open space lands known as Wright's Field, owned by the Back Country Land Trust, with which the County is actively coordinating. Semi-rural residences border the BSA to the southwest, north, and east. Additional open space is to the south of the BSA, with one lone residence within this area.

1.4.7 Existing Roads and Trails

The BSA contains no formalized trails or roads, but several informal trails traverse the property, most notably in the northern portion. An informal dirt road begins on the eastern boundary of the BSA along South Grade Road and provides access to the property and the adjacent Wright's Field. Many trails extend west and north, in areas where the public travels to Wright's Field to the west and toward the hilltop peak in the north-central portion of the BSA. At least three additional trails extend south to South Grade Road and west to adjacent residences. Some trails and other areas within the BSA show signs of off-road vehicle activity; tire tracks can be seen from aerial imagery (Google Earth).

1.4.8 Existing Fire Fuel Management

Current Fire Fuel Reduction Zones. In accordance with the County Consolidated Fire Code and the Alpine Fire Protection District Ordinance, the County is clearing vegetation within the following fire fuel reduction zones, which, historically, have been cleared per the direction of the Alpine Fire District. These recommendations are also contained within the Fire and Emergency Operational Assessment (FEOA) prepared by Rohde & Associates.

- At the far northeastern edge of the County's parcel where it abuts residences along Engelmann Oak Lane, within 100 feet south of their property line. This area is currently cleared of all vegetation and mapped as disturbed habitat.
- Along South Grade Road, within 30 feet of the road edge along the County's parcel. This area includes predominantly Valley needlegrass grassland and smaller stands of open Engelmann oak woodland at the northern and eastern edges of the County's property, transitioning to denser scrub vegetation with moderate to steep slopes and three Engelmann oak trees toward the southern and western edge of the County's property. No Engelmann oaks were removed as part of these activities, but the trees were limbed.

1.4.9 Regional Context

The BSA is within the Metro-Lakeside-Jamul segment of the MSCP County Subarea Plan (County 1997). The entirety of the BSA was designated as Pre-approved Mitigation Area in the MSCP County Subarea Plan. The Wright's Field property, directly to the west of the BSA, is within this same Pre-approved Mitigation Area designation. Further surrounding the BSA is unincorporated land within the Metro-Lakeside-Jamul segment of the MSCP. The BSA is at the far eastern end of the MSCP County Subarea Plan.

1.4.10 Habitat Types/Vegetation Communities

Vegetation mapping within the BSA was conducted by ICF biologists in February and March 2019 by walking meandering transects and observing from selected vantage points that allowed an expansive view of the BSA. An additional vegetation survey was conducted in June and July 2022 to update vegetation conditions within the BSA and to confirm that mapping met a 0.10-acre minimum mapping unit requirement. The 94.2-acre BSA supports 11 vegetation communities/land cover types (Table 6; Figure 3). Vegetation communities were described and assigned numerical codes according to the *Terrestrial Natural Communities of California* (Holland 1986), as modified by Oberbauer et al. (2008). The habitat types/vegetation communities and land cover types observed within the BSA were disturbed habitat; Diegan coastal sage scrub; Diegan coastal sage scrub, *Baccharis* dominated; flat-topped buckwheat; coastal sage-chaparral transition; southern mixed chaparral; Valley needlegrass grassland; non-native grassland; open Engelmann oak woodland; non-native woodland; and eucalyptus woodland (Appendix A: Figure 3). Valley needlegrass grassland is the most common vegetation community in the BSA, composing approximately 26.1 acres of the 94.2-acre BSA.

Table 6. Vegetation Communities Occurring within the BSA

Oberbauer Code	Vegetation Community	Area in BSA (acres)
11300	Disturbed Habitat	2.0
	Disturbed Habitat – Northern Fire Fuel Modification Area	0.7
32500	Diegan Coastal Sage Scrub	12.2
	Disturbed Diegan Coastal Sage Scrub	0.5
32530	Diegan Coastal Sage Scrub, Baccharis dominated	2.5
32800	Flat-topped Buckwheat	10.1
	Disturbed Flat-topped Buckwheat	9.1
	Flat-topped Buckwheat – Existing Fire Fuel Reduction Zone	0.2
37G00	Coastal Sage-Chaparral Transition	11.0
37120	Southern Mixed Chaparral	4.0
42110	Valley Needlegrass Grassland	24.4
	Disturbed Valley Needlegrass Grassland	0.7
	Valley Needlegrass Grassland – Existing Fire Fuel Reduction Zone	1.1
42200	Non-native Grassland	8.4
	Non-native Grassland – Existing Fire Fuel Reduction Zone	< 0.1
71181	Open Engelmann Oak Woodland	7.1
79000	Non-native Woodland	0.2
79100	Eucalyptus Woodland	0.1
Total*		94.2

*sum of values does not equal total because of rounding.

The County currently clears vegetation in accordance with the County Consolidated Fire Code and local Alpine Fire Protection District ordinance and in coordination with the Alpine Fire District. Areas along South Grade Road are mowed very close to the ground within 30 feet of South Grade

Road, as needed, by the County of San Diego. The County also removes vegetation (to bare ground conditions) along the northern edge of the County's property within 100 feet, where adjacent to existing housing parcels, for fire fuel reduction purposes.

1.4.10.1 Disturbed Habitat (11300)

Disturbed habitat supports either no vegetation or a cover of non-native weedy species that are adapted to a regime of frequent human disturbance. Many of the characteristic species of this habitat are also indicator species of annual grasslands, although disturbed areas tend to be dominated more by forbs than grasses. Characteristic species may include tumblewood (*Salsola tragus*), tocalote (*Centaurea melitensis*), Italian thistle (*Carduus pycnocephalus*), bristly ox-tongue (*Helminthotheca echioides*), and African crown daisy (*Glebionis coronaria*).

Disturbed habitat within the BSA consists of unformalized dirt roads and unformalized multi-use trails. Disturbed habitat is not considered a sensitive vegetation community.

1.4.10.2 Diegan Coastal Sage Scrub (32500)

Diegan coastal sage scrub is a scrub community consisting of low, soft-leaved woody subshrubs, with few more than 1 meter high (Holland 1986). Most species are active in winter and early spring and drought deciduous in late spring or early summer. This community is most often dominated by California sagebrush (*Artemisia californica*) and California buckwheat.

Diegan coastal sage scrub in the BSA is dominated by California buckwheat, with California sagebrush, laurel sumac (*Malosma laurina*), deerweed (*Acmispon glaber* var*. glaber*), white sage (*Salvia apiana*), and San Diego monkey flower (*Diplacus australis*) also occurring. Diegan coastal sage scrub in the BSA exists primarily in the west-central portion of the BSA. Disturbed stands of Diegan coastal sage scrub exhibiting higher anthropomorphic disturbance (e.g., invasive species) were also noted within the BSA.

1.4.10.3 Diegan Coastal Sage Scrub, Baccharis Dominated (32530)

Diegan coastal sage scrub, Baccharis dominated, is similar to Diegan coastal sage scrub (32500) but dominated by *Baccharis* species. It is often found with other forms of Diegan coastal sage scrub and on upper terraces of river valleys. Diegan coastal sage scrub, Baccharis dominated, is found in only a few small stands in the northern portion of the BSA and dominated by broom baccharis (*Baccharis sarothroides*).

1.4.10.4 Flat-topped Buckwheat (32800)

Flat-topped buckwheat is a scrub community found in coastal areas and foothills throughout San Diego County. This monoculture community usually results from disturbance and transitioning to coastal sage scrub or chaparral. Dominant plant species include California buckwheat and deerweed. Flat-topped buckwheat was found primarily in transition areas between the coastal sage scrub stands at the north-central portions of the BSA and the grassland stands at the southern end of the BSA. An area of flat-topped buckwheat at the northeastern portion of the BSA was cleared prior to the 2019 vegetation mapping effort but has since passively recovered. This stand has a higher concentration of invasive species, such as tocalote (*Centaurea melitensis*) and broom baccharis (*Baccharis sarothroides*).

1.4.10.5 Coastal Sage-Chaparral Transition (37G00)

Coastal sage-chaparral is a transitional community, containing a mix of sclerophyllous, woody chaparral species and drought-deciduous, malacophyllous sage scrub species. The dominant plant species for this community are chamise (*Adenostoma fasciculatum*) and California sagebrush (*Artemisia californica*), which are generally equal in cover. Laurel sumac (*Malosma laurina*), black sage (*Salvia mellifera*), and lemonade berry (*Rhus integrifolia*) are more common in coastal sage scrub, while *Ceanothus* species and Mission manzanita (*Xylococcus bicolor*) are more common in chaparrals. This vegetation community was observed in only a few small stands at the far northern and far southern ends of the BSA.

1.4.10.6 Southern Mixed Chaparral (37120)

Southern mixed chaparral typically consists of broad-leaved sclerophyllous shrubs, approximately 1.5 to 3 meters tall. This vegetation community may include patches of bare soil. It sometimes forms a mosaic with coastal sage scrub. Southern mixed chaparral has high ecological value because it can contain special-status plant species and provide nesting and foraging habitat for several wildlife species. Within the BSA, this community was dominated by Mission manzanita (*Xylococcus bicolor*) and sugar bush (*Rhus ovata*).

1.4.10.7 Valley Needlegrass Grassland (42110)

Valley needlegrass grassland is a mid-height (to 2 feet) grassland dominated by perennial, tussock-forming purple needle grass (*Stipa pulchra*). Native and introduced annuals occur between the perennials. A 5 to 10 percent cover threshold of native species indicates it is native grassland.

The Valley needlegrass grassland in the BSA has high conservation value. It is at the central and southern area of the BSA and represents a large, contiguous vegetation community that is unique in the area. This community is also known to support special-status species, including QCB, and it is considered prime foraging habitat for several species of raptors. Disturbed stands of Valley needlegrass grassland at the northwest edge of the BSA, directly adjacent to Wright's Field, were noted. These stands exhibit higher anthropomorphic disturbance (e.g., invasive species).

1.4.10.8 Non-Native Grassland (42200)

Non-native grassland is characterized by a dense to sparse cover of annual grasses, reaching up to 1 meter (3 feet), which may include numerous native wildflowers, particularly in years of high rainfall. These annuals germinate with the onset of the rainy season and set seeds in the late spring or summer. This community is usually found on fine-textured soils that transition from moist or waterlogged in the winter to very dry during the summer and fall (Holland 1986). Non-native grasslands, in many circumstances, have replaced native grasslands as a result of disturbance (directly manmade [e.g., mechanical disturbance, grazing] or natural [e.g., altered fire cycles]).

The non-native grassland on the site has high conservation value due to its relative lack of disturbance and adjacency to high-quality native grasslands. Stands of non-native grassland in the BSA are devoid of noxious weeds and have a relatively high cover of native forb species. For example, in the northern portion of the large grassland block of habitat in the BSA, the non-native grasslands include approximately 50 to 75 percent absolute cover of fascicled tarplant (*Deinandra fasciulata*), with lovely blue-eyed grass (*Sisyrinchium bellum*), blue dicks (*Dichelostemma capitatum* ssp. *capitatum*), and mariposa lilies (*Calochortus* spp.). In the southern and eastern portions of the

grassland block, non-native grasslands support as much as 15 to 20 percent absolute cover of field gumplant (*Grindelia camporum*), along with lovely blue-eyed grass, blue dicks, and mariposa lilies. In the BSA, non-native grasslands are directly adjacent to, and function as a mosaic within, the larger Valley needlegrass grassland. These non-native grasslands represent a large, contiguous vegetation community that is unique in the area. This community is also known to support special-status species, including QCB, and considered prime foraging habitat for several species of raptors.

1.4.10.9 Open Engelmann Oak Woodland (71181)

Engelmann oak woodland is an evergreen woodland dominated by Engelmann oaks, typically with an understory of annual grasses. The community is found on fine-textured soils in areas with gentle slopes and in valley bottoms. It surrounds grassland meadows and often occupies the ecotone between the grassland and the surrounding shrublands. Engelmann oak is a CRPR List 4.2 species and County List D species and the dominant plant species within the areas mapped as Engelmann oak woodland. Engelmann oak woodland occurs in the northern half of the BSA in scattered locations.

As with the other woodlands found within the survey area, the open Engelmann oak woodland has high ecological value. Oak woodlands are considered special-status vegetation communities by the County and state and provide nesting habitat and valuable cover for a wide range of wildlife species. The oak woodland within the survey area provides suitable nesting habitat for several species of raptors and other birds.

1.4.10.10 Non-native Woodland (79000)

Non-native woodlands consist of exotic trees, usually intentionally planted, that are not maintained or artificially irrigated. This vegetation classification does not usually apply where the trees have naturalized or where they are in found within riparian woodlands. In the BSA, non-native woodlands were mapped for all areas of non-native ornamental trees that were not dominated by *Eucalyptus* species. Specifically, these stands included Russian olive (*Elaeagnus angustifolia*) trees planted for ornamental purposes.

1.4.10.11 Eucalyptus Woodland (79100)

Eucalyptus woodland is a non-native woodland habitat that can be single trees with little to no shrubby understory to scattered trees with a well-developed shrubby understory. Eucalyptus species hinder the ability of other species to grow because of the large amounts of leaf and bark litter produced by eucalyptus. Three small stands of eucalyptus woodland occur in the far northern end of the BSA.

1.4.11 Flora

Overall, nearly 120 unique vascular plant species were observed within the survey area during the special-status plant field surveys, most of them native species. All vascular plant species observed are listed in Appendix I. Seven sensitive plant species observed in the survey area are discussed in Section 1.4.12, below.

1.4.12 Sensitive Plant Species

No federally or state-listed endangered or threatened plant species were observed within the BSA. Eight sensitive plant species were observed in the BSA, including seven sensitive plant species included in the CNPS Rare Plant Inventory. These seven CNPS species included decumbent goldenbush (*Isocoma menziesii* var*. decumbens*), delicate clarkia (*Clarkia delicata*), Engelmann oak (*Quercus engelmannii*), Palmer's grapplinghook (*Harpagonella palmeri*), San Diego County viguiera (*Bahiopsis laciniata*), small-flowered microseris (*Microseris douglasii* ssp*. platycarpha*), and Southern California black walnut (*Juglans californica*) (Figure 4). Chocolate lily (*Fritillaria biflora*), observed within the BSA, is a County List D plant, indicating it has a limited distribution or is uncommon but not presently rare or endangered.

The literature review and database search (see Section 1.3.1) identified 83 special-status plant species that occur within the USGS 7.5-minute Alpine quadrangle map and the surrounding nine quadrangles. Because of the large number of potentially occurring special-status plants that were returned in this query (more than 100 species), an additional elevation restriction of 1,500 to 2,500 feet was applied. This elevation range is approximately 400 feet above and below the elevation range within the BSA. These species were evaluated for their potential to occur within the BSA and are discussed in Appendix J. After evaluating each species listed from the database query, accounting for the three thorough special-status plant surveys done in 2019, which was an excellent rain year for Southern California, all species listed in the query that were not observed within the BSA were determined to have little to no potential to occur on-site.

1.4.12.1 Sensitive Plant Species Observed within the BSA

Decumbent goldenbush (*Isocoma menziesii* var*. decumbens*) is listed as a CRPR 1B.2 and a County List A species. This perennial shrub utilizes coastal sage scrub habitat intermixed with grasslands and is more partial to clay soils than other closely related varieties (Reiser 2001). Approximately 226 individuals were observed in non-native grasslands in the southern portion of the survey area and in Valley needlegrass grassland in the eastern portions of the survey area (Appendix A, Figure 4).

Chocolate lily (*Fritillaria biflora*) is a County List D species. It is a bulbiferous perennial found in grasslands and clay soils. Individuals were noted in the southwestern portion of the BSA during 2019 and again during the 2021 survey specifically designed to detect this species. Four unique locations of this species were found, and one plant was noted at each of the four locations (Appendix A, Figure 4).

Delicate clarkia (C*larkia delicata*) is listed as a CRPR 1B.2 and a County List A species. It is an annual herb found in oak woodlands and chaparral. Two individuals were observed in the survey area in Diegan coastal sage scrub habitat (Appendix A, Figure 4).

Engelmann oak (*Quercus engelmannii*) is listed as a CRPR 4.2 and a County List D species. It is commonly found in the foothills between 50 and 1,300 meters. Growing to 12 meters tall, this tree has flat, waxy blue-green leaves and tolerates drier conditions better than coast live oak. Larger individuals are sometimes found growing in savannah grasslands, but the species may also occur as a shrubby element within chaparral. Approximately 127 Engelmann oaks were observed in the northern portions of the BSA in and around the proposed Alpine County Park (Appendix A, Figure 4).

Palmer's grapplinghook (*Harpagonella palmeri*) is listed as a CRPR 4.2 and a County List D species. This annual herb is found in open grassy areas within shrubland between 20 and 955 meters. Approximately 13,857 individuals were observed during special-status plant surveys in 2019 within numerous clay lenses, primarily in the central and southern portions of the site in disturbed flat-topped buckwheat habitat (Appendix A, Figure 4).

San Diego County viguiera (*Bahiopsis laciniata*) is listed as a CRPR 4.2 and County List D species. This perennial shrub is found in chaparral and coastal scrub between 10 and 750 meters. Approximately 67 individuals were observed in coastal scrub/chaparral transitions zones in the most northern and southwestern portions of the BSA (Appendix A, Figure 4).

Small-flowered microseris (*Microseris douglasii* ssp. *platycarpha*) is listed as a CRPR 4.2 and County List D species. This annual herb can be found in clay soils in coastal scrub, valley and foothill grasslands, and vernal pools within 15 to 1,070 meters. Two individuals were observed in Valley needle grassland in the southwestern portion of the BSA (Appendix A, Figure 4).

Southern California black walnut (*Juglans californica*) is listed as a CRPR 4.2 and a County List D species. It is a perennial deciduous tree associated with chaparral, cismontane woodland, coastal scrub, and riparian woodland at elevations ranging from 50 to 900 meters. One individual was observed in the northern portion of the BSA in flat-topped buckwheat habitat (Appendix A, Figure 4).

1.4.13 Special-Status Wildlife

The following special-status wildlife species were observed within the BSA during surveys conducted in 2019, 2020, and/or 2022 and are discussed further in this section:

Invertebrates:

- Quino checkerspot butterfly (*Euphydryas editha quino*)

Reptiles:

- Belding's orange-throated whiptail (*Aspidoscelis hyperythra*)
- Blainville's (Coast) horned lizard (*Phrynosoma blainvillii*)
- Coastal western whiptail (*Aspidoscelis tigris stejnegeri*)
- Red-diamond rattlesnake (*Crotalus ruber*)

Amphibians:

- Western spadefoot (*Spea hammondii*)

Birds:

- Burrowing owl (*Athene cunicularia*) (wintering migrant)
- Cooper's hawk (*Accipiter cooperii*)
- Red-shouldered hawk (*Buteo lineatus*)
- Western bluebird (*Sialia mexicana*)

Mammals:

- Big free-tailed bat (*Nyctinomops macrotis*)
- Pallid bat (*Antrozous pallidus*)
- Pocketed free-tailed bat (*Nyctinomops femorosaccus*)
- Townsend's big-eared bat (*Corynorhinus townsendii*)
- Western long-eared myotis (*Myotis evotis*)
- Western mastiff bat (*Eumops perotis*)
- Western red bat (*Lasiurus blossevillii*)
- Western small-footed myotis (*Myotis ciliolabrum*)
- Western yellow bat (*Lasiurus xanthinus*)
- Yuma myotis (*Myotis yumanensis*)

The following special-status wildlife species were determined to have high or moderate potential to occur because of suitable habitat conditions and current or historical ranges lying within the BSA:

Reptiles:

- Baja California coachwhip (*Masticophis fuliginosus*)
- California glossy snake (*Arizona elegans occidentalis*)
- Coast patch-nosed snake (*Salvadora hexalepis virgultea*)
- Coronado skink (*Salvadora hexalepis virgultea*)
- Southern California legless lizard (*Anniella stebbinsi*)

Birds:

- Bell's sage sparrow (*Artemisiospiza belli belli*)
- Burrowing owl (Breeding)
- Ferruginous hawk (*Buteo regalis*)
- Lawrence's goldfinch (*Spinus lawrencei*)
- Grasshopper sparrow (*Ammodramus savannarum*)
- Oregon vesper sparrow (*Pooecetes gramineus affinis*)
- Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*)
- White-tailed kite (*Elanus leucarus*)

Mammals:

- Northwestern San Diego pocket mouse (*Chaetodipus fallax fallax*)
- San Diego black-tailed jackrabbit (*Lepus californicus bennettii*)
- San Diego desert woodrat (*Neotoma lepida intermedia*)

Based on survey results and a literature review, the following species were determined to have low potential to occur; as a result, impacts on these species are not evaluated in subsequent chapters: HCB, listed FS (*Streptocephalus woottoni*, *Branchinecta sandiegonensis*), and CAGN. Appendix J provides a complete discussion regarding all special-status wildlife species with potential to occur.

Hermes Copper Butterfly (*Lycaena hermes*)

HCB was not detected within the survey area during the surveys in 2019 or 2020. Spiny redberry, the larval host plant of HCB, is distributed in several discrete patches throughout the scrub habitat in the BSA. Many of these redberry patches were also in proximity to patches of California buckwheat, mapped as flat-topped buckwheat stands (Figure 6). Suitable habitat was found in the northern portion and the small southwestern corner of the survey area, consisting of dense Diegan coastal sage scrub and areas of coastal sage-chaparral transition. The HCB survey report is attached as Appendix D.

San Diego and Riverside Fairy Shrimp (*Branchinecta sandiegonensis, Streptocephalus woottoni*)

Two species of federally listed endangered FS are known to occur in San Diego County: San Diego FS and Riverside FS. Twenty-eight basins were observed in the BSA during the wet season; these supported inundation for at least 30 days in 2018–2019, which is enough time for these two species to reach maturity. No FS individuals of either local species (San Diego FS and Riverside FS) were observed during wet-season sampling within the 28 sampled pools. No FS cysts were observed in any of the 28 sampled pools in the 2019 dry-season sampling. The USFWS protocol FS survey report is attached as Appendix B.

Coastal California Gnatcatcher (*Polioptila californica californica*)

CAGN was not detected during the protocol surveys in 2019, and no CAGN were incidentally detected during other biological surveys conducted for the Project in 2019, 2020, and 2022. The BSA is at the far eastern extent of the known range of CAGN and possibly just east of the known current range for this species, based on species occurrence data from USFWS (USFWS CFWO 2020), CNDDB (CDFW 2020), and the SanBIOS database (SANDAG 2020). In addition, the elevation and related weather extremes of the site may preclude occupation by CAGN. The CAGN protocol survey report is attached as Appendix F.

1.4.13.2 Invertebrates

See Appendix J for a complete list of all special-status invertebrates evaluated for occurrence within the BSA. The following sections provide details on invertebrate species that were observed within the BSA during surveys.

Quino Checkerspot Butterfly (*Euphydryas editha quino*)

The QCB survey area within the BSA supports approximately 82.8 acres of non-excluded areas, as defined by USFWS (USFWS 2014). Two adult QCB were observed within the survey area on April 8, 2019. The first QCB observed on April 8 was a female moving north and nectaring on blue dicks (*Dichelostemma capitatum*). The second QCB was a male observed defending an area of nectar plants, including blue dicks. No QCB host plants were observed within this area. These individuals

were not observed during QCB surveys on April 10 or during any subsequent protocol surveys. The 2019 QCB protocol survey report is attached as Appendix C. In 2020, QCB surveys were conducted within the BSA as well as within the adjacent Wright's Field. Two QCB were observed on March 5, 2020: one in the southwestern portion of the BSA and the other adjacent to a large patch of dot-seed plantain on Wright's Field. Figure 5 shows the location of QCB host plants and observed individuals during the 2019–2020 protocol surveys.

1.4.13.3 Reptiles and Amphibians

See Appendix J for a complete list of all special-status reptiles and amphibians evaluated for occurrence within the BSA. The following sections provide details on the special-status reptile and amphibian species that were observed within the BSA during surveys.

Belding's Orange-throated Whiptail (*Aspidoscelis hyperythra*)

Two individuals were observed incidentally within the BSA in 2019. Both were noted in the far northern portion of the BSA in scrub/chaparral habitats.

Blainville's (Coast) Horned Lizard (*Phrynosoma blainvillii*)

One individual was observed incidentally within the BSA in 2019 in the far northwestern portion of the BSA in a disturbed Valley needlegrass grassland stand.

Coastal Western Whiptail (*Aspidoscelis tigris stejnegeri*)

One individual was observed incidentally within the BSA in 2019 in the far western portion of the BSA in a Diegan coastal sage scrub stand.

Red-diamond Rattlesnake (*Crotalus ruber*)

One red-diamond rattlesnake was observed in the BSA in 2019 within oak woodlands on the rocky high point in the central portion of the BSA. This species occurs in a variety of habitats; in San Diego County, it is most common in coastal sage scrub, chaparral, pinyon-juniper woodland, and desert habitats (Lemm 2006).

Western Spadefoot (*Spea hammondii*)

The winter of 2018–2019 was an exceptionally wet winter for coastal San Diego County. During fairy shrimp surveys in 2019, a western spadefoot egg mass was observed in basin AP-7. These eggs were discovered on February 8, 2019; the basin was inundated through March 29, 2019, a total of seven weeks. It was dry after that date. No evidence of western spadefoot breeding was observed in any other basins on-site during the surveys. Larvae were never observed in basin AP-7 during weekly checks from February 8 through March 29, 2019. The single breeding attempt within AP-7 during February 2019 was very likely opportunistic in nature and indicative of the exceptionally wet winter. The basins on the County parcel appear to be too small and ephemeral in nature to allow for complete larval development during all but perhaps record rainfall years; they more often act as reproductive sinks for the species.

Based on the results of the 2022 western spadefoot survey, the seasonally inundated basins within the County's parcel are associated primarily with the trails that exist along the northern perimeter of the BSA. Approximately 48 ponded areas were surveyed within or adjacent to dirt access roads, of which approximately 35 were mapped within the County's parcel and 13 were mapped on Wright's Field.

No western spadefoot adults, larvae, or eggs were observed during surveys of seasonally inundated basins within the County's parcels in 2022. Based on the surveys conducted in 2022, the two basins on Wright's Field (WF-6 and WF-7) are the primary breeding pools for western spadefoot within the survey area, although successful western spadefoot recruitment was not observed in 2022. Based on the survey results, it appears basins within the County's parcel are too shallow and/or do not hold water long enough to support western spadefoot breeding activities during all but the wettest rain years.

Three adults were observed within the County's parcel during the nocturnal survey on March 4, 2022. All three were on the western side of the County's parcel, within approximately 70 to 150 meters of the basins on Wright's Field and more than 250 meters away from the closest inundation areas on the County's parcel. It appears that the County's parcel does provide upland habitat for western spadefoot; they were observed foraging only in the far western portions of the parcel. Western spadefoot were not documented foraging within the proposed Alpine Park boundary in 2022. Potential impacts on western spadefoot are addressed in Section 2.2.3, below; mitigation measure **MM-BIO-4** is proposed to reduce those impacts.

Appendix E provides additional details on the 2022 surveys for western spadefoot conducted in the BSA.

1.4.13.4 Birds

See Appendix J for a complete list of all special-status birds evaluated for occurrence within the BSA. The following sections provide details on avian species that were observed within the BSA during surveys.

Burrowing Owl (*Athene cunicularia*)

No breeding burrowing owls were observed within the BSA. A winter/migrant burrowing owl individual was incidentally observed within a rocky area of the BSA, outside of the proposed Alpine Park boundary during surveys in the winter of 2018–2019. No burrowing owls were observed during protocol surveys in 2019. Figure 5 (Appendix A) shows the location of the incidental burrowing owl observation. However, the County would address any potential impacts with mitigation measure **MM-BIO-6**.

Cooper's Hawk (*Accipiter cooperii*)

Cooper's hawk is a San Diego Group I species. This species utilizes open oak woodlands for foraging and nesting habitats and was observed during CAGN protocol surveys.

Red-shouldered Hawk (*Buteo lineatus*)

One red-shouldered hawk was noted in 2019 flying over the northern portion of the BSA within the Engelmann oak woodlands.

Western Bluebird (*Sialia mexicana*)

Western bluebird is a tree-nesting songbird, listed as a San Diego Group II species. It uses open oak woodlands as foraging and nesting habitat and was observed during CAGN protocol surveys.

1.4.13.5 Mammals

See Appendix J for a complete list of all special-status mammals evaluated for occurrence within the BSA. The following sections provide details on mammal species that were observed within the BSA during surveys.

Bats

During the 2019 and 2022 surveys, 15 of the 22 known bat species in San Diego County were detected. The bats detected are big brown bat, big free-tailed bat, California myotis, canyon bat, hoary bat, Mexican free-tailed bat, pallid bat, pocketed free-tailed bat, Townsend's big-eared bat, western long-eared myotis, western mastiff bat, western red bat, western small-footed myotis, western yellow bat, and Yuma myotis.

Seven of these observed bats are listed as California Species of Special Concern: pallid bat, Townsend's big-eared bat, western red bat, western yellow bat, western mastiff bat, pocketed free-tailed bat, and big free-tailed bat. All of these species, except western yellow bat, are also listed as San Diego County Group II species. Yuma myotis was observed in 2019 and 2022 in the grasslands in the central and southern portion of the BSA and is a County Group II species. Other County Group II bat species observed on-site in 2019 include western small-footed myotis and western long-eared myotis. Suitable roosting and foraging habitat for these species can be found on-site.

1.4.14 Wetlands/Aquatic Resources

No wetland features or aquatic resources were found within the BSA during any field surveys. There are multiple nearby National Hydrography Dataset features in the vicinity of the Project area. Chocolate Creek is a stream that begins on Wright's field, 0.30 mile west of the BSA, and travels northwest approximately 4.75 miles until it reaches El Capitan Lake. Viejas Creek travels south, approximately 0.30 mile east of the BSA, and continues southeast approximately 1 mile until it reaches the Sweetwater River. One unnamed drainage begins just south of South Grade Road near the BSA and travels approximately 2 miles southwest until it meets the north fork of the Sweetwater River.

1.4.15 Habitat Connectivity and Wildlife Corridors

Wildlife movement corridors are 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 vegetative cover, provide corridors for wildlife movement. 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.

Another important consideration is the setting of a project site with respect to regional connectivity with other undeveloped lands. Large blocks of contiguous habitat are important with respect to supporting resident populations of plants and wildlife as well as providing suitable conditions for wildlife movement and dispersal.

The BSA and the adjacent Wright's Field are surrounded by low-density exurban residential development. As such, the BSA and Wright's Field currently function as an "island" of habitat with limited connectivity to open space and other preserve areas. The proposed Project would be constructed at the eastern edge of this island of open space, leaving a smaller but similarly situated "island" of habitat to the west of the proposed park. As such, the Project site would not significantly affect a wildlife corridor or disrupt habitat connectivity.

1.5 Applicable Regulations

1.5.1 Federal Environmental Regulations

1.5.1.1 Federal Endangered Species Act

The FESA was enacted in 1973 to provide protection to threatened and endangered species and their associated ecosystems. "Take" of a listed species is prohibited, except when authorization has been granted through a permit under Section 4(d), 7, or 10(a) of the act. "Take" means to harass, harm, shoot, wound, kill, trap, capture, or collect or to attempt to engage in any of these activities without a permit.

1.5.1.2 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) was enacted in 1918. Its purpose is to prohibit the killing or transport of covered native migratory birds—or any part, nest, or egg of any such bird—unless allowed by another regulation adopted in accordance with the MBTA. The list of species that are protected by this act includes almost all native non-game species.

1.5.1.3 Bald and Golden Eagle Protection Act

When first enacted in 1940, the Bald and Golden Eagle Protection Act prohibited the take, transport, or sale of bald eagles, their eggs, or any part of the eagle. The act was amended in 1962 to extend prohibitions to the golden eagle. Under this act, "take" means to "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb."

1.5.1.4 Clean Water Act

In 1948, Congress first passed the Federal Water Pollution Control Act. This act was amended in 1972 and became known as the CWA. The CWA regulates the discharge of pollutants into the waters of the U.S. Under Section 404, permits need to be obtained from the U.S. Army Corps of Engineers (USACE) for the discharge of dredged or fill material into waters of the U.S. Under Section 401 of the act, water quality certification from the Regional Water Quality Control Board (RWQCB) needs to be obtained if there are to be any impacts on waters of the U.S.

1.5.2 State Environmental Regulations

1.5.2.1 California Environmental Quality Act

CEQA requires that biological resources be considered when assessing the environmental impacts resulting from proposed actions. CEQA does not specifically define what constitutes an "adverse effect" on a biological resource. Instead, lead agencies are charged with determining what specifically should be considered an impact.

1.5.2.2 California Fish and Game Code

The California FGC regulates the taking or possession of birds, mammals, fish, amphibians, and reptiles. It also provides additional protections for endangered species and regulations over lakes and streams and associated fish and wildlife habitat. Provisions regarding the protections for nesting birds are described in California FGC Section 3503 and make it unlawful to take, possess, or needlessly destroy the nest or eggs of most wild birds.

1.5.2.3 California Endangered Species Act

The CESA prohibits the "take" of any species that the California Fish and Game Commission determines to be a threatened or endangered species and is administered by CDFW. The CESA is found in California FGC Sections 2050–2116. Incidental take of these listed species can be approved by CDFW. Under this act, "take" means to hunt, pursue, catch, capture, or kill or attempt to hunt, pursue, catch, capture, or kill.

1.5.2.4 Lake and Streambed Alteration Program

The Lake and Streambed Alteration Program is administered by CDFW and found in Section 1600 et seq. of the California FGC. CDFW regulates streams and waterways and associated fish and wildlife habitat. CDFW is to be notified if a project will affect lake or streambed resources.

1.5.2.5 Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act is the California equivalent of the CWA. It provides for statewide coordination of water quality regulations through the establishment of the State Water Resources Control Board and nine separate RWQCBs that oversee water quality on a day-to-day basis at the regional/local level.

1.5.2.6 Natural Community Conservation Planning Act of 1991

The Natural Community Conservation Planning Act of 1991 is designed to conserve natural communities at the ecosystem scale while accommodating compatible land use. CDFW is the principal state agency implementing the act. NCCPs developed in accordance with this act provide for comprehensive management and conservation of multiple wildlife species and identify and provide for the regional or area-wide protection and perpetuation of natural wildlife diversity while allowing compatible and appropriate development and growth. The Project is within the boundaries of the San Diego MSCP, which is an adopted NCCP; the County maintains an Implementing Agreement with CDFW.

1.5.2.7 Native Plant Protection Act

The NPPA, enacted in 1977, allows the California Fish and Game Commission to designate plants as "rare" or "endangered." There are 64 species of plants that have been designated and protected as "rare" under the NPPA. Species designated as "endangered" are regulated under provisions of the CESA. The NPPA prohibits take of endangered or rare native plants, but it includes some exceptions for agricultural and nursery operations, emergencies, and—after properly notifying CDFW—certain vegetation removal. It is codified primarily in California FGC Section 1900 et seq.

Chapter 2
Project Effects

2.1 Impact Definitions

Biological resource impacts can be considered direct, indirect, or cumulative. They are also either permanent or temporary in nature.

Direct: Occur when biological resources are altered, disturbed, or destroyed during project implementation. Examples include clearance of vegetation, encroachment into wetland buffers (not applicable on this Project), diversion of surface water flows, and the loss of individual species and/or their habitats.

Indirect: Occur when project-related activities affect biological resources in a manner that is not direct. Examples include elevated noise and dust levels, increased human activity, decreased water quality, changes to hydrological conditions not resulting in type conversion of vegetation community, and the introduction of invasive wildlife (domestic cats and dogs) and plants.

Cumulative: Occur when biological resources are either directly or indirectly affected to a minor extent as a result of a specific project, but the project-related impacts are part of a larger pattern of similar minor impacts. The overall result of these multiple minor impacts from separate projects is considered a cumulative impact on biological resources.

Temporary: Temporary impacts can be direct or indirect and are considered reversible. Examples include the removal of vegetation from areas that will be revegetated, elevated noise levels, and increased levels of dust.

Permanent: Permanent impacts can be direct or indirect and are not considered reversible. Examples include removing vegetation from areas that will have permanent structures placed on them or landscaping an area with non-native plant species.

2.2 Project Impacts

All potential Project-related impacts (direct, indirect, and cumulative) were evaluated as a part of this assessment. Implementation of the Project would have primarily three classes of impacts: (1) permanent direct impacts on vegetation communities, sensitive plants species, and habitat for sensitive animals; (2) indirect temporary effects on certain sensitive natural communities, sensitive animals, or sensitive plant species from construction-related activities such as dust deposition, increased human presence, and noise associated with construction equipment; and (3) indirect permanent effects resulting from operation of the regional park system, such as an increased public presence that may indirectly affect animal movement or behaviors. Figure 3 in Appendix A shows the locations of all proposed Project impacts.

In addition to the Alpine County Park described in Section 1.2, above, the Project would result in the maintenance of approximately 1 acre of existing multi-use trails throughout the property. These are existing trails, and maintenance would not result in the removal of any native habitat. Maintenance

of the existing trail system and is not anticipated to have significant direct or indirect effects, including loss of habitat, because the trails to be maintained already exist within disturbed areas. The trail construction would have to be conducted in compliance with state and federal criminal prohibitions against taking of nesting birds and would not be expected to result in any direct or indirect mortality of general or sensitive wildlife species. As a result, the trails that would be formalized as part of the proposed Project are considered "Impact Neutral."

Areas identified in Figure 3 as "Native Habitat Avoidance Area" are within the generalized boundary of the proposed Alpine County Park, but they would not be subject to mass grading or vegetation removal during site preparation activities. These areas are at the northern end of the proposed park, adjacent to the proposed equestrian staging area. Impacts within the Native Habitat Avoidance Area are considered temporary indirect impacts.

Implementation of the Project includes the construction of public restroom facilities. The County may implement a septic system and associated leach field to accommodate sewage from the proposed restroom facilities. Another option under consideration is for the County to extend a sewer line into the proposed Alpine County Park, which would preclude the need for the septic system. For purposes of this analysis, both the sewer line and septic system are included as potential impacts. The septic system installation would not result in impacts on native habitats because it is currently within a fire management area that is regularly cleared of vegetation as needed and at the direction of the Alpine Fire District. As a result, this area is dominated by disturbance-adapted forbs and non-native grasses. Over the long term, the only change associated with the septic system would be an increase in water supply that is not anticipated to result in a change of vegetation community composition because it is anticipated to remain as a disturbed vegetation community.

Fire Fuel Reduction Zone as Part of the Project

- Along South Grade Road, where the Alpine Park boundary would be adjacent to the road, an additional 20 feet would be part of the existing fire fuel reduction zone along the road. The fire fuel reduction zone would occur within the current footprint of the proposed park. An additional 20 feet of fire fuel modification is also required along South Grade Road, approximately 100 feet south of the northeast corner of the County's parcel where it is adjacent to the Native Habitat Avoidance Area. Three Engelmann oak canopies occur within this zone.
- Within 100 feet of the volunteer parking pad in the northern portion of the proposed active park, fire fuel clearance would occur. Per the FEOA, both a Zone A (30 feet) and Zone B (100 feet) fire fuel clearance is required. Within 30 feet of the volunteer parking pad, the area would be cleared to Zone A standards, which would result in "landscape replacement" per the FEOA. No Engelmann oak trees occur within Zone A. Zone B fire clearance should achieve at least a 75 percent reduction in fire line intensity from a wildfire, which would be accomplished in this area by removing shrub fuels (predominantly flat-topped buckwheat) by a minimum of 50 percent and grass/herb fuels by a minimum of 80 percent . Canopies associated with four Engelmann oaks occur within the Zone B area. Engelmann oaks may require canopy trimming to meet the minimum 10- to 15-foot separation distance required in the FEOA for Zone B areas, in coordination with a certified arborist.

Table 7 summarizes the types of impacts associated with this Project.

Table 7. Summary of Project Components and Associated Impacts

General Location	Project Component	Impact Type	Sum of Acres
Alpine County Park	Alpine County Park	Permanent	22.2
	New Fire Fuel Modification Zones	Permanent	0.5
	Leach Field	Permanent	0.4
Total Permanent Impacts			**23.1**
Alpine Park Preserve	Native Habitat Avoidance Area	Temporary Indirect	2.1
	Sewer Pipe (if septic system not used)	Temporary Direct	< 0.1
	All Other Areas of Alpine Park Preserve	Resource Management/Habitat Enhancement Activities Only	65.4
Total Preserved			**67.5**
Existing Trails to Be Maintained		Impact Neutral	1.0
Existing Fuel Reduction Areas (not part of Project)		N/A	2.6
Grand Total			**94.2**

2.2.1 Habitats

Clearing of native vegetation during grading and site preparation is required for construction of the Project. Development of the Project would result in direct, permanent impacts on up to 23.1 acres of land, of which approximately 22.4 acres are considered sensitive natural communities, classified as Tier I through Tier III (Table 8) (Appendix A, Figure 3). Permanent direct impacts on approximately 471 square feet of sensitive natural communities[1] also would occur as part of the western spadefoot mitigation for the Project, which requires the construction of up to three new western spadefoot basins within the Alpine Park Preserve. Table 8 summarizes the maximum Project impacts on habitat types/vegetation communities from development of the Project.

Permanent impacts on sensitive natural communities would occur predominantly within Valley needlegrass grassland, disturbed flat-topped buckwheat stands, and non-native grasslands. Permanent impacts on Engelmann oak woodlands have been reduced to a minimum during the County's redesign of the Concept Plan of the proposed park in 2020. The County would avoid Engelmann oak woodlands, trees, and their associated canopy during construction to the extent feasible. Fire fuel management clearing would occur within the understory of approximately six the Engelmann oaks in the northern portion of the Project area in coordination with a certified arborist, four of which may also experience canopy thinning. Although no permanent buildings would be built within 100 feet of oaks, the volunteer parking pad, on which a recreational vehicle would be permanently parked, is located in proximity to the Engelmann oaks in the northern portion of the parcel. The nearest Engelmann oak is within approximately 60 feet of the volunteer parking pad.

Permanent impacts on native habitats (22.4 acres) represent approximately 4.9 percent of the total available open space and conserved lands within the immediate vicinity of the Project. These existing open space and conserved lands include the Wright's Field Preserve; privately held open space lands, including some with conservation easements; and the proposed Alpine Park Preserve.

[1] The County will attempt to construct western spadefoot basins in non-native grasslands. Impacts on non-native grasslands will be mitigated at a 1:1 ratio on-site or off-site at a mitigation bank. Should impacts occur on Valley needlegrass grassland from basin creation, the County will mitigate at a 2:1 ratio on-site through native grassland restoration and/or preservation of existing native grassland.

Table 8. Maximum Project Impacts on Vegetation Communities and Land Covers

Vegetation Community/Land Cover[a]	Tier[c]	Area in Acre(s)						
		Permanent Impacts[e]			Temporary Impacts		Impact Neutral	Total
		Alpine County Park[d]	Leach Field	New Fire Fuel Modification Areas	Native Habitat Avoidance Area	Sewer Pipe	Maintenance of Existing Trails	
Disturbed Habitat (11300)	IV	0.5	0.1	< 0.1	< 0.1	—	1.0	1.6
Diegan Coastal Sage Scrub (32500), Including Disturbed and Baccharis Dominated (32530)	II	< 0.1	—		< 0.1	—	—	< 0.1
Disturbed Flat-topped Buckwheat (32800)	II	1.6	0.3	0.3	1.0	<0.1	—	3.2
Flat-topped Buckwheat (32800)	II	1.7	—	0.1	0.7	<0.1	—	2.4
Flat-topped Buckwheat – Existing Fire Fuel Modification Zone (32800)	II	< 0.1	—		—	—	—	< 0.1
Coastal Sage-Chaparral Transition (37G00)	II	—	—		—	—	—	—
Southern Mixed Chaparral (37120)	III	—	—		—	—	—	—
Valley Needlegrass Grassland (42100)	I	14.4	—		< 0.1	—	—	14.5
Valley Needlegrass Grassland - Existing Fire Fuel Modification Zone (42100)		0.3	—		—	—	—	0.3
Disturbed Valley Needlegrass Grassland (42100)	I	—	—		—	—	—	—
Non-native Grassland (42220)	III	3.6	—		—	—	—	3.6
Open Engelmann Oak Woodland (71181)	I	—	—	0.1	0.4		—	0.5
Non-native Woodland (79000)	IV	< 0.1	—	< 0.1	< 0.1		—	< 0.1
Eucalyptus Woodland (79100)	IV	—	—		—		—	—
Total[b]		**22.2**	**0.4**	**0.5**	**2.1**	**<0.1**	**1.0**	**26.1**

a. Vegetation categories and numerical codes are from Holland (1986) and Oberbauer et al. (2008).
b. Individual rows may not sum to total because of rounding.
c. Tier categories are defined in the County's Biological Mitigation Ordinance.
d. The additional 20-foot fire clearance zone where the park footprint is adjacent to South Grade Road is within the current Alpine Park footprint, so no additional impacts would occur beyond what is shown below.
e. An additional 471 square feet of impacts on sensitive natural communities would occur from implementation of the western spadefoot mitigation measure (**MM-BIO-4**) requiring the construction of three basins for spadefoot. It is not known exactly where these basins would be constructed, but the County would endeavor to place these in areas with non-native grasses or flat-topped buckwheat and avoid native grassland areas to the extent feasible. Impacts associated with construction of the basins would be mitigated in accordance with **MM-BIO-9**.

A maximum of approximately 2.1 acres of sensitive habitat would be subject to temporary impacts during construction, predominantly within flat-topped buckwheat and open Engelmann oak woodland areas (Table 8). The Native Habitat Avoidance Area is directly adjacent to areas that would be developed into the equestrian staging area as part of the Project and, as such, could be subject to indirect, short-term impacts during construction. The temporary indirect impacts could include increased dust deposition on leaf surfaces from construction equipment and grading in adjacent areas and increased erosion or runoff during rain events if the adjacent areas are graded and no stormwater pollution prevention best management practices are implemented. However, dust suppression and stormwater pollution prevention best management practices would be implemented throughout construction to minimize potential impacts. Further information about impacts anticipated on Engelmann oaks is provided in Section 2.2.2, below.

2.2.2 Sensitive Plants

Of the eight sensitive plant species found within the BSA, two would be directly affected (i.e., removed) by implementation of the Project: decumbent goldenbush and Palmer's grappling hook. Decumbent goldenbush would be affected at one location in the north-central portion of the proposed Alpine County Park, within an area that supports approximately 110 individuals over approximately 3,500 square feet. Approximately 200 Palmer's grappling hook individuals would be affected within the northwestern edge of the proposed Alpine County Park. Individuals would be removed during grading and site preparation of the Project.

The County redesigned the proposed Project's equestrian staging area to avoid impacts on Engelmann oaks. Areas identified as "Native Habitat Avoidance Area" would not be subject to grading or vegetation removal during site preparation activities (see Figure 4). As a result, there are no Engelmann oak individuals or their associated canopies within the proposed grading limits of the Project. Grading and site development would occur entirely outside of the canopy drip line of all Engelmann oaks.

The County is proposing grading and site development within 0.94 acre of land that is within a 50-foot root protection zone[2] where Engelmann oak root zones are located. Activities within the root protection zone include grading/site preparation (e.g., compaction) and construction of park infrastructure (Figure 7). These activities would occur within the root protection zone of approximately 25 Engelmann oak trees, including one individual that was noted by the County's arborist in 2020 to be in very poor health and/or dying. Although these grading activities would occur within the root protection zone, as mentioned above, none of those activities would occur directly under the canopy of any Engelmann oaks, and no Engelmann oaks would be removed from construction activities associated with the Project.

Fire fuel modification activities would occur within approximately 0.1 acre of Engelmann oak woodland in coordination with a certified arborist Approximately seven Engelmann oak tree canopies are located within the area where fire fuel management would occur. Four of these oaks are in the Zone B fire fuel reduction zone where canopy thinning of some oaks may be required, in coordination with a certified arborist. The other three oaks are located directly west of South Grade Road in the 20-foot area where fire fuel management would be extended west from the

[2] Root protection zones are defined in Section 3.5.5 of the County's *Report Format and Content Requirements* document as 50 feet "outward from the outside edge of the oak canopy."

existing fire fuel management along South Grade Road. The understory vegetation in this area is dominated by purple needlegrass, non-native grasses, and flat-topped buckwheat

Short-term indirect impacts could occur on decumbent goldenbush, Palmer's grapplinghook, and Engelmann oak during construction activities because each of these sensitive species occur adjacent to areas where the proposed Alpine County Park would be built. These three species all occur within at least 200 feet of proposed construction activities. Construction-related indirect impacts could include dust deposition that could alter the photosynthetic vigor of these individual plants and the potential spread of invasive species into the Alpine Park Preserve from the construction area. These short-term indirect impacts could become permanent if invasive species become established and are not eradicated. However, dust control measures are required for this Project and would reduce these impacts to less than significant, in addition to weed abatement by County staff members. Other potential long-term indirect impacts include trampling from an increased anthropogenic presence and the possibility of off-trail activities. The public is currently walking and, at times, parking on the County's property; therefore, these impacts are not expected to be appreciably greater after construction of the proposed park. Moreover, the County has proposed additional signage, the presence of a live-in volunteer and park rangers to monitor the Alpine Park Preserve and Alpine County Park, as well as a formalized staging area for parking, which would minimize impacts on these special-status species from unauthorized activities (e.g., off-trail trampling, building of jumps/berms within the trails or parking in unauthorized areas). After implementation of the proposed Project, it is anticipated that fewer long-term impacts on special-status plants would occur compared to baseline conditions.

Chocolate lily, delicate clarkia, San Diego County viguiera, small-flowered microseris, and Southern California black walnut were all observed within the BSA. These species are not expected to be affected by implementation of the Project, either directly or indirectly, and are more than 200 feet from the proposed Alpine County Park and within the areas proposed for permanent protection and long-term management within the Alpine Park Preserve.

2.2.3 Sensitive Wildlife

2.2.3.1 Invertebrates

Fairy Shrimp

No special-status FS were observed during wet- and dry-season surveys conducted in 2018–2019; therefore, no impacts on FS are expected to occur.

Quino Checkerspot Butterfly

The Project is not within a Recovery Area or within designated critical habitat for QCB (USFWS 2003). The Project would result in impacts on two of seven locations (29 percent) where QCB adults were observed on the Project site or on Wright's Field in the past, including the observation made in 2010, as documented in the USFWS CFWO data (USFWS CFWO 2020), and during surveys in 2019 and 2020. Both locations would be affected by construction of Alpine County Park. No locations would be affected by maintenance of the existing trails. Five locations (71 percent) where QCB adults were observed in the past would be permanently protected within either the Wright's Field Preserve or the proposed Alpine Park Preserve.

Incidental take of QCB could occur in the form of harassment, harm, injury, or mortality. Direct impacts that could result in incidental take of QCB would occur through the permanent removal of up to approximately 22.4 acres of QCB occupied habitat, which is expected to be completed in the first year of Project implementation. Direct impacts on QCB adult locations and host plants are shown in Figure 5. There is also the potential for inadvertent take of a small number of QCB to occur in the Alpine Park Preserve when implementing habitat management activities described in the Habitat Restoration and Enhancement Plan and Resource Management Plan as a result of site preparation activities tied to habitat restoration and accidental trampling of QCB larvae and host plants during monitoring and or trail management.

Hermes Copper Butterfly

HCB was not observed within the Project site during comprehensive surveys during 2019 and 2020. In addition, HCB has not been documented from the County's property in publicly available databases, such as SANDAG 2011 and CNDDB (CDFW 2020). Occurrences nearby have been documented at the northern portion of Wright's Field where spiny redberry is much more abundant than on the County's property and on a privately held parcel south of Wright's Field. There are only approximately 68 spiny redberry within the County's parcel, representing approximately 4 percent of the 1,679 spiny redberry individuals mapped on the County's parcel and Wright's Field. Furthermore, no impacts on spiny redberry would occur from construction of the proposed Alpine County Park, proposed new fire fuel reduction areas, or the associated maintenance of existing trails. As a result, no impacts on HCB individuals are anticipated from the proposed Project.

Although park development would result in permanent development of 20.3 acres of designated critical habitat, only 4.0 acres contains the physical and biological features critical to the conservation of the species, which includes areas of flat-topped buckwheat (including disturbed flat-topped buckwheat) and Engelmann oak woodland. See Section 3.2 for additional information on impacts on designated critical habitat for HCB.

2.2.3.2 Reptiles and Amphibians

The Belding's orange-throated whiptail, Blainville's (coast) horned lizard, coastal western whiptail, and red-diamond rattlesnake were observed within the BSA. Baja California coachwhip, California glossy snake, coast patch-nosed snake, Coronado skink and Southern California legless lizard were not observed during surveys but have moderate or high potential to occur within the BSA. These species could be directly and indirectly affected through implementation of Alpine County Park, both during construction and post-construction. Direct impacts include the conversion of native and naturalized habitat that could support these species to a developed park. Direct impacts could occur during construction of the park if individuals are in the construction footprint. However, the proposed preserve portion of the County property, as part of Project implementation, in addition to the other adjacent open space and preserved land, would provide habitat for these species. The long-term survival of the species would be benefited through the permanent preservation of a portion of the County property, in addition to proposed restoration of native grassland.

Indirect impacts on these species could occur during construction and maintenance of the Project. Indirect temporary impacts during construction include increased dust from grading and construction, increased noise from construction crews and equipment, and increased foot traffic during construction. However, dust suppression and stormwater pollution prevention best management practices would be implemented throughout construction to minimize potential

impacts. In addition, the public is currently accessing the County property. Through implementation of the Project with formalized trails, an on-site volunteer, County rangers, trash cans, bathrooms, signs, and a designated staging area for parking, foot traffic would be reduced in the undesignated areas that the public is currently accessing by foot and/or vehicle.

Post-construction, the existence of Alpine County Park could increase the amount of anthropogenic influence in the areas immediately surrounding the park footprint. There is a possibility for increased littering and foot traffic within the park and the maintained trail system, which exists in habitat that could support these species. However, the presence of trash cans, signs, park rangers, and an on-site volunteer, in addition to coordination with Back Country Land Trust and formalized trails, could decrease potential impacts on these species' habitat with the implementation of the proposed preserve and Alpine Park. Other indirect impacts include introduction of non-native or invasive plant/animal species (i.e., domestic dogs and horses). These indirect impacts may cumulatively result in reduced use of habitat immediately surrounding the Project footprint. However, the County is proposing restoration of native grassland and permanent preservation of approximately 67.5 acres of the County property, in addition to long-term active management of this area. The restoration efforts and active management of the proposed preserve portion of the Project would assist in preventing the spread of invasive plants and benefit native habitats. Signs would be posted and the public would be subject to park rules within the proposed preserve land and the Alpine Park to prevent impacts from domestic and horses within sensitive habitats. Ranger-led hikes would also assist the public in learning further about the resources the County proposes to protect in perpetuity and importance of staying on designated trails and picking up after domestic animals. Impacts could be significant. However, through the design measures and on-site management through implementation of the Project, in addition to implementation of mitigation measures **MM-BIO-10**, which requires native grassland restoration, and **MM-BIO-9**, which requires habitat-based mitigation be provided, as well as through the establishment of the Alpine Park Preserve (**APM-BIO-1**), which would protect the remaining habitat for these species in perpetuity, the impact would be less than significant.

Western Spadefoot

Based on the results of the 2022 western spadefoot survey, the seasonally inundated basins within the County's parcel are associated primarily with the trails that exist along the northern perimeter of the BSA. Approximately 48 ponded areas were surveyed within or adjacent to dirt access roads, of which approximately 35 were mapped within the County's parcel and 13 were mapped on Wright's Field.

No western spadefoot adults, larvae, or eggs were observed during surveys of seasonally inundated basins within the County's parcels in 2022. Based on the surveys conducted in 2022, it is clear that two basins on Wright's Field (WF-6 and WF-7) are the primary breeding pools for western spadefoot within the survey area, although successful western spadefoot recruitment was not observed in 2022. Basins within the County's parcel are too shallow and/or do not hold water long enough to support western spadefoot breeding activities during all but the wettest rain years.

Western spadefoot may be affected by the Project. One breeding pool of approximately 157 square feet (AP-7) was documented within the active park development footprint in 2019. This breeding pool may be utilized by western spadefoot seeking to expand from the core population on Wright's Field Preserve during exceptionally wet years, such as 2019 when an egg mass was observed in AP-7. AP-7 would be filled in during construction of the active park (**Impact-BIO-4**). Impacts on this potential breeding pool would be significant absent mitigation.

As described in the Western Spadefoot Survey Report (Appendix E), the core breeding population of western spadefoot is located within seasonally inundated basins on Wright's Field Preserve. Three adults were observed within the County's parcel during the nocturnal survey on March 4, 2022. All three were on the western side of the County's parcel, within approximately 70 to 150 meters of the basins on Wright's Field and more than 250 meters away from the closest inundation areas on the County's parcel. It appears that the County's parcel does provide upland habitat for western spadefoot, but western spadefoot were documented foraging only in the far western portions of the parcel during the 2022 surveys.

Based on a recent study (Baumberger et al. 2019) that documented the distances from breeding pools to burrow locations, burrows and estivating adults could be expected to occur within approximately 262 meters of the known breeding pools on Wright's Field Preserve. The area within this 262-meter distance includes the western portion of the BSA but not areas within the proposed active park where grading would occur (see Figure 4.4-4).

Adult western spadefoot also emerge a few nights per year to forage and breed (San Diego Management and Monitoring Program 2022). These activities are most likely to occur within the same general area as burrowing habitat, although the presence of eggs within the basin AP-7 during 2019 demonstrate that they can migrate farther east and into the area proposed for park development during these nocturnal breeding events but very likely only during particularly wet years. Because these foraging and breeding events happen in the evening when construction equipment would not be active, it is unlikely that direct impacts on western spadefoot, such as crushing or illegal collecting, would occur during foraging and breeding events. However, there is a possibility that some estivating western spadefoots would occur within the proposed Project footprint where grading would occur. If western spadefoots were estivating in areas where grading is proposed, individuals could be crushed from construction equipment. These impacts are significance, absent mitigation, as described further in Section 3.2. The County would address potential impacts with mitigation measure **MM-BIO-4**; therefore, the impact would be less than significant.

2.2.3.3 Birds

Construction of Alpine County Park would have potential permanent direct impacts and indirect impacts on avian species endemic to the region. Burrowing owl, a California Species of Special Concern; California Cooper's hawk, a California Species of Special Concern; red-shouldered hawk, a County Group I species; and western bluebird, a County Group 2 species, were observed in the BSA during surveys in 2019 and 2020 and could be affected by the Project. Although the burrowing owl that was observed was a transient winter migrant and breeding season surveys were negative, burrowing owl could still occur within the BSA and possibly within the areas proposed for grading for the active use park. Ground squirrel burrows exist throughout the BSA, and if breeding burrowing owls were present during construction activities, direct mortality to this species, including eggs or chicks, could occur.

White-tailed kite is also a wide-ranging avian species that has high potential to occur within the BSA, in addition to Bell's sage sparrow, ferruginous hawk, grasshopper sparrow, and Southern California rufous-crowned sparrow, which have moderate potential to occur within the BSA. Approximately 22.4 acres of foraging and/or breeding habitat for these species would be permanently affected when the grasslands and scrub habitats are graded during construction. These habitats may also be utilized for foraging by other resident raptor species residing in the Alpine region. However, the proposed preserve portion of the County property, as part of Project implementation, in addition to the other adjacent open space and preserved land, would provide habitat for these species.

Grassland obligate bird species, or avian species that strongly prefer open grassland habitats, also would be affected by the proposed Project. These include the burrowing owl (observed wintering only), grasshopper sparrow, Oregon vesper sparrow, and ferruginous hawk. Approximately 19 acres of native and non-native grasslands used by these species are proposed to be removed during construction of the active use park. However, the proposed preserve portion of the County property as part of Project implementation, in addition to the other adjacent open space and preserved land, would provide habitat for these species.

Bell's sage sparrow, a County Group I species; Lawrence's goldfinch, a Bird of Conservation Concern; and Southern California rufous-crowned sparrow, a County Group I species, could occur within the approximately 3.6 acres of open flat-topped buckwheat scrub stands within the proposed active park area. These species would experience the permanent loss of this habitat as a result of construction of the active park. However, the proposed preserve portion of the County property, as part of Project implementation, in addition to the other adjacent open space and preserved land, would provide habitat for these species.

Temporary direct impacts would occur during construction of the Project. Expected impacts include increased dust from grading and construction, increased noise from construction crews and equipment, increased foot traffic during construction, and increased noise pollution from crews and equipment. This may temporarily alter the natural behaviors of avian species in the area. However, the proposed preserve portion of the County property, as part of Project implementation, in addition to the other adjacent open space and preserved land, would provide habitat for these species. The long-term survival of the species would be benefited through the permanent preservation of a portion of the County property, in addition to proposed restoration of native grassland. In addition, dust suppression and stormwater pollution prevention best management practices would occur throughout construction to minimize potential impacts. Furthermore, the public is currently accessing the County property; through implementation of the Project with an on-site volunteer, County rangers, trash cans, bathrooms, signs, formalized trails, and a designated staging area for parking, foot traffic would be reduced in undesignated areas that the public is currently accessing by foot and/or vehicle.

Post-construction, the existence of Alpine County Park would increase the amount of anthropogenic influence in the areas immediately surrounding the park footprint. There is a possibility for increased littering and foot traffic within the park and in the maintained trail system, which exists in habitat that could support these species, although all three species will readily forage in the vicinity of human activities. However, the presence of trash cans, signs, park rangers, an on-site volunteer, a designated parking area, in addition to coordination with Back Country Land Trust and formalized trails, would decrease potential impacts on these species' habitat with the implementation of the proposed preserve and Alpine Park.

The equestrian staging area would contain receptacles for waste and equestrian manure, and a Manure Management Plan would be prepared for the proposed Project to control disease vectors and pests, such as mosquitoes and other animals/insects that are vectors for disease or capable of affecting human health. Other indirect impacts include the introduction of non-native or invasive plant species, which, if not maintained, could affect viable habitat. However, the restoration efforts and active management of the proposed preserve portion of the Project would assist in preventing the spread of invasive plants and benefit the native habitats these species rely on for foraging. There is the also the possibility for increased presence of human and dogs through the park and trails as well as an increase in car traffic within the park footprint. These indirect impacts may cumulatively

result in reduced use of habitat immediately surrounding the Project footprint. However, the presence of trash cans, signs, park rangers, an on-site volunteer, a designated parking area, in addition to coordination with Back Country Land Trust and formalized trails, would decrease potential impacts on these species' habitat with the implementation of the proposed preserve and Alpine Park. In addition, implementation of mitigation measures **MM-BIO-5**, to avoid impacts on nesting birds; **MM-BIO-6,** preconstruction burrowing owl surveys; **MM-BIO-10,** native grassland restoration; and **MM-BIO-9,** preservation of sensitive habitat types, would reduce the impacts to less than significant.

2.2.3.4 Mammals

Special-Status Bats

During the 2019 and 2022 bat surveys, 15 of the 22 known bat species in San Diego County were detected. The bats detected are big-free tailed bat, a County Group 2 species; pallid bat, a County Group 2 species; pocketed free-tailed bat, a County Group 2 species; Townsend's big-eared bat, a County Group 2 species; western long-eared myotis, western mastiff bat, a County Group 2 species; western red bat, a County Group 2 species; western small-footed myotis, a County Group 2 species; western yellow bat; and Yuma myotis, a County Group 2 species. Seven of these species are listed as California Species of Special Concern: pallid bat, Townsend's big-eared bat, western red bat, western yellow bat, western mastiff bat, pocketed free-tailed bat, and big free-tailed bat. Permanent direct and temporary indirect impacts on these species are expected to occur.

The bat species were observed foraging over most of the native habitats in the BSA, especially within the open Engelmann oak woodland, flat-topped buckwheat, and native and non-native grasslands within the Project footprint. Direct impacts on sensitive habitats (Table 8) would remove foraging habitat for these bat species during vegetation clearing associated with construction of Alpine County Park. However, the County is proposing restoration of native grassland and permanent preservation of a portion of the County property, in addition to active management on-site for the proposed preserve land and Alpine Park. The restoration efforts and active management of the proposed preserve portion of the Project would assist in preventing the spread of invasive plants and benefit the native habitats some of these species rely on for foraging. Signs would be posted and the public would be subject to park rules within the proposed preserve land and Alpine Park to prevent impacts from domestic and horses within sensitive habitats. Ranger-led hikes would also assist the public in learning further about the resources the County proposes to protect in perpetuity and the importance of staying on designated trails and picking up after domestic animals. Impacts would potentially be significant. However, through the design measures and on-site management through implementation of the Project, in addition to implementation of mitigation measures **MM-BIO-6,** pallid bat boxes; **MM-BIO-7,** bat roost avoidance; **MM-BIO-9,** native grassland restoration; and **MM-BIO-10,** preservation of sensitive habitat types, as well as through the establishment of the Alpine Park Preserve (**APM-BIO-1**), which would protect the remaining habitat for these species in perpetuity, the impact would less than significant.

Implementations of the Project would not directly affect any known roosting habitat or maternal colony sites; however, roost sites are difficult to detect and can shift from year to year. It is presumed that the bats present in the BSA are utilizing oak woodlands and/or grasslands as foraging or roosting sites, but there also may be some potential for bats to use the rock outcrops or crevices within boulders as roost sites. No large rock outcrops or trees would be removed as part of construction of the Project. However, construction would occur directly adjacent to oaks and in the

vicinity of rock outcrops/boulders where bats could be roosting. These construction activities have the potential to disrupt the breeding success of pregnant females and their pups, potentially causing direct mortality in some instances. These potential effects are discussed further in Section 3.2, below, and would be mitigated to less than significant through **MM-BIO-8**, requiring bat roost avoidance.

Indirect impacts on bat species, such as disruption of foraging behavior, could occur if construction takes place during evening hours. Because bats are nocturnal species and construction is expected to occur during daytime hours, indirect impacts on these species due to construction activities are not expected to alter natural behaviors. Maintenance of existing trails near or within oak woodlands is not expected to alter the quality of forage or affect roosting habitat for these species because these trails occur within disturbed, bare-ground areas already, and trail maintenance would occur during daytime hours.

Other Special-Status Mammals

The northwestern San Diego pocket mouse, a County Group 2 species; San Diego black-tailed jackrabbit, a County Group 2 species; and San Diego desert woodrat, a Group 2 species were determined to have moderate potential to occur within the BSA (Appendix J) and the potential to be affected by implementation of the Project. Suitable habitat for all three species can be found in the Valley needlegrass grasslands, non-native grasslands, and open flat-topped buckwheat scrub habitats within the BSA and within the construction footprint of the Alpine County Park. Grasslands and flat-topped buckwheat within the construction footprint would be directly affected and converted to a developed park, removing it as habitat that could support these species. However, the County is proposing restoration of native grassland and permanent preservation of a portion of the County property, in addition to active management on-site for the proposed preserve land and Alpine Park. The restoration efforts and active management of the proposed preserve portion of the Project would assist in preventing the spread of invasive plants and benefit native habitats these species rely on for foraging. Signs would be posted and the public would be subject to park rules within the proposed preserve land and the Alpine Park to prevent impacts from domestic animals and horses within sensitive habitats. Ranger-led hikes would also assist the public in learning further about the resources the County proposes to protect in perpetuity and the importance of staying on designated trails and picking up after domestic animals. Impacts would potentially be significant. However, through the design measures and on-site management through implementation of the Project, in addition to implementation of mitigation measures **MM-BIO-9,** native grassland restoration, and **MM-BIO-10,** preservation of sensitive habitat types, as well as through the establishment of the Alpine Park Preserve (**APM-BIO-1**), which would protect the remaining habitat for these species in perpetuity, the impact would be less than significant.

Temporary direct and indirect impacts on these species may occur during and post-construction of the Project. During construction, temporary direct impacts on these species include possible accidental take due to construction activities, increased dust from grading and construction, increased noise from construction crews and equipment, and increased foot traffic during construction. Natural behaviors of these species could be affected. However, dust suppression and stormwater pollution prevention best management practices would occur throughout construction to minimize potential impacts. In addition, the public is currently accessing the County property; through implementation of the Project with formalized trails, an on-site volunteer, County rangers, trash cans, bathrooms, signs, and a designated staging area for parking, foot traffic would be reduced in the undesignated areas that the public is currently accessing by foot and/or vehicle. In

addition, through the design measures and on-site management through implementation of the Project, in addition to implementation of mitigation measures **MM-BIO-10,** native grassland restoration, and **MM-BIO-9,** preservation of sensitive habitat types, as well as through the establishment of the Alpine Park Preserve (**APM-BIO-1**), which would protect the remaining habitat for these species in perpetuity, the impact would be less than significant.

Because the species are active at mostly night (Tremor et al. 2017), foraging habits are not anticipated to be significantly affected, but construction activities may cause the species to be active during the day to avoid construction activities. These forced disruptions to the circadian rhythm could have negative effects on their ability to regulate their temperature and metabolism, causing general stress to these individuals. The San Diego pocket mouse is known to utilize burrows as its form of shelter. Because this species is less active during the day, when construction would be most active, there is potential for impacts on this species, which might be resting in burrows.

Post-construction, the existence of Alpine County Park could increase the amount of anthropogenic influence in the areas immediately surrounding the park footprint. There is a possibility for increased littering, human waste, and foot traffic within the park and in the maintained trail system, which exists in habitat that could support this species. There is the also the possibility for increased presence of dogs within the trail system and an increase in car traffic. However, the public is currently accessing the County property; through implementation of the Project with formalized trails, an on-site volunteer, County rangers, trash cans, bathrooms, signs, and a designated staging area for parking, these impacts would be reduced in the undesignated areas that the public is currently accessing by foot and/or vehicle. Signs would be posted and the public would be subject to park rules within the proposed preserve land and the Alpine Park to prevent impacts from domestic dogs and horses within sensitive habitats.

Other indirect impacts include the introduction of non-native or invasive plant species, which, if not maintained, could affect viable habitat. These indirect impacts may cumulatively result in reduced use of habitat immediately surrounding the Project footprint. However, the County is proposing restoration of native grassland (see Chapter 4, **MM-BIO-10**) in addition to active management on-site for the proposed preserve land and Alpine Park. The restoration efforts and active management of the proposed preserve portion of the Project would assist in preventing the spread of invasive plants and benefit the native habitats these species rely on for foraging.

2.2.4 Core Wildlife Area/Wildlife Corridors

Development of the Project would not significantly alter the way that wildlife utilize this contiguous block of open space. The conversion of 22.4 acres of native habitat to a developed park facility would not significantly constrain wildlife movement because the park would be adjacent to existing development on three sides and situated at the far eastern edge of the approximately 450-acre contiguous block of habitat in the immediate vicinity (i.e., the adjacent Wright's Field Preserve and privately held, directly contiguous open space lands in the immediate vicinity of the proposed Project, some of which are protected through a conservation easement). As described above, the Alpine Park Preserve would be created on the western edge of the park, contiguous to Wright's Field Preserve, and maintained as an MSCP preserve in perpetuity. Trails would be utilized by medium and large mammals for ease of movement through the preserve, similar to baseline conditions.

The Project would permanently affect up to 22.4 acres of native habitat within a core wildlife area. Although these impacts may affect certain sensitive species, as detailed in Sections 2.2.3 and 2.2.4,

the daytime usage of the preserve would not significantly affect the functioning of the preserve as a core wildlife area.

Chapter 3
Special-Status Species

3.1 Guidelines for the Determination of Significance

CEQA Appendix G states that a project would have a potentially significant effect on biological resources if it would:

> …have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service

Specifically, according to the County, any of the following conditions would be considered significant (County 2010b):

- 3.A. The Project would affect one or more individuals of a species listed as federally or state endangered or threatened.
- 3.B. The Project would affect an on-site population of a County List A or B plant species or a County Group I animal species or a species listed as a state Species of Special Concern.
- 3.C. The Project would affect the local long-term survival of a County List C or D plant species or a County Group II animal species.
- 3.D. The Project may affect arroyo toad aestivation, foraging, or breeding habitat.
- 3.E. The Project would affect golden eagle habitat.
- 3.F. The Project would result in a loss of functional foraging habitat for raptors.
- 3.G. The Project would affect the viability of a core wildlife area, defined as a large block of habitat that supports a viable population of a sensitive wildlife species or an area that supports multiple wildlife species.
- 3.H. The Project would cause indirect impacts that would very likely harm sensitive species over the long term.
- 3.I. The Project would affect occupied burrowing owl habitat.
- 3.J. The Project would affect occupied coastal cactus wren habitat.
- 3.K. The Project would affect occupied Hermes copper habitat.
- 3.L. The Project would affect the nesting success of sensitive animals (as listed in the Guidelines for Determining Significance) through grading, clearing, fire fuel modification, and/or noise generating activities such as construction.

Each of these significance criteria is discussed in Section 3.2, below, with respect to the proposed Project.

3.2 Analysis of Project Effects

Each of the significance criteria listed in Section 3.1 is discussed below with respect to the Project's anticipated effects. Those criteria for which impacts are not anticipated are discussed briefly at the end of the section.

- 3.A. The Project would affect one or more individuals of a species federally or state-listed as endangered or threatened.

  Occupied QCB habitat would be affected by the construction and maintenance of the Project. Impacts on occupied QCB habitat would be significant. Mitigation for significant impacts on QCB would be provided through **MM-BIO-3**, which stipulates that the County would provide permanent protection of occupied QCB habitat within the Alpine Park Preserve, ensure no net loss of QCB host plants through enhancement and restoration of habitat, provide ongoing species monitoring, and comply with all Endangered Species Act requirements to address impacts on the species. The County intends to secure an incidental take permit (ITP) for impacts on occupied QCB habitat and implement all conservation measures contained therein. Specifically, the County would prepare an HCP to address and mitigate impacts on occupied QCB habitat. The remainder of the County parcel not affected by the Alpine County Park would be preserved in perpetuity as the Alpine Park Preserve. QCB habitat also would be re-established on the proposed Alpine Park Preserve. Impacts would be mitigated to less-than-significant levels through implementation of **MM-BIO-3**, which would ensure no net loss of host plants through restoration and enhancement of habitat, provide permanent protection of QCB habitat within the proposed preserve portion of the Project, and ensure ongoing monitoring by the County.

- 3.B. The Project would affect an on-site population of a County List A or B plant species or a County Group I animal species or a species listed as a state Species of Special Concern.

  Of the 226 decumbent goldenbush individuals observed within the survey area, 110 would be affected by implementation of the Project, which is nearly half of the on-site population. These impacts would be significant, absent mitigation, on the existing population of decumbent goldenbush. The remaining individuals would be protected in perpetuity by the establishment of the Alpine Park Preserve.

  The County would implement **MM-BIO-1**, which would require salvage of on-site decumbent goldenbush plants and replacing lost individuals at a 3:1 ratio. After implementation of this mitigation measure, there would be no net loss of this individual, an increase in the population within the County-owned land, and no substantial adverse effect on the local long-term survival of this species. Establishing the Alpine Park Preserve and implementing **MM-BIO-1** would reduce impacts on decumbent goldenbush to less-than-significant levels.

  The following reptile state Species of Special Concern were observed within the BSA: the coast horned lizard, the coastal western whiptail, the orange-throated whiptail, and the red-diamond rattlesnake. Although not observed within the BSA, the following state Species of Special Concern reptiles have moderate to high potential to occur within the BSA: Baja California coachwhip, the California glossy snake, the coast patch-nosed snake, the Coronado skink, and the Southern California legless lizard. These species would be directly and indirectly affected through implementation of the active park during construction. Impacts on up to approximately 22.4 acres of habitat (i.e., scrub and/or grasslands) for these reptile species would be a significant impact. Impacts would be mitigated to less-than-significant levels through the

establishment of the Alpine Park Preserve (**APM-BIO-1**), which would protect the habitat within the County's parcel (and potentially in some off-site locations) for these species in perpetuity. Furthermore, impacts on habitat would be mitigated in accordance with **MM-BIO-9**, which would require compensatory mitigation to be provided.

Western spadefoot may also be affected by the proposed Project. One breeding pool (AP-7) may be utilized by western spadefoot seeking to expand from the core population on Wright's Field Preserve during exceptionally wet years, such as 2019 when the egg mass was observed in AP-7. This breeding pool is present within the existing trails on-site but within the active park footprint. As a result, it would be filled in during construction of the park. Impacts on this one potential breeding pool would be significant absent mitigation. The County would mitigate at a 3:1 ratio for impacts on this breeding pool by creating three breeding pools closer to the core Wright's Field population. Basins would be constructed within clay soils in the Alpine Park Preserve, within micro-watersheds capable of filling the basins during rain events. Basins would be constructed with an adequate depth to increase the chance of survival during dry years compared to baseline conditions documented in 2022. Monitoring of the new basins would be conducted for 5 years following completion of the basin construction to document breeding outcomes and determine if adaptive management is needed to increase survival and recruitment within the constructed basins. The County would also monitor the core population on the Wright's Field Preserve to document population dynamics over time within this core population. Impacts would be mitigated to less-than-significant levels through implementation of **MM-BIO-4**, which would create additional breeding habitat for western spadefoot toads, **APM-BIO-1,** and **MM-BIO-9**, which would preserve potential foraging habitat in perpetuity.

The following County Group I avian species were observed within the BSA: Cooper's hawk and red-shouldered hawk. Although not observed within the BSA, the following avian County Group I species have moderate to high potential to occur on-site: Bell's sage sparrow, ferruginous hawk, grasshopper sparrow (also a state Species of Special Concern), Southern California rufous-crowned sparrow, and white-tailed kite. There is potential for nesting of some of these species in the mature Engelmann oaks and foraging in the grasslands and/or shrub/chaparral stands in the BSA. Other species can nest in grasslands, shrubs, and other vegetated areas. Oregon vesper sparrow, a state Species of Special Concern (not on the County Group I list) has high potential to occur within the Project site. Impacts on nests for any of the avian species discussed in this section, such as removal of an active nest during construction or the loss of eggs or chicks, would be significant. However, no tree removal activities would occur from the proposed Project, and pre-construction nesting bird surveys would be required for the Project under **MM-BIO-5**, which would reduce potential impacts on nesting birds to less than significant. Impacts on up to approximately 22.4 acres of habitat (i.e., scrub and/or grasslands and oak woodlands) for these avian species also would be a significant impact. Impacts would be mitigated to less-than-significant levels through the establishment of the Alpine Park Preserve (**APM-BIO-1**), which would protect the foraging and/or nesting habitat within the County's parcel (and potentially in some off-site locations) for these species in perpetuity. Furthermore, impacts on habitat would be mitigated in accordance with **MM-BIO-9**, which would require compensatory mitigation be provided.

As mentioned in Chapter 2, breeding burrowing owl could occur within the BSA in the future and possibly within the areas proposed for grading for the active park. Ground squirrel burrows exist throughout the BSA, and if breeding burrowing owls were present during construction activities, direct mortality to this species, including eggs or chicks, could occur. These impacts

would be significant, absent mitigation. **MM-BIO-6** would require pre-construction take avoidance surveys for this species, which would reduce these potential impacts to less than significant.

The following state Species of Special Concern mammal species were documented within the BSA or have moderate or high potential to occur and, therefore, could be affected by the proposed Project: big free-tailed bat, Northwestern San Diego pocket mouse, pallid bat, pocketed free-tailed bat, San Diego black-tailed jackrabbit, San Diego desert (Bryant's) woodrat, Townsend's big-eared bat, western mastiff bat, western red bat, and western yellow bat. The loss of approximately 22.4 acres of habitat for these species would result in a significant impact. Impacts would be reduced to less-than-significant through the establishment of the Alpine Park Preserve (**APM-BIO-1**), which would protect the habitat within the County's parcel (and potentially in some off-site locations) for these species in perpetuity. Furthermore, impacts on habitat would be mitigated in accordance with **MM-BIO-9**, which would require compensatory mitigation be provided.

There are only two known pallid bat colony sites in San Diego County (Stokes 2018). The pallid bat individuals observed during focused bat surveys are believed to belong to the maternal colony that roosts in Viejas on a private residence. This species has very specific foraging strategy and utilizes grasslands and open oak woodlands as its main foraging habitat. In addition, this species has characteristics that affect its success with increased urbanization. This includes its tendency to fly at low altitude, its inability to fly over prolonged distances, and its specialized foraging strategies. The loss of approximately 22.4 acres of pallid bat foraging habitat would result in a significant impact that would be mitigated through the establishment of the Alpine Park Preserve (**APM-BIO-1**) and compensatory mitigation provided under **MM-BIO-9**, which would protect habitat for pallid bat within the County's parcel (and potentially in some off-site locations) for this species in perpetuity. Furthermore, impacts on pallid bat would be further reduced through implementation of **MM-BIO-7,** which would require the County to further support pallid bat populations through the installation of bat boxes

Bat species are particularly vulnerable to impacts on maternal roost sites, such as within oaks or rock crevices. As mentioned in Chapter 2, impacts on maternal roost sites may occur during construction activities that occur in proximity to these sites. These impacts would cause direct impacts on California Species of Special Concern, including the potential for direct mortality, especially of pregnant females or pups. These impacts would be significant under the County's guidelines (County of San Diego 2010b), absent mitigation. Impacts on roosting special-status bat species would be reduced through implementation of **MM-BIO-8**, which would require bat roost sites to be avoided during construction to the extent possible.

These significant impacts would be reduced to less-than-significant levels through implementation of **APM-BIO-1**, which would protect the species' habitat in perpetuity, in addition to **MM-BIO-2**, which would implement Engelmann oak tree avoidance and minimization measures; **MM-BIO-6**, which would install and monitor bat boxes; **MM-BIO-7,** which would avoid bat roosts; **MM-BIO-8**, which would restore non-native grassland to native grassland within the proposed preserve portion of the Project and a portion of Wright's Field; and **MM-BIO-9**, which would require habitat-based mitigation and preserve sensitive habitats in perpetuity.

- 3.C. The Project would affect the local long-term survival of a County List C or D plant species or a County Group II animal species.

  The following Group II reptile species were observed within the BSA or have moderate or high potential to occur: coast horned lizard, coastal western whiptail, red-diamond rattlesnake, coast patch-nosed snake, Coronado skink, and Southern California legless lizard. Impacts on these species are described under Threshold 3.B, above, because these species are also California Species of Special Concern.

  Western spadefoot, a County Group II amphibian species, may also be affected by the proposed Project. Impacts on this species are described under Threshold 3.B, above, because this species is also a California Species of Special Concern.

  Western bluebird, a County Group II avian species, was observed within the BSA. Lawrence's goldfinch (*Spinus lawrencei*), a Bird of Conservation Concern (not on County Group II list) has high potential to occur within the BSA. Impacts on nests for these avian species, such as removal of an active nest during construction or the loss of eggs or chicks, would be significant. However, no tree removal activities would occur from the proposed Project, and pre-construction nesting bird surveys would be required for the Project. Impacts on up to approximately 22.4 acres of habitat (i.e., scrub and/or grasslands) for these avian species would be a significant impact. Impacts would be mitigated to less-than-significant levels through implementation of **MM-BIO-5,** which would require pre-construction nesting bird surveys, and through the establishment of the Alpine Park Preserve (**APM-BIO-1**), which would protect the foraging and/or nesting habitat within the County's parcel (and potentially in some off-site locations) for these species in perpetuity. Furthermore, impacts on habitat would be mitigated in accordance with **MM-BIO-9**, which would require compensatory mitigation to be provided.

  The following County Group II mammal species were documented within the BSA or have moderate or high potential to occur within the BSA and are already analyzed in Threshold 3.B., above: big free-tailed bat, Northwestern San Diego pocket mouse, pallid bat, pocketed free-tailed bat, Townsend's big-eared bat, San Diego black-tailed jackrabbit, San Diego desert (Bryant's) woodrat, western mastiff bat, and western red bat.

  The western long-eared myotis, western small-footed myotis, and Yuma myotis are County Group II bat species not previously discussed. The impacts on these three bats would be similar to those disclosed for the bats described in Threshold 3.B. Although it is less clear that these impacts would affect the long-term local survival of these species, the loss of approximately 22.4 acres of habitat could result in a significant impact. These significant impacts would be reduced to less-than-significant levels through implementation of **APM-BIO-1**, which would protect the species habitat in perpetuity, and **MM-BIO-9**, which would require habitat-based mitigation and preserve sensitive habitats in perpetuity. Impacts on maternal bat roosts of these species may occur during construction, which would be significant. Impacts on roosting special-status bat species would be reduced through implementation of **MM-BIO-8**, which would require bat roost sites to be avoided during construction to the extent possible.

  Engelmann oak is a County List D species that occurs in the BSA. No direct removal of any Engelmann oaks would occur because of implementation of the Project. Canopy thinning may be required for four oaks located within the new fire fuel management zones proposed as part of the Project, in coordination with a certified arborist. Indirect impacts may result from grading activities within the root protection zone of 25 Engelmann oaks. These impacts would not occur

within the dripline/canopy of these trees. Approximately 0.94 acre would be within the root protection zone where grading/site preparation (e.g., compaction) and construction of park infrastructure would occur (Figure 7). Engelmann oaks have endured challenges in recent years that threatened the long-term survival of the species; these challenges include development, pest infestations, and climate change impacts. As a result, impacts associated with fire fuel management and grading within the root protection zone would be potentially significant, absent mitigation. Potential impacts on Engelmann oaks would be mitigated through implementation of **MM-BIO-2**.

- 3.F. The Project would result in a loss of functional foraging habitat for raptors.

  Implementation of the Project would result in loss of approximately 22.4 acres of functional foraging habitat for raptors. Valley needle grassland and non-native grassland both serve as prime foraging habitat for raptors, as do the open scrub habitats on-site. The Project footprint would affect all of these types of habitats, resulting in a loss of functional foraging habitat for raptors. These impacts would be significant. Impacts would be mitigated to less-than-significant levels through habitat-based mitigation provided through **MM-BIO-9** (see Chapter 4) and the preservation of the Alpine Park Preserve, which would conserve functional foraging habitat for raptors in perpetuity.

- 3.G. The Project would affect the viability of a core wildlife area, defined as a large block of habitat (typically 500 acres or more, not limited to Project boundaries, though smaller areas with particularly valuable resources may also be considered a core wildlife area) that supports a viable population of a sensitive wildlife species or supports multiple wildlife species.

  Alteration of any portion of a core habitat could be considered less than significant only if a biologically based determination can be made that the Project would not have a substantially adverse effect on the core area and the species it supports.

  The Project could affect the viability of a core wildlife area. The BSA and the adjacent Wright's Field support multiple special-status plant and wildlife species, including the federally listed QCB. Collectively, contiguous open space areas in the immediate vicinity of the proposed Project total approximately 380 acres when the BSA, Wright's Field, and privately held open space parcels are included. Although this number is less than the 500 acres required to consider the site a "core wildlife area," the area supports particularly sensitive biological resources such as QCB and large stands of intact native grasslands. Although the proposed Project would affect only approximately 23.1 acres of the 380 acres, those impacts would represent approximately 6 percent of the available core habitat area. Based on the extent of impacts and the number of wildlife species potentially affected, these impacts on a core wildlife area would be significant, absent mitigation. Mitigation would be provided through the establishment of the Alpine Park Preserve (**APM-BIO-1**) and **MM-BIO-9**, which would protect the up to approximately 67.5 acres of habitat within the County's parcel for these species in perpetuity. Furthermore, impacts on the core wildlife area also would be mitigated in accordance with **MM-BIO-10**, which would require native grassland restoration (see Chapter 4).

- 3.I. The Project would affect occupied burrowing owl habitat.

  As discussed above, under Threshold 3.B, the Project would have the potential to affect occupied burrowing owl habitat at some point in the future. One transient wintering burrowing owl was observed incidentally on the Project site, outside of proposed impact areas associated with Alpine County Park. Breeding season surveys were negative. However, suitable grassland

habitat and ground squirrel burrows were observed on-site, and as a result, there is some potential for impacts on burrow locations during construction. These impacts would be significant, absent mitigation. Mitigation is provided under **MM-BIO-6**, which would require pre-construction take avoidance surveys to be completed and coordination with CDFW and USFWS to avoid potential impacts on burrowing owl if found.

- 3.L. The Project would affect nesting success of sensitive animals (as listed in the Guidelines for Determining Significance) through grading, clearing, fire fuel modification, and/or noise-generating activities such as construction.

  Implementation of the Project would have the potential to affect the nesting success of sensitive animals if vegetation clearing for initial construction of the park or any subsequent fuel modification activities are conducted during the breeding season for avian species or the roosting/pupping season for bat species. Impacts on the nesting success of sensitive animals would be a potentially significant impact. Implementation of **MM-BIO-5** would reduce impacts on avian species to less-than-significant levels. Implementation of **MM-BIO-8** would reduce impacts on roosting bats.

The proposed Project would not result in significant impacts under the following guidelines for the following reasons:

- 3.C. The Project would affect the local long-term survival of a County List C or D plant species or a County Group II animal species.

  Approximately 13,857 Palmer's grapplinghook individuals were observed during special-status plant surveys in 2019. Of the 13,857 individuals, 200 would be affected by the Project footprint, representing approximately 1 percent of the on-site population. Because of the low number of individuals being affected, the relatively large number of individuals in the entirety of the BSA, and the available habitat that would be protected in perpetuity in the preserve, impacts would not result in a regional decline in the species and therefore would be less than significant.

  No Impacts on chocolate lily would occur, either directly or indirectly, because all chocolate lilies occur more than 200 feet from the proposed Alpine County Park footprint. There is low potential for some chocolate lily bulbs being present within the Project footprint that could be removed during construction, even though no chocolate lily individuals were observed inside the proposed footprint during surveys. Potential impacts on underground bulbs and suitable habitat for this species (clay soils in grasslands) would not significantly affect the regional long-term survival of this species because of the amount of available habitat present in the Alpine Park Preserve.

- 3.D. The Project may affect arroyo toad aestivation, foraging, or breeding habitat.

  Any alteration of suitable habitat within 1 kilometer (3,280 feet) in any direction of occupied breeding habitat or suitable stream segments (unless very steep slopes or other barriers constrain movement) could be considered less than significant only if a biologically based determination can be made that the Project would not affect the aestivation or breeding behavior of arroyo toads.

  No suitable arroyo toad breeding or aestivation habitat occurs on-site. Arroyo toad is not known from the area. No impacts on arroyo toad would occur.

- 3.E. The Project would affect golden eagle habitat.

  Any alteration of habitat within 4,000 feet of an active golden eagle nest could be considered less than significant only if a biologically based determination can be made that the Project would not have a substantially adverse effect on the long-term survival of the identified pair of golden eagles.

  The Project would not have a substantial adverse effect on the long-term survival of golden eagle individuals. The Project area would not have suitable breeding habitat for golden eagle. A reduction in potential foraging habitat would not result in a substantial adverse effect on the long-term survival of this species.

- 3.H. The Project would cause indirect impacts, particularly at the edge of proposed development adjacent to proposed or existing open space or other natural habitat areas, to levels that would very likely harm sensitive species over the long term.

  The following issues should be addressed in determining the significance of indirect impacts: increasing human access; increasing predation or competition from domestic animals, pests, or exotic species; altering natural drainage; and increasing noise and/or nighttime lighting to a level above ambient that has been shown to adversely affect sensitive species.

  It is unlikely that construction of the Alpine County Park would cause indirect impacts to a level that would harm sensitive species over the long term. There would be no night lighting from the park, and construction of a formal trail system would keep visitors from veering into the wild spaces within the Alpine Park Preserve. The changes in hydrology expected from implementation of the septic system (i.e., increase in water used compared to baseline conditions) would occur within disturbed habitat that is currently regularly disced for fire prevention/fuel modification. As a result, an increase in the amount of water used in these areas would not result in a significant impact on sensitive species because none currently occur in this disturbed area.

- 3.J. The Project would not have impacts on cactus wren habitat.

  No cactus wren habitat occurs within the preserve, and no coastal cactus wren or suitable cactus wren habitat was observed within the BSA.

- 3.K. The Project would affect proposed designated critical habitat for HCB, including areas that have the physical and biological requirements for this species.

  Approximately six spiny redberry individuals occur within the fire fuel modification areas and may be affected by vegetation thinning in these areas. However, this species was not observed within the BSA or on the adjacent Wright's Field during surveys. As a result, there would be no impacts on occupied HCB habitat as a result of the Project.

3.3 Cumulative Impact Analysis

The BSA is entirely within the MSCP. County guidelines state that if the appropriate study area is entirely within the MSCP, a project may rely on the MSCP to determine that the project's impacts are not cumulatively considerable (County 2010b). The Project would be consistent with the MSCP and the BMO, although DPR is exempt from the BMO. Therefore, any Project impacts would not be cumulatively considerable.

3.4 Mitigation Measures and Design Considerations

Under CEQA, mitigation is required for Project effects on biological resources that are identified as being significant. An appropriate level of mitigation is determined primarily through two considerations, as follows:

- The nature and relative magnitude of the Project's impacts on the resource, and
- The resource's degree of sensitivity.

The County proposes the following mitigation measures to reduce potentially significant impacts to below a level of significance.

MM-BIO-1: Decumbent Goldenbush Mitigation. To mitigate for significant impacts on decumbent goldenbush, the County will replace at a 3:1 mitigation ratio any affected decumbent goldenbush individuals. Individual plants and/or seeds will be salvaged from the on-site population prior to the start of construction and installed within Alpine Park Preserve. Plantings will be monitored for a minimum of 3 years to ensure the 3:1 mitigation ratio has been met and that the planted individuals have properly established themselves. Seed/material from on-site populations may be contract grown to provide replacement plantings.

MM-BIO-2: Implement Engelmann Oak Avoidance and Minimization Measures. The following measures will minimize and avoid potential impacts on Engelmann oaks resulting from the Project:

1. Engelmann oaks within 50 feet of any mass grading shall be fenced entirely around the tree dripline to ensure that no construction activities, including equipment staging, vegetation grubbing, driving, or grading, occur within the tree's dripline. These restrictions shall be communicated to the construction contractor prior to work in this area.
2. To mitigate for any potential significant impacts to Engelmann oak trees, the County will monitor the health of all Engelmann oaks within 200 feet of the proposed Alpine County Park development footprint for 5 years following construction. A certified arborist with experience monitoring oak health will conduct the monitoring. Mortality or serious declines in the health of the Engelmann oaks during these 5 years within this area will be mitigated at a 3:1 ratio, should significant impacts occur. Specifically, three Engelmann oaks will be planted for each oak tree that has died or is in serious decline. The mitigation would occur within on-site Engelmann oak woodland areas that will be permanently protected. Planting shall occur within either the Native Habitat Protection Area or within the northwestern portion of the open space preserve. All oak plantings must be certified pathogen free, including for *Phytophthora* species.
3. Any areas within the Engelmann oak root protection zone (i.e., all areas within 50 feet of Engelmann oak canopy) shall be identified on a map that is provided to the construction contractor. Any grading or construction activities within the root protection zone shall be monitored to minimize impacts on oaks to the maximum extent possible. Training shall be provided for the construction contractor by a biological monitor prior to the start of construction activities in this area. This training will detail ways that the construction contractor can reduce impacts as much as possible on Engelmann oaks within the root protection zone. The following avoidance and minimization measures must be implemented: (1) minimizing repetitive travel routes within the root protection zone,

(2) restricting any long-term storage of heavy materials within the root protection zone, and (3) restricting work within the root protection zone when the ground is wet to avoid compaction as much as possible after a rain event. Additional avoidance and minimization measures not envisioned here that can be feasibly implemented during construction must be identified and implemented.

MM-BIO-3: Ensure No Net Loss of Quino Host Plants and Provide Permanent Protection of Quino Habitat. The County DPR shall seek a Section 10 ITP (or Section 7 ITP if there is a federal nexus) for impacts on QCB-occupied habitat. Regardless of the conservation measures required under the ITP, the County will mitigate for impacts on occupied QCB habitat by providing, at a minimum, on-site preservation of occupied habitat for QCB within the open space preserve as well as the assurance that no net loss of QCB host plants will occur because of the Project. The County DPR shall ensure that there is no net loss of QCB host plants by performing on-site enhancement and restoration activities within QCB habitat, including planting dot-seed plantain, removing thatch to support healthy populations of dot-seed plantain, and maintaining and monitoring these enhancement areas for a minimum of 5 years. Construction activities will not occur until the ITP is secured. Conservation measures shall be implemented pursuant to that ITP and will include measures to restore and enhance QCB and provide permanent habitat protection and maintenance activities within the open space preserve.

As part of its ongoing monitoring, the County will demonstrate that QCB persists on the Project site at the end of the 5-year restoration and enhancement period. If QCB can no longer be found on either the County's preserve or within the adjacent Wright's Field in a normal flight year at the end of the 5-year restoration period, the County will secure a specific off-site parcel that will contribute meaningfully to the specie'' long-term conservation.

MM-BIO: 4 Western Spadefoot. The County will mitigate for impacts on one western spadefoot breeding pool, encompassing approximately 157 square feet, by creating three permanent basins, encompassing a minimum of 471 square feet and designed to support western spadefoot breeding. These constructed basins will be created within clay soils on the permanently protected lands on the County's parcel, no closer than 100 feet from the western edge of the Alpine County Park. Basins will be constructed within approximately 262 meters from the core breeding population on Wright's Field to maximize opportunities for western spadefoots on Wright's Field to naturally expand into these newly constructed basins. No basins will be constructed within the areas proposed for QCB habitat enhancement activities.

Hydrological analysis will be conducted prior to site selection to map the micro-watersheds in potential sites and ensure the constructed basins fill naturally with rainwater. Basins will be constructed to allow for maximum inundated depths of approximately 18 to 24 inches (20 to 60 centimeters), with the goal that they remain inundated long enough to increase the chances that breeding will be successful during dry years. Conversely, the newly constructed basins shall be designed in such a way that they support standing water for only several weeks following seasonal rains so that aquatic predators (e.g., fish, bullfrogs, and crayfish) cannot become established. Because ponding duration is so critical to the success of this effort, additional studies may be needed to estimate infiltration rates, soil profile, depth of clay soil layer, etc. The County will conduct these studies, as needed, to estimate ponding duration within constructed

basins. Terrestrial habitat surrounding the proposed relocation site shall be as similar in type, aspect, and density to the location of the existing pool(s), as feasible.

The County will develop a Western Spadefoot Habitat Mitigation and Monitoring Plan to describe requirements for the constructed basins, how basin sites are chosen, what activities will be conducted during the installation of the new basins, adaptive management, maintenance activities, access controls (e.g., fences), and what monitoring and reporting activities will occur and when. The data for the micro-habitat hydrological analysis will also be presented within this plan. The Western Spadefoot Habitat Mitigation and Monitoring Plan will be provided to the CDFW and USFWS for review and comment.

The new basins will be constructed concurrently with Alpine County Park, and western spadefoots observed within the Project footprint will be relocated to suitable basins outside the Project footprint.

Monitoring of the newly constructed basins will be conducted during the wet season (approximately December through April) at approximately 1-week intervals, beginning with the first significant rain event each year for 5 years following completion of the basin construction. The County's biologist will map the spatial extent of the basins, document inundation depths of the basins and breeding outcomes, and determine if adaptive management is needed to increase survival and recruitment within the constructed basins. Notes will be made if egg masses or larvae are observed. One nocturnal adult survey will also be conducted in each of the 5 years when a breeding event is occurring to document the foraging/mobility patterns of western spadefoots in the area of the new basins. The County will also monitor the core breeding population on the Wright's Field Preserve, using the same methods described above (basin mapping and weekly checks, nocturnal survey, etc.) to document population dynamics of the entire population over time.

Monitoring/survey data will be provided to CDFW and USFWS by the monitoring biologist following each monitoring period, and a written report summarizing the monitoring results will be provided to CDFW and USFWS at the end of the monitoring effort each year. Success criteria for the monitoring program shall include evidence of a ponding duration suitable to support western spadefoot reproduction within at least one of the constructed basins in at least one of the 5 years of monitoring.

After exclusionary fencing has been installed around all initial ground-disturbing construction, but prior to initiation of initial ground disturbance, the spadefoot biologist will conduct at least three nighttime surveys for spadefoots within the fenced area. Surveys will continue until no more spadefoots are captured and relocated out of the fenced footprint and/or upon the recommendations of the spadefoot biologist. These surveys will be conducted during appropriate climatic conditions and during the appropriate hours (i.e., nighttime, during rain events in breeding season) to maximize the likelihood of encountering spadefoots. If climatic conditions are not highly suitable for spadefoot activity, spadefoot habitat in the Project footprint will be watered to encourage aestivating toads to surface. All spadefoots found within the Project area will be captured and translocated by the spadefoot biologist to the nearest suitable habitat outside of the work area. Upon completion of these surveys and prior to initiation of construction activities, the spadefoot biologist will report the capture and release locations of all spadefoots found and relocated during these surveys to CDFW and USFWS.

MM-BIO-5: Avoid and Minimize Impacts on Special-Status Avian Species and Other Birds Protected under the MBTA. To mitigate for potentially significant impacts on sensitive nesting birds and raptors, the County DPR shall avoid ground-disturbing activities during the bird breeding season to keep the Project in compliance with state and federal regulations regarding nesting birds (i.e., the federal MBTA and California FGC). The bird breeding season is defined as January 15 to September 15, which includes the tree-nesting raptor breeding season of January 15 to July 15, the ground-nesting raptor breeding season of February 1 to July 15, and the general avian breeding season of February 1 to September 15.

If removal cannot be avoided during the bird and/or raptor nesting season, a nesting bird survey will be conducted no more than 72 hours prior to ground-disturbing activities by a qualified avian biologist within 500 feet of proposed ground- or vegetation-disturbing activities. Biologists will also survey for raptor nests up to 1,500 feet from proposed ground- or vegetation-disturbing activities. This is necessary to definitively ascertain whether raptors or other migratory birds are actively nesting at the Project site or in an area that could be indirectly affected by work activities (i.e., through noise or visual disturbances). Special attention will be paid to determining the presence of nesting grassland-endemic bird species, such as grasshopper sparrow, that may be nesting within dense grasses present within the proposed development footprint.

If any active nests are detected, the area will be flagged and mapped on construction plans, along with a buffer, as recommended by the qualified biologist. The buffer area(s) established by the qualified biologist will be avoided until the nesting cycle is complete or it is determined that the nest is no longer active. The qualified biologist shall be a person familiar with bird breeding behavior and capable of identifying the bird species of San Diego County by sight and sound and determining alterations of behavior as a result of human interaction. Buffers may be adjusted, based on the observations by the biological monitoring on the response of the nesting birds to human activity.

MM-BIO-6: Burrowing Owl Preconstruction Surveys. Prior to initiation of Project clearing, grading, grubbing, or other construction activities, pre-construction surveys for the presence of burrowing owl to verify species absence will be conducted, including surveying suitable habitat within the Project footprint and a 300-foot buffer by a qualified biologist; no grading shall occur within 300 feet of an active burrowing owl burrow. The pre-construction surveys shall follow the take avoidance survey methods outlined in the *Staff Report on Burrowing Owl Mitigation* (California Department of Fish and Game 2012). The first survey shall be conducted within 30 days of initial site disturbance, and the second survey shall occur within 24 hours of initial site disturbance.

Following the initial pre-grading survey, the Project site will be monitored for new burrows each week until grading is complete. Subsequent pre-construction surveys will be required if lapses in the Project occur exceeding 72 hours. If present in the Project construction footprint or within 300 feet of the Project site, coordination with CDFW and USFWS shall occur to establish measures to avoid potential impacts on burrowing owl. Such measures will be decided in coordination with the CDFW and USFWS and will follow the "Strategy for Mitigating Impacts to Burrowing Owls in the Unincorporated County" (Attachment A of the County's Report Format and Content Requirements – Biological Resources).

Following the first pre-construction survey, within 30 days of initial site disturbance, the qualified biologist will submit a Pre-Grading Survey Report to the County, CDFW, and USFWS within 14 days of the survey and include maps of the Project site. If any burrowing owls are observed, the burrowing owl locations on aerial photos and in the format described in the mapping guidelines of the County's Report Format and Content Requirements – Biological Resources will be included. A qualified biologist will attend the pre-construction meeting to inform construction personnel about the burrowing owl requirements.

MM-BIO-7: Protect Pallid Bat. The County DPR shall work with a bat expert to design and install bat boxes that attract pallid bat prior to vegetation removal activities commencing on site. These bat boxes shall be designed to accommodate both solitary individuals and maternal roost sites. Bat box designs shall reflect best practices at the time of installation and be specific to larger-sized bats like pallid bat with respect to roost chamber sizes, etc. The design and placement of bat boxes shall also consider how to best maintain proper roost temperature. When possible, the bat boxes shall be placed along the edges of the wooded areas on-site. The final design, numbers, and placement of bat boxes will be determined by the bat expert in consultation with County DPR staff using the best practices known at the time.

Monitoring of the bat boxes shall be conducted quarterly for the first 2 years and twice yearly during years 3 through 5 after installation. Any problems that are noted (e.g., mortality, predation) shall be addressed in consultation with the bat expert. Occupancy status, including species, numbers, etc., shall be documented to the extent possible without disturbing the occupants. If, after the first 2 years, a bat box remains unoccupied by any bat species, the County DPR and bat expert will discuss if the bat box needs to be repositioned on-site or redesigned. An annual report shall be prepared by the bat expert or designee to document the findings of the monitoring visits. The County will provide copies of this annual report to CDFW and also include updates on the bat box monitoring on the site in the County's annual report for the MSCP.

MM-BIO-8: Bat Roost Avoidance. Because of the difficulty in detecting all potentially occurring roosting bats (e.g., the western red bat within the Engelmann oaks, pallid bats within rock crevices, etc.), no construction activities that could disturb a maternal roost site will occur during the pupping season (typically April 1 through August 31). This measure specifically precludes high-frequency surveying as well as intensive noise-generating activities (e.g., jack-hammering, etc.) within 200 feet of any Engelmann oaks or rock outcrops during the pupping season. If construction activities must occur within this 200-foot avoidance buffer during the pupping season, the County will conduct definitive bat roost surveys to determine the presence or absence of maternal day-roost and/or night- roost locations within the 200-foot avoidance buffer that overlaps the construction footprint. The bat biologist(s) who will conduct these surveys shall have the appropriate education, training, and experience to conduct the roost surveys. The bat roost survey methodology will be described in a Bat Roost Management, Monitoring, and Mitigation Plan, which will be prepared at least 30 days prior to the start of construction and provided to CDFW.

Bat roost survey methods may include mist netting and tracking individual bats using telemetry and/or additional acoustic surveys timed to determine if individual Engelmann oaks or rock outcrops within the 200-foot avoidance buffer are supporting bat roost sites. If any maternal roost sites within the 200-foot avoidance buffer are identified, an appropriate avoidance buffer shall be established around that roost site in accordance with the requirements established in

the Bat Roost Management, Monitoring, and Mitigation Plan. Avoidance buffer distances will account for the ability of that individual bat species to tolerate specific types of low- and high-frequency construction noise and other human disturbance associated with the Project. No construction activities that could disrupt the roost site will be permitted within the established avoidance buffer.

Bat biologists will monitor construction activities occurring adjacent to the avoidance areas for the bat roost sites in accordance with the Bat Roost Management, Monitoring, and Mitigation Plan. Monitoring frequency and duration also will conform to the Bat Roost Management, Monitoring, and Mitigation Plan and be able to determine that the established bat roost avoidance buffers are large enough to prevent maternal roost site impacts, including, but not limited to, roost site abandonment. Avoidance buffers will be expanded if any stress or disturbance to the maternal roost site is observed during monitoring. In years 1, 3, and 5 following construction completion, the County will conduct bat surveys, including maternal bat roost surveys, within the areas originally surveyed prior to construction. If the maternal bat roost sites previously observed prior and during construction are still observed during these monitoring surveys, no additional mitigation will be required. If any maternal roost sites observed prior to or during construction are no longer present (i.e., are not observed in any of the three post-construction surveys), the County will mitigate for the loss of the maternal roost site at a 2:1 ratio, using methods agreed upon in the Bat Roost Management, Monitoring, and Mitigation Plan. This may include planting additional Engelmann oaks within the proposed preserve if the affected maternal roost site utilized Engelmann oak trees or by building artificial bat roosts for the affected bat species.

3.5 Conclusions

The proposed measures detailed above would reduce the Project's impacts on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS to a less-than-significant level.

Chapter 4
Riparian Habitat or Sensitive Natural Communities

4.1 Guidelines for the Determination of Significance

CEQA Appendix G states that a project would have a potentially significant effect on biological resources if it would:

> …have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service

Specifically, according to the County, the following conditions would be considered significant (County 2010b):

- 4.A. Project-related grading, clearing, construction or other activities would temporarily or permanently remove sensitive native or naturalized habitat on or off the project site.
- 4.B. Any of the following will occur to or within jurisdictional wetlands and/or riparian habitats, as defined by USACE, CDFW and the County: removal of vegetation; grading; obstruction or diversion of water flow; adverse change in velocity, siltation, volume of flow, or runoff rate; placement of fill; placement of structures; construction of a road crossing; placement of culverts or other underground piping; any disturbance of the substratum; and/or any activity that may cause an adverse change in native species composition, diversity, and abundance.
- 4.C. The Project would draw down the groundwater table to the detriment of groundwater-dependent habitat, typically a drop of 3 feet or more from historical low groundwater levels.
- 4.D. The Project would cause indirect impacts to levels that would very likely harm sensitive habitats over the long term.
- 4.E. The Project would not include a wetland buffer adequate to protect the functions and values of existing wetlands.

Each of these significance criteria is discussed in Section 4.2, below, with respect to the proposed Project.

4.2 Analysis of Project Effects

Each of the significance criteria listed in Section 4.1 is discussed below with respect to the Project's anticipated effects. Those criteria for which impacts are not anticipated are discussed briefly at the end of the section.

- 4.A. The Project would remove sensitive native or naturalized habitat.

  The Project would directly and permanently affect Valley needlegrass, non-native grassland, Engelmann oak woodland, and flat-topped buckwheat within a Biological Resource Core Area (BRCA). Valley needlegrass and Engelmann oak woodlands are listed as Tier I vegetation communities, flat-topped buckwheat is listed as a Tier II vegetation community, and non-native

grassland is listed as a Tier III vegetation community in Attachment K of the BMO. Table 8 shows how many acres of these sensitive natural communities could be affected by implementation of the Alpine County Park and how many would be protected in the Alpine Park Preserve.

Impacts on sensitive natural communities or naturalized habitats would be significant. Impacts would be reduced to less-than-significant levels through implementation of **APM-BIO-1**, **MM-BIO-9**, **MM-BIO-10** and a Resource Management Plan for Alpine Park Preserve. These measures are discussed below in Section 4.4.

The proposed Project would not result in significant impacts under the following guidelines for the following reasons:

- 4.B. Impacts on USACE/RWQCB, CDFW, and County jurisdictional habitat would not occur because there none of these resources are identified on-site.
- 4.C. The Project would not use groundwater and therefore would not draw down the groundwater table to the detriment of groundwater-dependent habitat.
- 4.D. The Project is not anticipated to cause indirect impacts at levels that would be likely to harm sensitive habitats over the long term. Although anthropogenic presence is likely to increase through construction of Alpine County Park, measures have been sought to reduce impacts on the sensitive natural communities in the neighboring Alpine Park Preserve. The current informal trail system would be converted to a more formalized system, discouraging unauthorized uses within Alpine Park Preserve. A permanent live-in volunteer would also be situated within Alpine County Park, which would further reduce indirect impacts on sensitive habitats through an increased monitoring presence in the area. The presence of trash cans, signs, park rangers, and an on-site volunteer would further reduce indirect impacts on sensitive habitat with implementation of the proposed preserve and Alpine Park
- 4.E. The Project would not support wetlands waters or riparian habitats.

4.3 Cumulative Impact Analysis

The BSA is entirely within the MSCP. County guidelines state that if the appropriate study area is entirely within the MSCP, a project may rely on the MSCP to determine that the project's impacts are not cumulatively considerable (County 2010b). The Project would be consistent with the MSCP and the BMO, although DPR is exempt from the BMO. Therefore, any Project impacts would not be cumulatively considerable.

4.4 Mitigation Measure and Applicant-Proposed Measure

Under CEQA, mitigation is required for significant project effects on biological resources. As defined by CEQA Section 15370, mitigation includes measure to avoid, minimize, or rectify impacts. An appropriate level of mitigation is determined primarily through two considerations, as follows:

- The nature and relative magnitude of the Project's impacts on the resource, and
- The resource's degree of sensitivity.

The County proposes the following mitigation measures and applicant-proposed measure (APM) to reduce potentially significant impacts to below a level of significance:

- 4.A. Potentially significant direct and permanent impacts on sensitive vegetation communities would be mitigated to below a level of significance by habitat-based mitigation, as described below.

  APM-BIO-1: Establishment of the Alpine Park Preserve: As required under the County's MSCP Subarea Plan, Alpine Park Preserve will be managed in perpetuity in accordance with a Resource Management Plan. This plan will outline management activities to be carried out by the County. Activities likely to be included in the Resource Management Plan would enhance and preserve the affected sensitive natural communities. These activities include long-term monitoring of on-site preservation areas, non-native and invasive species vegetation management, and habitat restoration on the preserve as applicable. Through these strategic measures to mitigate for impacts, the preserved sensitive natural communities will be managed to maintain high-quality and functioning habitat. Through these initiatives, the County will demonstrate its long-term commitment to species conservation within Alpine Park Preserve.

  MM-BIO-9: Compensatory Habitat-Based Mitigation. To mitigate for potentially significant impacts on Tier I, Tier II, and Tier III sensitive habitats, the County will provide compensatory mitigation consistent with its BMO to reduce significant impacts on sensitive vegetation communities. Mitigation will be provided within Alpine Park Preserve and/or within off-site location(s), as summarized below:

Mitigation Requirements

Tier[a]	Total Impacts	Mitigation Ratio	Mitigation Requirement	On-site Mitigation	Off-site Mitigation
Tier I	14.86	2:1	29.73	17.48 acres of preservation plus 4.84 acres of restoration (see **MM-BIO-10**)	7.41 acres of restoration on Wright's Field Preserve (see **MM-BIO-10**)
Tier II	3.97	1.5:1	5.95	5.95	None
Tier III	3.57	1:1	3.57	None	3.57[b]

a. Tiers correspond to those described in the County's BMO, and mitigation sites will meet the criteria for BRCA.
b. Habitat-based mitigation for permanent direct impacts on non-native grasslands will be satisfied through purchase of credits and/or land acquisition of a similar high-quality non-native grassland in an off-site location.

MM-BIO-10: Native Grassland Mitigation. Impacts on up to 14.79 acres of Valley needlegrass grassland will be mitigated at a 2:1 ratio through preservation of 10.60 acres of Valley needlegrass grassland and 6.88 acres of open Engelmann oak woodland on-site, in addition to 4.84 acres of restoration of non-native grassland to Valley needlegrass grassland within the County's parcel and 7.41 acres of restoration on Wright's Field Preserve. All restoration will be conducted in accordance with a Habitat Restoration and Enhancement Plan (HREP) approved by the Wildlife Agencies (USFWS and CDFW). Success criteria established in that HREP will include meeting at least a 5 percent absolute cover of purple needlegrass within restoration areas while retaining similar cover and species composition of native forbs currently present within non-native grassland areas on-site. If restoration does not meet the restoration goals, the County will implement adaptive management measures to be approved by the Wildlife Agencies.

4.5 Conclusions

Potentially significant direct and permanent impacts on sensitive vegetation communities would be mitigated to below a level of significance by the implementation of **APM-BIO-1**, **MM-BIO-9,** and **MM-BIO-10**.

Chapter 5
Federal and State Wetlands and Waterways

5.1 Guidelines for the Determination of Significance

CEQA Appendix G states that a project would have a potentially significant effect on biological resources if it would:

> …have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption or other means

Specifically, according to the County, any of the following conditions would be considered significant (County 2010b):

- 5.A. Any of the following will occur to or within jurisdictional wetlands, as defined by USACE: removal of vegetation; grading; obstruction or diversion of water flow; adverse change in velocity, siltation, volume of flow, or runoff rate; placement of fill; placement of structures; construction of a road crossing; placement of culverts or other underground piping; any disturbance of the substratum; and/or any activity that may cause an adverse change in native species composition, diversity, and abundance.
- 5.B. The Project would draw down the groundwater table to the detriment of groundwater-dependent federal wetlands, typically a drop of 3 feet or more from historical low groundwater levels.
- 5.C. The Project would not include a wetland buffer adequate to protect the functions and values of existing wetlands.

These significance criteria, for which impacts are not anticipated, are discussed briefly in Section 5.2, below.

5.2 Analysis of Project Effects

The proposed Project would not result in significant impacts under the following guidelines for the following reasons:

- 5.A. No federal wetlands were mapped within the BSA, and no impacts on federal wetlands would occur. The Project would also avoid impacts on CDFW jurisdictional habitat.
- 5.B. This Project would not use groundwater.
- 5.C. The Project would not affect the functions and values of existing wetlands.

5.3 Cumulative Impact Analysis

The proposed Project would not result in impacts on state or federal wetlands and therefore would not contribute to the cumulative loss of state or federal wetlands.

5.4 Mitigation Measures and Design Consideration

The proposed Project would not result in impacts on state or federal wetlands; no mitigation measures are required.

5.5 Conclusions

No federal wetlands were mapped within the BSA, and no impacts on federal wetlands would occur. No significant impacts would occur.

Chapter 6
Wildlife Movement and Nursery Sites

6.1 Guidelines for the Determination of Significance

CEQA Appendix G states that a project would have a potentially significant effect on biological resources if it would:

> …interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites

Specifically, according to the County, any of the following conditions would be considered significant (County 2010b):

- 6.A. The Project would prevent wildlife access to foraging habitat, breeding habitat, water sources, or other areas necessary for their reproduction.
- 6.B. The Project would substantially interfere with connectivity between blocks of habitat or could block or substantially interfere with a local or regional wildlife corridor or linkage.
- 6.C. The Project would create artificial wildlife corridors that would not follow natural movement patterns.
- 6.D. The Project would increase noise and/or nighttime lighting in a wildlife corridor or linkage to levels proven to affect the behavior of the animals identified in a site-specific analysis of wildlife movement.
- 6.E. The Project would not maintain an adequate width for an existing wildlife corridor or linkage and/or would further constrain an already-narrow corridor through activities such as (but not limited to) reduction of corridor width, removal of available vegetative cover, placement of incompatible uses adjacent to it, and placement of barriers in the movement path.
- 6.F. The Project would not maintain adequate visual continuity (i.e., long lines of sight) within wildlife corridors or linkages.

These significance criteria, for which impacts are not anticipated, are discussed briefly in Section 6.2, below.

6.2 Analysis of Project Effects

The Project would not result in significant impacts under the following guidelines for the following reasons:

- 6.A. The Project would not prevent wildlife access to foraging habitat, breeding habitat, or water sources. The BSA and the adjacent Wright's Field are surrounded by low-density exurban residential development. As such, the BSA and Wright's Field currently function as an "island" of habitat with limited connectivity to open space and other preserve areas. The proposed Project would be constructed at the eastern edge of this island of open space, leaving a smaller but similarly situated "island" of habitat to the west of the proposed park. The Alpine County Park

and Alpine Park Preserve would serve as an island of habitat surrounded by exurban development on all sides. As such, development of this Project would not exclude any existing wildlife from accessing foraging habitat, breeding habitat, or water sources.

- 6.B. The Project would not interfere with connectivity or wildlife corridors. Alpine County Park would be adjacent to existing development to the north, south, and east and directly adjacent to a busy arterial road, South Grade Road, that already limits wildlife movement in the area.

  Residential development within the past 15 to 20 years in the vicinity of the proposed Project has substantively changed how wildlife can move to the north and east of the County's parcel. Specifically, three large houses to the north of the County parcel along Engelmann Oak Lane were built during this time period and restrict movement of terrestrial mesofauna to the north. Two additional homes east of the intersection of South Grade and Boulder Oak Lane were also built in this timeframe. These homes constrain wildlife movement from the far northeastern corner of the County parcel to points farther east. Large-lot residential developments, many with fences around their perimeters, currently restrict wildlife movement from due east of the County parcel to points farther east. Wildlife movement, therefore, on the north and east of the County parcel is already constrained to backyards where there are gaps in fences or where animals can move under or over fences. Development of the equestrian center at the northern end of the proposed active park would further restrict east–west movement at this northeastern edge of the County parcel, but there would be an area of open space (where the leach field for the septic system is proposed) of approximately 100 feet in width remaining in this area for east–west movement of terrestrial fauna.

  On the southern end of the proposed park, the development would potentially constrain wildlife movement from the south to the north for approximately 500 feet where the proposed active park is proposed directly north of the Findel Ranch portion of Wright's Field. This 500-foot stretch represents only approximately 30 percent of the total linear distance where wildlife ostensibly cross from protected lands (i.e., the Findel Ranch section of Wright's Field) south of South Grade Road into the Wright's Field/County parcel to the north, or vice-versa. Approximately 1,060 feet remain where wildlife could cross from the Findel Ranch portion of Wright's Field into the proposed Alpine Park Preserve, ensuring that wildlife movement would continue to the extent it currently does in that portion. Most small mammals/meso-carnivore that are expected to use these habitat blocks can utilize widths of less than 1,000 feet as movement corridors. As a result, a reduction of approximately 30 percent of the width of this corridor from the proposed Project would not substantially change wildlife movement patterns from baseline conditions.

  Development of the Project would not significantly alter the way that wildlife utilize this contiguous block of open space. The conversion of 22.4 acres of native habitat to a developed park facility would not significantly constrain wildlife movement because the park would be adjacent to existing development on three sides and situated at the far eastern edge of the approximately 450-acre contiguous block of habitat in the immediate vicinity (i.e., the adjacent Wright's Field Preserve and privately held, directly contiguous open space lands in the immediate vicinity of the proposed Project, some of which are protected through a conservation easement). The Alpine Park Preserve would be created on the western edge of the park, contiguous to Wright's Field Preserve, and maintained as an MSCP preserve in perpetuity. Trails would be utilized by medium and large mammals for ease of movement through the preserve, similar to baseline conditions. No features would be constructed that would impinge any movement areas, including ridgelines or canyons.

As a result, Alpine County Park would not interfere within connectivity or wildlife corridors.

- 6.C. The Project would not create artificial wildlife corridors. The trails may be utilized by medium to large mammals. The Project would not modify or constrain any corridors on the preserve. Alpine County Park would be adjacent to existing development to the north, south, and east and directly adjacent to a busy arterial road, South Grade Road, that already limits wildlife movement in the area. As a result, Alpine County Park would not create an artificial wildlife corridor.
- 6.D. The Project would not propose any new nighttime lighting or nighttime usage of the preserve. Public access to the preserve would be limited to a low level and would not substantially increase noise within the preserve.
- 6.E. The Project would not impede movement in wildlife corridors. Public access is proposed only during daylight hours and would not affect the nighttime movement of medium to large mammals. Implementation of the Project would not constrain the movement of reptiles, small mammals, or birds.
- 6.F. The Project would not constrain the visual continuity of wildlife corridors or linkages. Development would be focused on the eastern edge of the existing open space adjacent to the busy South Grade Road. Trails would not interrupt visual continuity.

6.3 Cumulative Impact Analysis

The Project would not result in significant impacts on a wildlife corridor; therefore, impacts would not be cumulatively significant.

6.4 Mitigation Measures and Design Consideration

The Project would not result in significant impacts on wildlife corridors and linkages; therefore, mitigation is not proposed.

6.5 Conclusions

The Project would not result in significant impacts on wildlife corridors and linkages.

Chapter 7
Local Policies, Ordinances, and Adopted Plans

7.1 Guidelines for the Determination of Significance

CEQA Appendix G states that a project would have a potentially significant effect on biological resources if it would:

> …conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan

Specifically, according to the County, any of the following conditions would be considered significant (County 2010b):

- 7.A. For lands outside of the MSCP, the Project would affect coastal sage scrub vegetation in excess of the County's 5 percent habitat loss threshold, as defined by the Southern California Coastal Sage Scrub Natural Community Conservation Planning Guidelines.
- 7.B. The Project would preclude or prevent the preparation of the subregional NCCP. For example, the project proposes development within areas that have been identified by the County or resource agencies as critical to future habitat preserves.
- 7.C. The Project would affect any amount of sensitive habitat lands, as outlined in the Resource Protection Ordinance.
- 7.D. The Project would not minimize and/or mitigate coastal sage scrub habitat loss in accordance with Section 4.3 of the Natural Community Conservation Planning Guidelines.
- 7.E. The Project would not conform to the goals and requirements outlined in any applicable HCP, Habitat Management Plan, Special Area Management Plan, Watershed Plan, or similar regional planning effort.
- 7.F. For lands within the MSCP, the Project would not minimize impacts on BRCAs, as defined in the BMO.
- 7.G. The Project would preclude connectivity between areas of high habitat values, as defined by the Southern California Coastal Sage Scrub Natural Community Conservation Planning Guidelines.
- 7.H. The Project would not maintain existing movement corridors and/or habitat linkages, as defined by the BMO.
- 7.I. The Project would not avoid impacts on MSCP narrow endemic species and would affect core populations of narrow endemics.
- 7.J. The Project would reduce the likelihood of survival and recovery of listed species in the wild.
- 7.K. The Project would result in the killing of migratory birds or destruction of active migratory bird nests and/or eggs (MBTA).

- 7.L. The Project would result in the take of eagles, eagle eggs, or any part of an eagle (Bald and Golden Eagle Protection Act).

Each of these significance criteria is discussed in Section 7.2, below, with respect to the proposed Project. Those criteria for which impacts are not anticipated are discussed briefly at the end of the section.

7.2 Analysis of Project Effects

Each of the significance criteria listed in Section 7.1 is discussed below with respect to the Project's anticipated effects. Those criteria for which impacts are not anticipated are discussed briefly at the end of the section.

- 7.K. Construction-related impacts could result in the killing of migratory birds or destruction of active migratory bird nests and/or eggs protected under the MBTA and California FGC.

  The construction of the Project would have potential to destroy birds or bird nests protected under the federal MBTA and California FGC if grading or vegetation clearing is conducted during the breeding season for these taxa, defined as January 15–July 15 for tree-nesting raptors and February 15–September 15 for other birds. Impacts on birds or their nesting success would violate the MBTA and California FGC and be considered significant. These impacts would be reduced to less-than-significant levels with implementation of **MM-BIO-5**.

The proposed Project would not result in significant impacts under the following guidelines for the following reasons:

- 7.A&D. The Project is within the MSCP Plan Area, and as such, these criteria are not applicable to the Project.
- 7.B. The Project is consistent with the existing NCCP and the San Diego MSCP and would not prelude the preparation of another subregional NCCP.
- 7.C. The Resource Protection Ordinance does not apply to this Project and the project would be within the MSCP. The Project would be consistent with the BMO, although DPR is exempt from the BMO.
- 7.E. This Project would be consistent with the San Diego MSCP. The preserve would be managed by a Resource Management Plan that would be prepared by the County. The Resource Management Plan would be consistent with the MSCP and promote the implementation of the MSCP preserve system.
- 7.F. This site is within the MSCP and considered a BRCA. This Project has been designed to minimize impacts on the BRCA by keeping the development footprint as small as possible while still meeting the Project purpose and need. Multi-use trails have been designed to be as narrow as possible while allowing for public access. Project-related impacts on habitat within the BRCA would be mitigated consistent with the BMO through the implementation of mitigation measure **MM-BIO-9**.
- 7.G. The Project would not preclude connectivity. Trails would be expected to be used by nocturnal mammals and reptiles for movement.
- 7.H. The Project would not result in impacts on existing movement corridors or habitat linkages.

- 7.I. A wintering burrowing owl was observed within the Study Area. The Project would preserve at a 1:1 or higher ratio suitable habitat for burrowing owl through **MM-BIO-9**, **MM-BIO-10**, and **APM-BIO-1**. Pre-construction surveys for burrowing owl would also occur through **MM-BIO-6**.
- Breeding populations of narrow endemic species are not present within any portion of the Alpine County Park Project area or within Alpine Park Preserve.
- 7.J. The Project would not reduce the likelihood of recovery of listed species. Although the Project would result in impacts on occupied QCB habitat, those impacts would be mitigated through implementation of **MM-BIO-3** and the associated HCP and Habitat Restoration and Enhancement Plan for the Project. The Section 10 species permitting process would ensure that there would be no reduced likelihood of recovery of QCB.
- 7.L. The Project would not result in take of golden eagles. The Project would be situated within eagle foraging habitat, but the impacts associated with implementation of the Project would not significantly affect eagle foraging and would not result in take. No Project elements are proposed within 4,000 feet of a golden eagle nest.

County Consolidated Fire Code

Although not specifically identified in Thresholds 7.A. through 7.L., a conflict with one provision of the County Consolidated Fire Code would occur as part Project implementation. The proposed volunteer parking pad would be within the northern end of the proposed Alpine County Park. The location of this pad would result in the need for a Zone A and Zone B fire fuel modification zone, as described above. The County Consolidated Fire Code, Section 4907.2, Fuel Modification (f), states:

> When the subject property contains an area designated to protect biological or other sensitive habitat or resource, no building or other structure requiring a fuel modification zone shall be located so as to extend the fuel modification zone into a protected area.

The County re-designed the site plan in the fall of 2022 to move the volunteer parking pad from its previous location, approximately 12 feet from the edge of the proposed preserve. The County moved the location of the pad to avoid the fuel modification zone (Zone A and Zone B) extending into the preserve. Its new location is more centrally located directly adjacent to the equestrian staging area; it extends into the Native Habitat Avoidance Area inside of the equestrian center loop road. The Native Habitat Avoidance Area would become part of the preserve after construction is complete. As such, the placement of this volunteer parking pad is not entirelyconsistent with these provisions in the County Consolidated Fire Code and as such, these impacts would be significant. These impacts would be mitigated consistent with the BMO through the implementation of mitigation measure **APM-BIO-1** and **MM-BIO-9.**

7.3 Cumulative Impact Analysis

The Project would be consistent with the MSCP and would not conflict with any local policies or ordinances or any HCP, NCCP, or other approved local, regional, or state HCP. Therefore, the Project would not add to cumulative impacts related to local policies or plans.

7.4 Mitigation Measures and Design Consideration

Under CEQA, mitigation is required for Project effects on biological resources that are identified as being significant. An appropriate level of mitigation is determined primarily through two considerations, as follows:

- The nature and relative magnitude of the Project's impacts on the resource, and
- The resource's degree of sensitivity.

The County proposes the following mitigation measures to reduce potentially significant impacts to below a level of significance:

- **MM-BIO-3** (discussed in Section 3.4),
- **MM-BIO-5** (discussed in Section 3.4), and
- **MM-BIO-9** (discussed in Section 4.4).

7.5 Conclusions

The Project would avoid significant impacts on local policies, ordinances, and plans. Implementation of **MM-BIO-5** would ensure that impacts on protected MBTA birds from Project construction would be avoided and that no significant impact would occur. Implementation of **MM-BIO-3** and the associated HCP and Habitat Restoration and Enhancement Plan would mitigate impacts on QCB habitat. Mitigation measures **APM-BIO-1**, **MM-BIO-9,** and **MM-BIO-10** would ensure that any impacts on the BRCA would be mitigated to below a level of significance, as would mitigation for impacts associated with fire fuel management zones extending into areas intended to become part of the Alpine Park Preserve in the future.

Chapter 8
References

Arnett, Jr., R. H. 2000. *American Insects: A Handbook of the Insects of America North of Mexico*, second edition. Boca Raton, FL: CRC Press.

Baldwin, B. G., D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, and D. H. Wilken (eds.). 2012. *The Jepson Manual: Vascular Plants of California*, *Second Edition*. University of California Press, Berkeley.

Baumberger, Katherine L., M. V. Eitzel, M. E. Kirby, and M. H. Horn. 2019. Movement and Habitat Selection of the Western Spadefoot *(Spea hammondii)* in Southern California. *PLOS One.* Available: https://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0222532&type=printable.

Bradley, R. D., L. K. Ammerman, R. J. Baker, L. C. Bradley, J. A. Cook, R. C. Dowler, C. Jones, D. J. Schmidly, F. B. Stangl, Jr., R. A. Van Den Bussche, and B. Wursig. 2014. *Revised Checklist of North American Mammals North of Mexico*. Lubbock, TX: Occasional Papers, Museum of Texas Tech University, Number 327.

California Department of Forestry and Fire Protection. 2019. *California Fire Perimeters*. GIS layer. Version Fire18_1, released May 1, 2019. Available: https://frap.fire.ca.gov/mapping/gis-data/.

California Department of Fish and Game. 2012. *Staff Report on Burrowing Owl Mitigation.* State of California Natural Resources Agency. March 7.

California Department of Fish and Wildlife. 2018. *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities*. Available: http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/Protocols_for_Surveying_and_Evaluating_Impacts.pdf.

———. 2020. *California Natural Diversity Database*. GIS data.

California Native Plant Society. 2001. CNPS Botanical Survey Guidelines. In *California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California*, D.P. Tibor (ed.), pp. 38–40. Sixth edition. Special Publication No. 1, California Native Plant Society, Sacramento, 387 pp.

———. 2019. *Inventory of Rare and Endangered Plants of California* (Eighth Edition). Online Edition. Available: http://cnps.web.aplus.net/cgibin/inv/inventory.cgi.

———. 2020a. *CNPS Rare Plant Ranks Webpage*. Available: https://www.cnps.org/rare-plants/cnps-rare-plant-ranks.

———. 2020b. *Considerations for Including CRPR 4 Plant Taxa in CEQA Biological Resource Impact Analysis*. Technical Memorandum Adopted by the CNPS Rare Plant Program Committee. January 21. Available: https://www.cnps.org/wp-content/uploads/2020/02/crpr4_technical_memo.pdf.

Chesser, R. T., S. M. Billerman, K. J. Burns, C. Cicero, J. L. Dunn, A. W. Kratter, I. J. Lovette, N. A. Mason, P. C. Rasmussen, J. V. Remsen, Jr., D. F. Stotz, and K. Winker. 2020. *Checklist of North American Birds* (online). American Ornithological Society. Available: http://checklist.americanornithology.org/taxa.

County of San Diego. 1997. *Multiple Species Conservation Program: County of San Diego Subarea Plan.*

———. 2010a. *Report Format and Content Requirements*. Land Use and Environment Group. Fourth Revision. September 15.

———. 2010b. *Guidelines for Determining Significance Biological Resources*. Land Use and Environment Group. Fourth Revision. September 15.

Esri. 2020. *Alpine* (USGS topographic. scale not given). World Topographic Map layer.

Hogue, C. L. 1993. *Insects of the Los Angeles Basin*. Los Angeles, CA: Natural History Museum of Los Angeles County.

Holland, R. F. 1986. *Preliminary Descriptions of the Terrestrial Natural Communities of California*. Nongame Heritage Program, California Department of Fish and Game.

Jepson Herbarium. 2021. *eFlora*. Available: https://ucjeps.berkeley.edu/interchange/.

Lemm, J. M. 2006. *Field Guide to Amphibians and Reptiles of the San Diego Region*. University of California Press.

North American Butterfly Association. 2016. *Checklist of North American Butterflies Occurring North of Mexico*, Edition 2.3. Available: https://www.naba.org/pubs/enames2_3.html.

Oberbauer, Thomas, Meghan Kelly, and Jeremy Buegge. 2008. *Draft Vegetation Communities of San Diego County*. March. Based on *Preliminary Descriptions of the Terrestrial Natural Communities of California*, Robert F. Holland, Ph.D., October 1986.

Opler, P. A., and A. B. Wright. 1999. *A Field Guide to Western Butterflies*. Boston, MA: Houghton Mifflin Company.

Rebman, J. P., and M. G. Simpson. 2014. *Checklist of the Vascular Plants of San Diego County*, *Fifth Edition*. San Diego, CA: San Diego Natural History Museum and San Diego State University.

Reiser, C. H. 2001. *Rare Plants of San Diego County*. Aquafir Press, 2001 edition.

San Diego Association of Governments. 2011. *Two-year Evaluation of Hermes Copper* (Lycaena Hermes) *on Conserved Lands in San Diego County.* Available: https://sdmmp.com/download.php?cid=CID_sarah.mccutcheon@aecom.com_5994b080567d0

———. 2019. *SanBIOS Data Layer*. Digital data layer of sensitive species observations reported to SanBIOS.

———. 2020. *SanBIOS Data Layer*. Digital data layer of sensitive species observations reported to SanBIOS.

San Diego Geographic Information Source. 2006. *Watersheds GIS Layer*. Available: http://www.sangis.org/download/available.html.

———. 2018. *Fire Burn History GIS Dataset*. Information drawn from CDF-FRAP.

San Diego Management and Monitoring Program. 2022. *Western Spadefoot Species Profile*. Available: https://sdmmp.com/species_profile.php?taxaid=206990.

Shiraiwa, Kojiro. 2009. *The Butterflies of San Diego County Introduction and Identification Guide*. May.

Society for the Study of Amphibians and Reptiles. 2021. *North American Species Names Database*. Available: https://ssarherps.org/cndb/.

Stokes. D. 2018. *Draft Final Report for Focused Pallid Bat* (Antrozous pallidus) *and Townsend's Big-eared Bat* (Corynorhinus townsendii) *Surveys in San Diego County, California*. Prepared for the San Diego Management and Monitoring Program. Prepared by the San Diego Natural History Museum.

Tremor, Scott, Drew Stokes, Wayne Spencer, Jay Diffendorfer, Howard Thomas, Susan Chivers, and Phillip Unitt (eds.). 2017. *San Diego County Mammal Atlas.* Proceedings of the San Diego Society of Natural History, 432 pp.

U.S. Department of Agriculture, Natural Resources Conservation Service. 2019. Web Soil Survey. Available: http://websoilsurvey.nrcs.usda.gov. Accessed April 2018.

U.S. Fish and Wildlife Service. 1997. *Coastal California Gnatcatcher* (Polioptila californica californica) *Presence/Absence Survey Guidelines.* Available: https://www.fws.gov/ventura/docs/species/protocols/cagn/coastal-gnatcatcher_survey-guidelines.pdf.

———. 2000. *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed Proposed and Candidate Plants.* Available: https://www.fws.gov/ventura/docs/species/protocols/botanicalinventories.pdf.

———. 2003. *Recovery Plan for the Quino Checkerspot Butterfly*. Available: https://www.federalregister.gov/documents/2003/09/17/03-23684/recovery-plan-for-the-quino-checkerspot-butterfly.

———. 2014. *Quino Checkerspot Butterfly Survey Guidelines*. Carlsbad Fish and Wildlife Office. December 15. Available: https://www.fws.gov/carlsbad/TEspecies/Documents/QuinoDocs/Quino%20Survey%20Guidelines_version%2015DEC2014.pdf.

———. 2017. *Survey Guidelines for the Listed Large Branchiopods*. November 13. Available: https://www.fws.gov/ventura/docs/species/protocols/vpshrimp/shrimp2017.pdf.

———. 2019. *National Hydrography Dataset*. Available: https://hydro.nationalmap.gov/arcgis/rest/services/nhd/MapServer.

———. 2020. *Endangered and Threatened Wildlife and Plants*. Threatened Species Status for the Hermes Copper Butterfly with 4(d) Rule and Designation of Critical Habitat. Available: https://www.federalregister.gov/documents/2020/01/08/2019-28461/endangered-and-threatened-wildlife-and-plants-threatened-species-status-for-the-hermes-copper

U.S. Fish and Wildlife Service, Carlsbad Fish and Wildlife Office. 2019. *Species Occurrence Data*. Digital data layer of spatial locations of observations of federally listed species.

———. 2020. *Species Occurrence Data*. Digital data layer of spatial locations of observations of federally listed species. August.

Chapter 9
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Brian Lohstroh, Sara Galindo, Kelsey Dix, and Matt Stewart – Contributing Authors

Nick Janssen – GIS Support

9.2 Contacts

County of San Diego, Department of Parks and Recreation

Appendix A
Figures

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2 Project Vicinity

3 Vegetation Communities

4 Special-Status Plants

5 Special-Status Wildlife

6 Hermes Copper Proposed Critical Habitat and Known Occurrences

7 Engelmann Oak Root Protection Zone Impacts

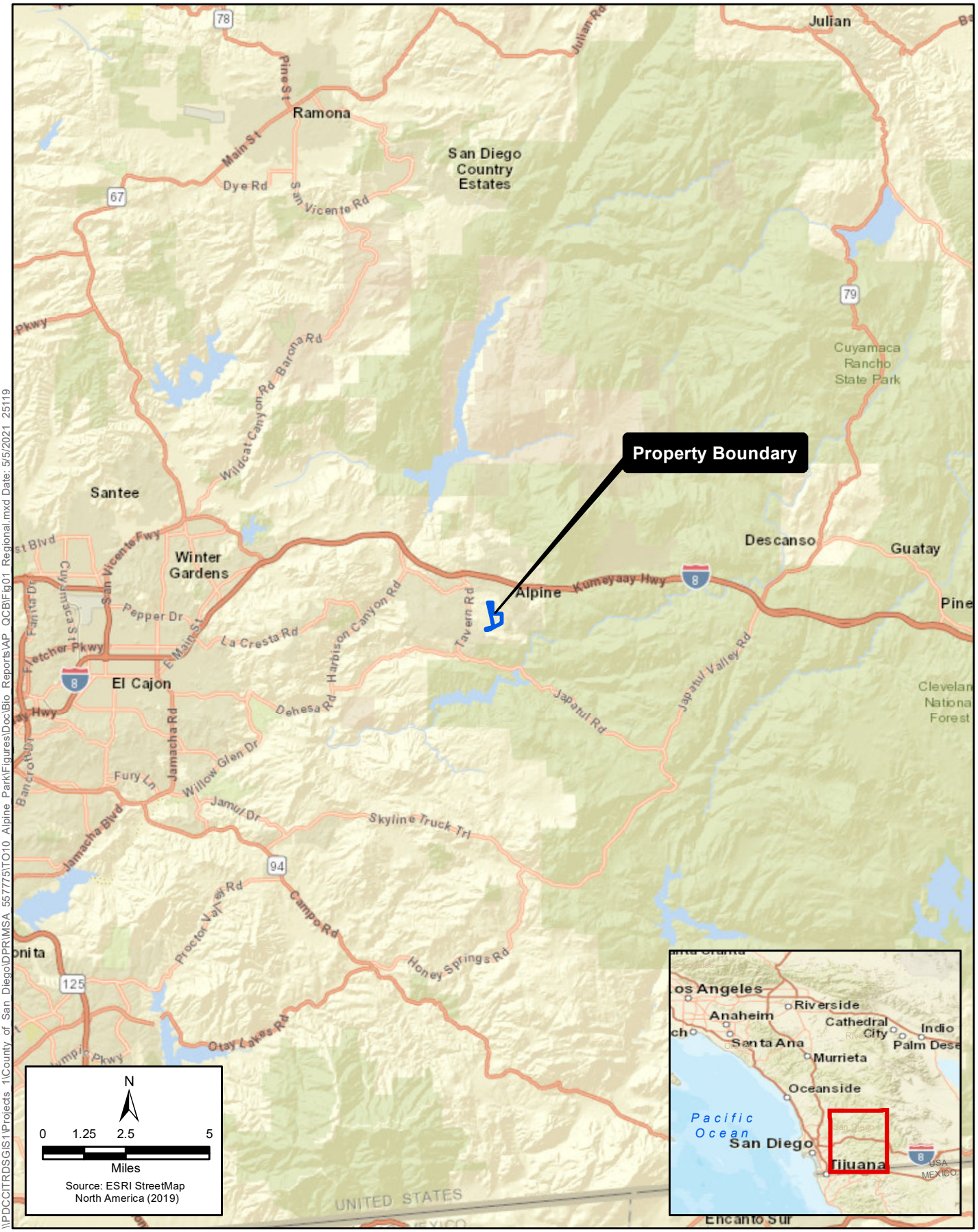

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Figure 1
Regional Location
Alpine County Park Project

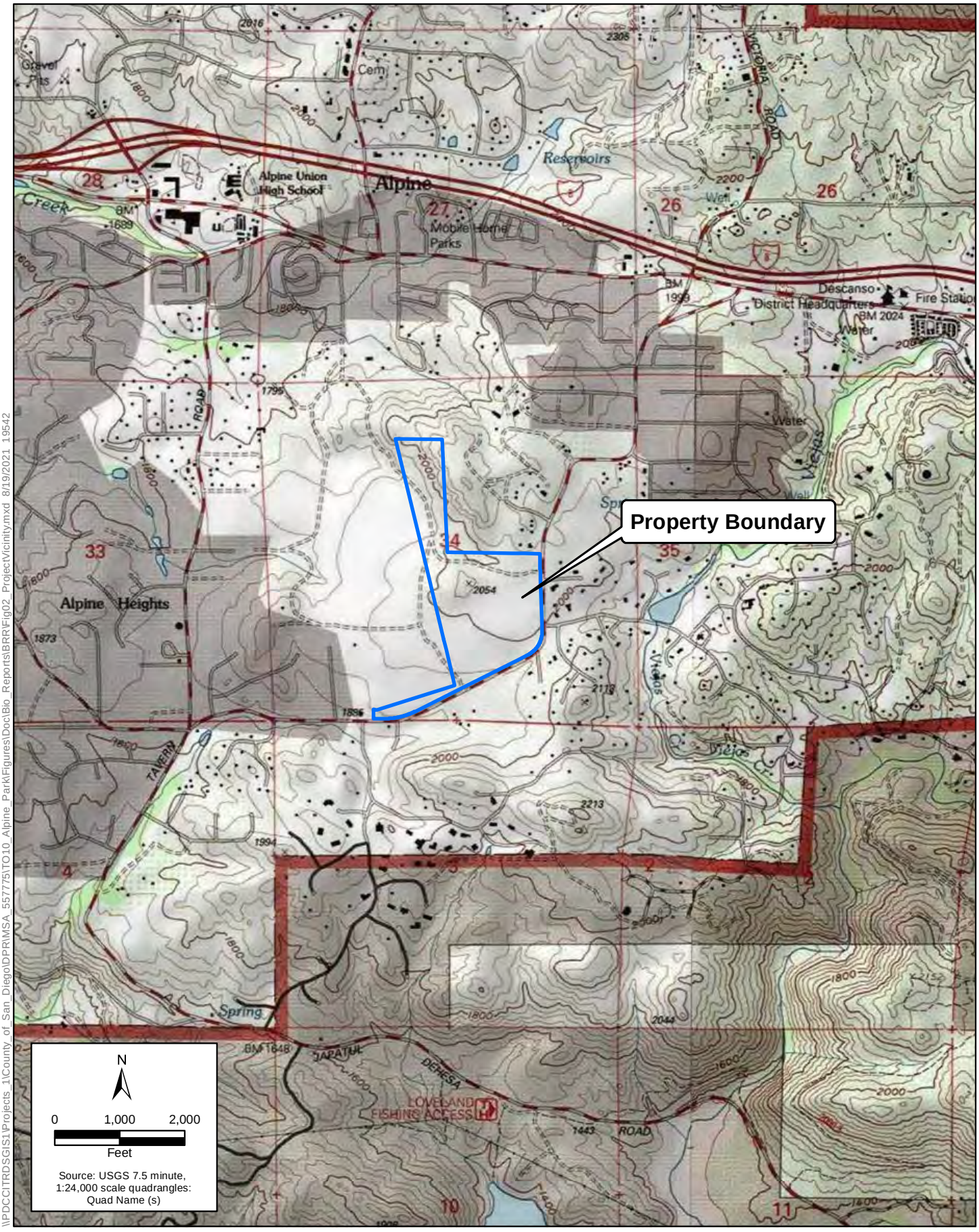

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Figure 2
Project Vicinity
Alpine County Park Project

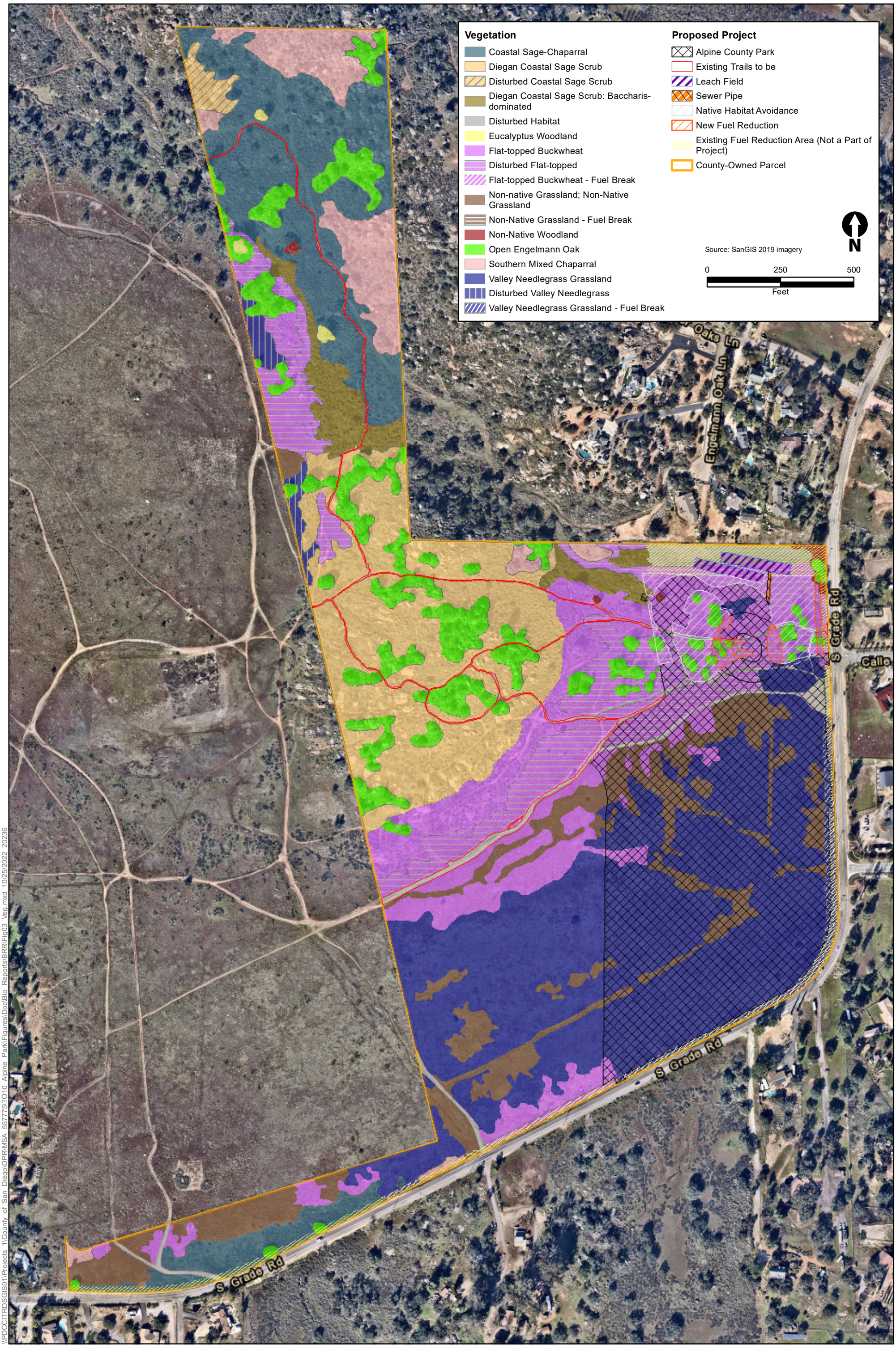

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Figure 3
Vegetation Communities
Alpine County Park Project

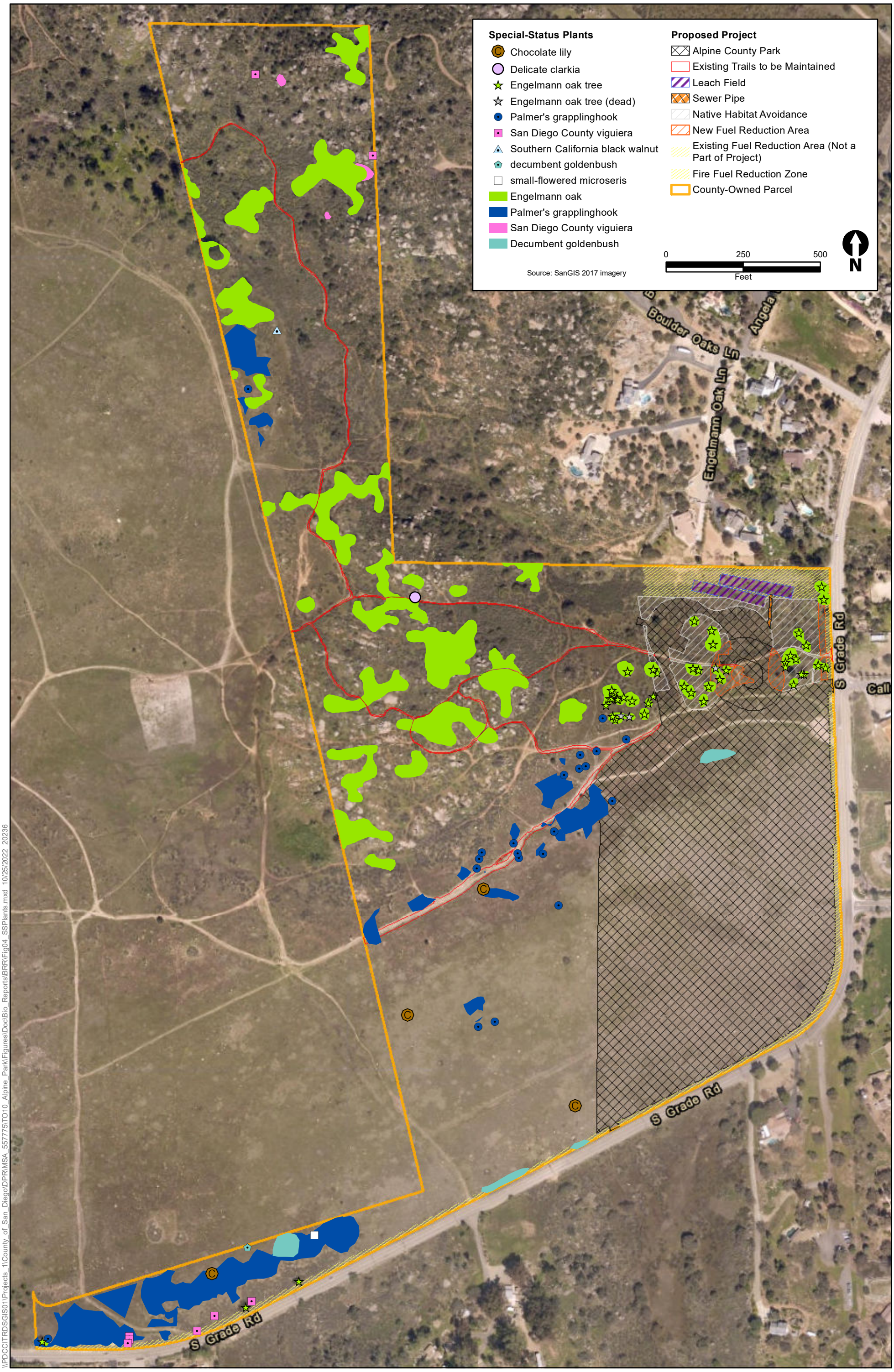

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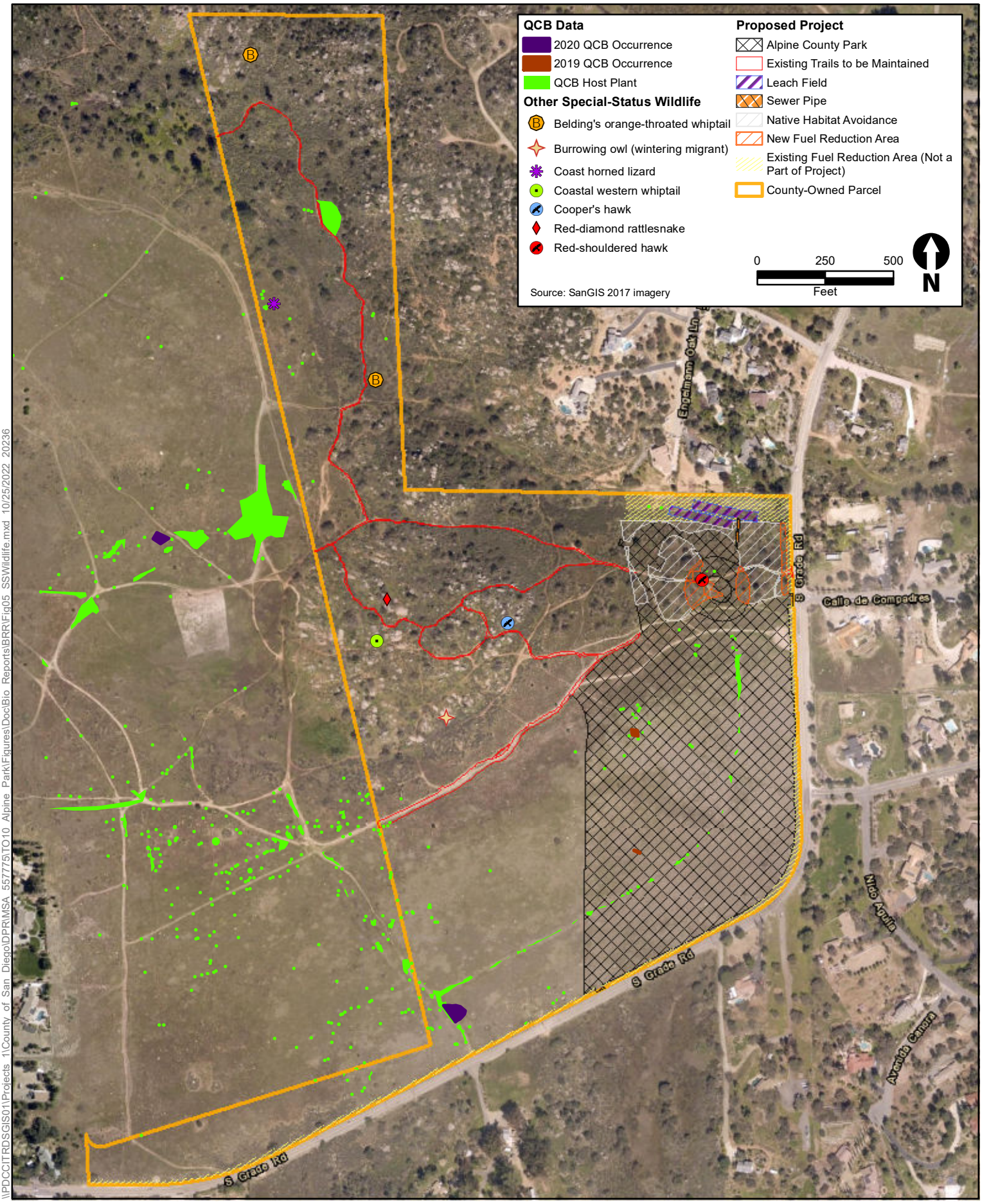
Figure 4
Special-Status Plants
Alpine County Park Project



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Special-Status Wildlife
Alpine County Park Project

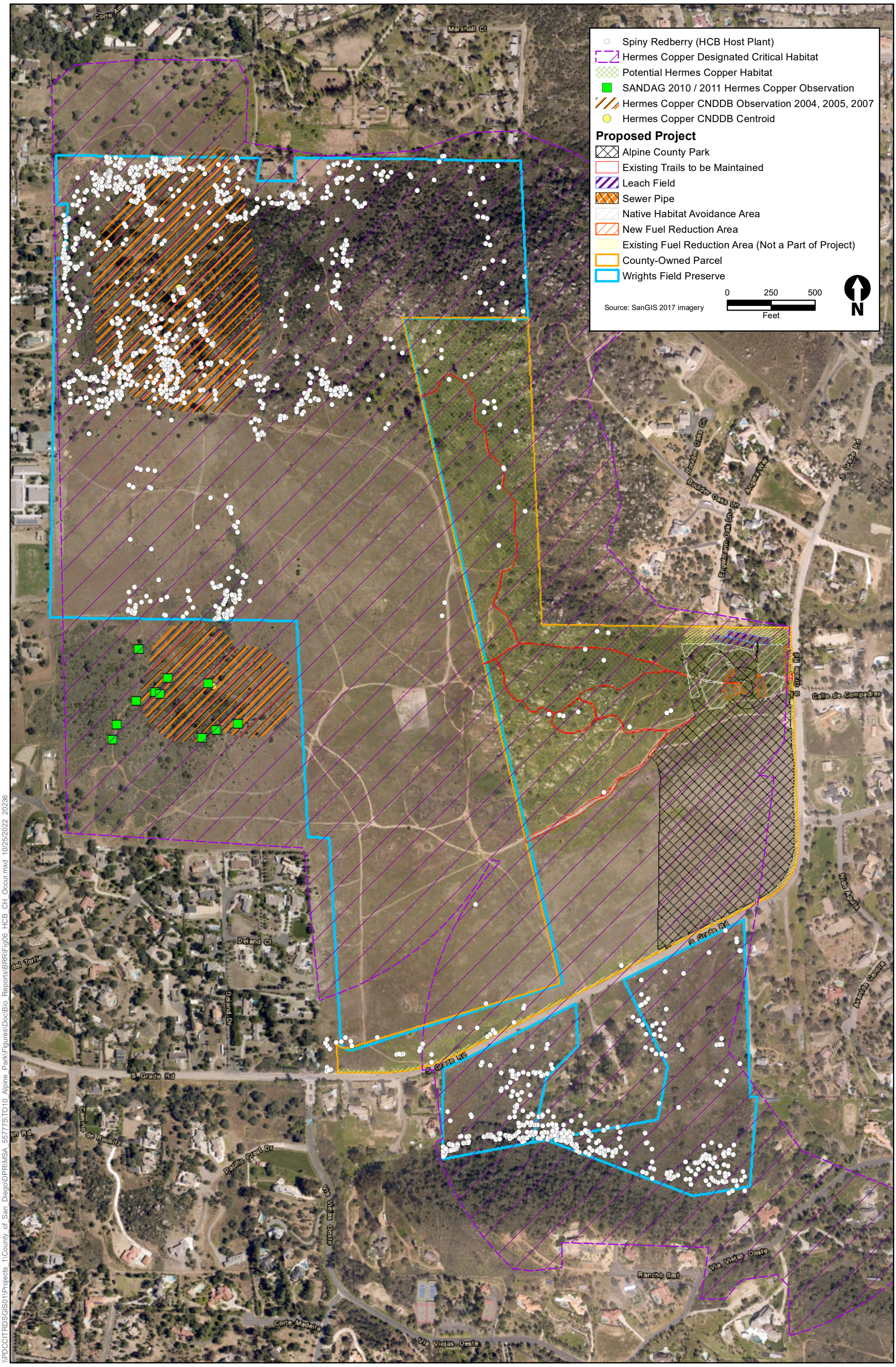

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Figure 6
Hermes Copper Proposed Critical Habitat and Known Occurrences
Alpine County Park Project

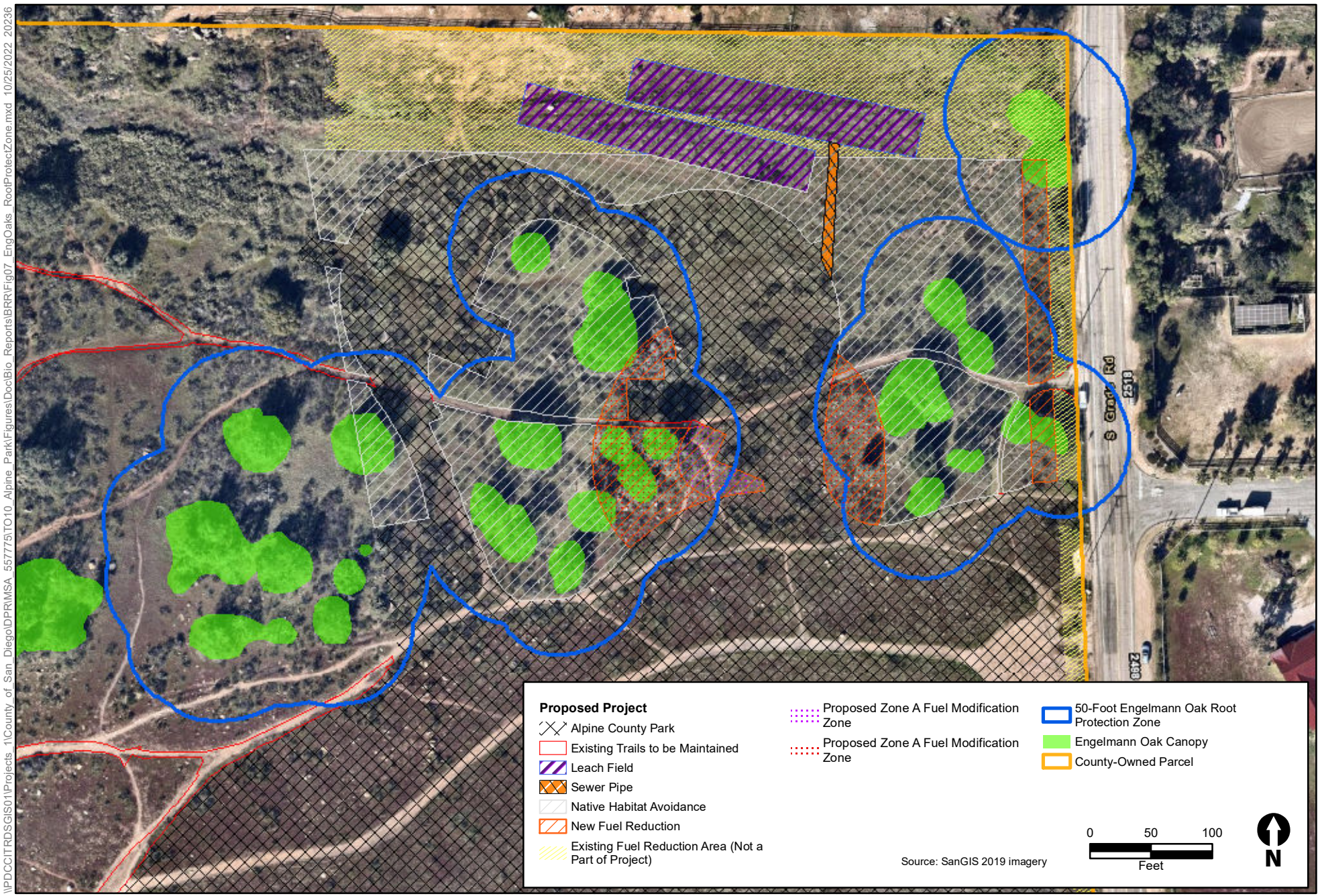

Figure 7
Engelmann Oak Root Protection Zone Impacts
Alpine County Park Project

Appendix B

2018–2019 Wet- and Dry-Season Fairy Shrimp Surveys

2018-19 Wet and Dry Season Fairy Shrimp Surveys for Alpine Park

Prepared for:

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October 2019



ICF. 2019. 2018-19 Wet and Dry Season Fairy Shrimp Surveys for Alpine Park. October.

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Appendix B USFWS Wet Season Data Sheets

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Appendix D Representative Photos

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1.0 Introduction

The County of San Diego Department of Parks and Recreation retained ICF to conduct protocol-level wet and dry season surveys for listed large branchiopods within an open space parcel located in Alpine, California within the Alpine U.S. Geological Survey 7.5-minute topographic map (Figures 1 and 2) in San Diego County, California.

The surveys in 2018-2019 were conducted within the approximately 35-acre area of the property had appropriate topography and clay soils to allow for development of road pools. No vernal pool/mima mound habitat was present on the property.

The goal of this survey was to determine presence or absence of listed large branchiopods (fairy shrimp) in seasonally inundated depressions within the study area (Figure 3). The large branchiopods known from seasonal freshwater basins in southern San Diego County are San Diego fairy shrimp *(Branchinecta sandiegonensis)*, Lindahl's fairy shrimp *(Branchinecta lindahli*), and Riverside fairy shrimp (*Streptocephalus woottoni*).

No fairy shrimp were observed during wet or dry season surveys of seasonally inundated basins within the study area.

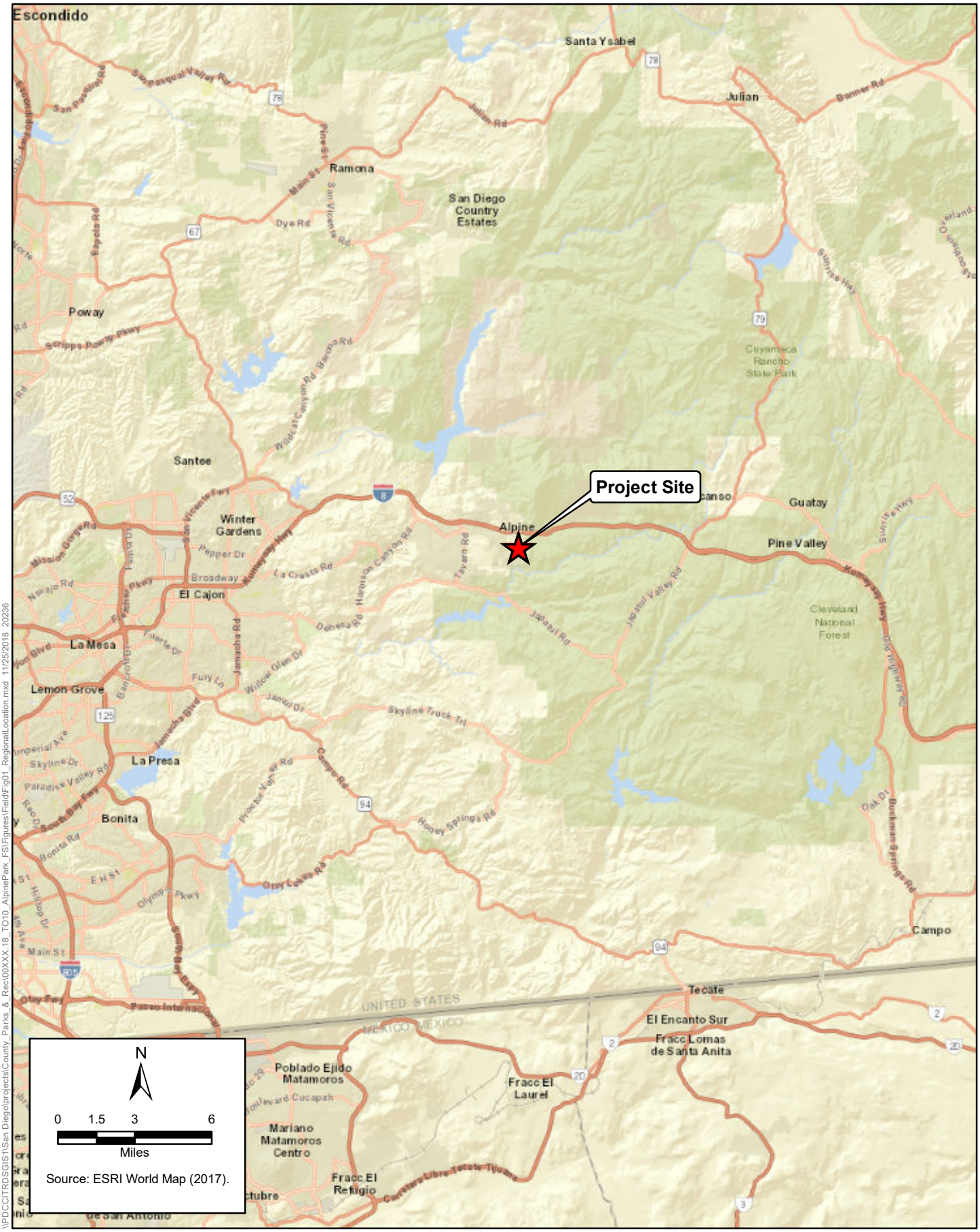
2.0 Methods

ICF conducted protocol level wet and dry season surveys on the 28 seasonally-inundated basins observed within the study area (Figure 3). Survey methodology follows the USFWS *Survey Guidelines for the Listed Large Branchiopods* (Guidelines; USFWS 2017) as described below. Prior to initiating the wet and dry season surveys, pre-survey notification letters were sent to the USFWS Carlsbad Fish and Wildlife Office informing intent to conduct a protocol dry season survey for listed fairy shrimp (Appendix A).

2.1 Wet Season Survey

ICF fairy shrimp permitted biologist Brian Lohstroh (TE-063608-6) conducted the wet season surveys at the Alpine site, with occasional assistance from ICF biologist Ryan Layden (permit application filed). Rainfall events were tracked to ascertain when basins became inundated using National Weather Service forecasts and observations (NWS 2018), along with observations from nearby Weather Underground personal weather stations (WU 2018). Hydrology checks were performed as needed to confirm basin inundation, and sampling was performed at one-week intervals after initial inundation (Table 1).

Sampling was performed using a 1 mm mesh dip net suitable for capturing fairy shrimp adults, as well as a 255-micron mesh net to make observations of nauplii and other smaller aquatic invertebrates. Water temperature was ascertained using an infrared thermometer after gentle agitation of the water column to homogenize any potential temperature variations within the water column. Basin perimeters were logged with a Trimble R1 submeter Bluetooth GPS using ArcGIS Collector. Additional data collected for each basin included basin type (natural/constructed/road rut), other aquatic animal species present, pool condition and if necessary, disturbance type.



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ICF

Figure 1
Regional Location
Alpine Park 2018-2019 Wet and Dry Season Fairy Shrimp Surveys

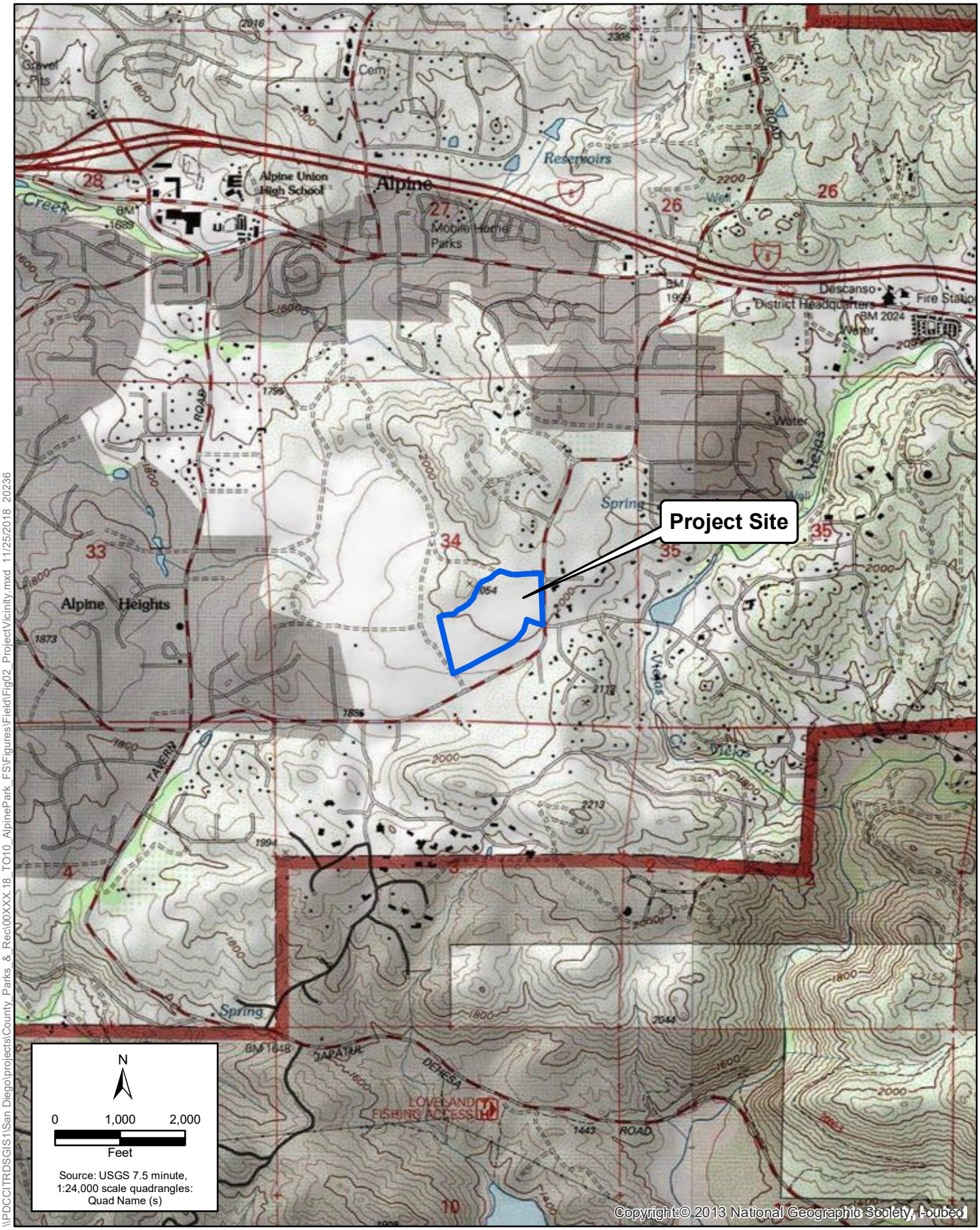

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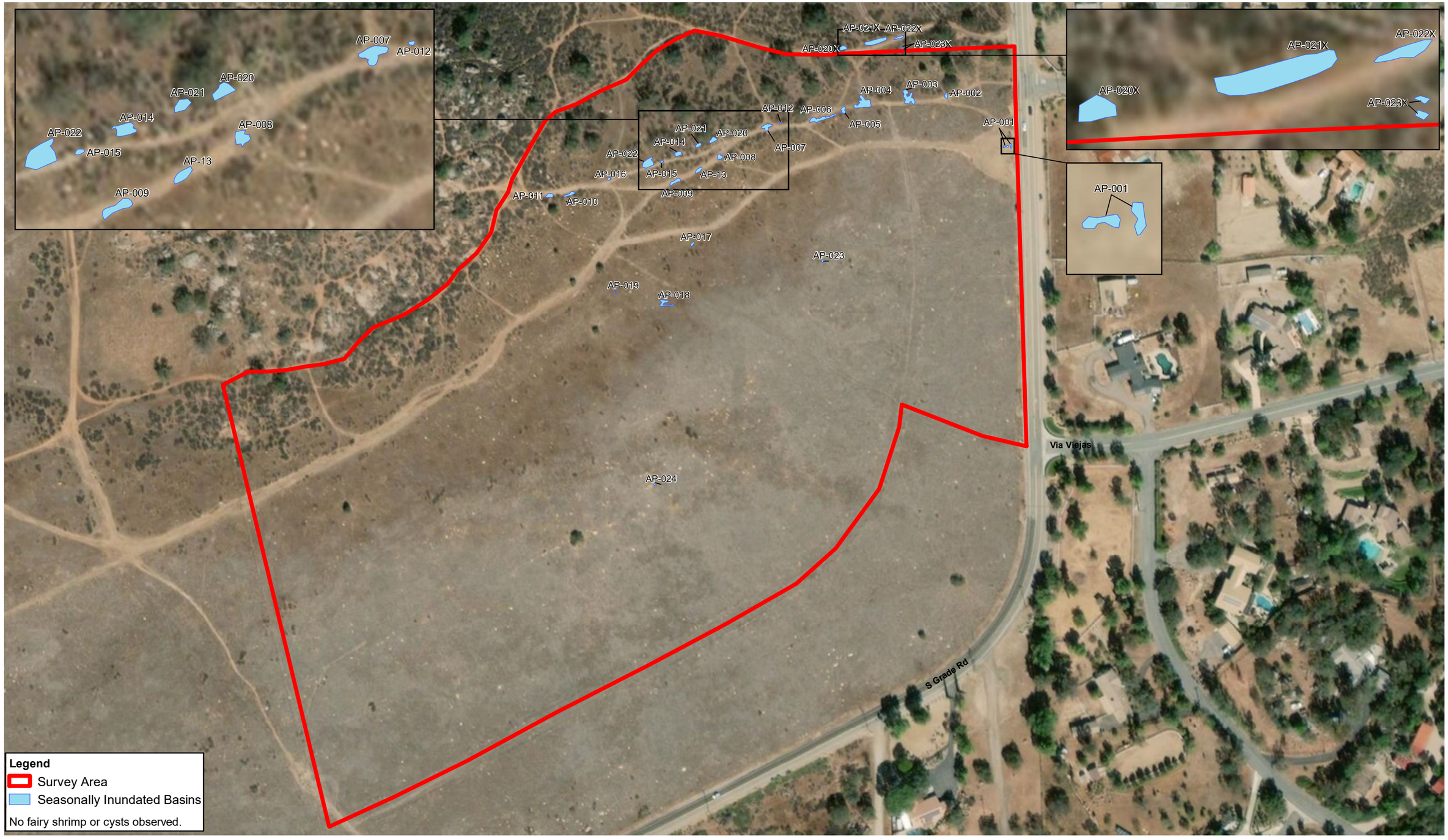
Figure 2
Project Vicinity
Alpine Park 2018-2019 Wet and Dry Season Fairy Shrimp Surveys



Source: Esri, DigitalGlobe (2018)

0 150 300 Feet

1:2,200

Figure 3
Sampled Basins
Alpine Park 2018-2019 Wet and Dry Season Fairy Shrimp Surveys

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Dip nets were cleaned with sanitized water between basins to prevent cross-contamination and all equipment used in the water, including boots, were cleaned and sanitized with a 3-6% sodium hypochlorite solution before and after each sampling survey visit.

Table 1. Wet Season Sampling Dates and Conditions

Date	Time on site		Temp (ºF)	Sky Cover (%)	Wind Speed (MPH)	Personnel	Survey Type
12/3/2018	Start	0715	39	10	0-3	RL	Hydrology Check
	End	0945	51	0	0-3		
12/7/2018	Start	0740	52	30	3-5	BL	Wet Season Survey 1
	End	0820	51	0	3-5		
12/14/2018	Start	0900	59	100	0-3	BL, RL	Hydrology Check
	End	0945	60	100	0-3		
1/1/2019	Start	1040	48	0	10-18	BL	Wet Season Survey 2
	End	1023	52	0	10-18		
1/8/2019	Start	0930	63	10	0-3	BL, RL	Wet Season Survey 3
	End	1050	67	10	3-5		
1/15/2019	Start	0910	48	100	3-5	BL, RL	Wet Season Survey 4
	End	1130	49	100	3-5		
1/22/2019	Start	0900	52	0	3-5	BL	Wet Season Survey 5
	End	1045	59	0	3-5		
2/8/2019	Start	0945	54	0	0-2	BL	Wet Season Survey 6
	End	1100	55	0	0-3		
2/15/2019	Start	0625	46	100	0-2	BL	Wet Season Survey 7
	End	0730	45	100	0-2		
2/22/2019	Start	0740	36	10	0-2	BL	Wet Season Survey 8
	End	0900	52	0	0-1		
3/1/2019	Start	0800	60	20	0-1	BL	Wet Season Survey 9
	End	0845	64	20	0-1		
3/8/2019	Start	0915	46	100	3-7	BL	Wet Season Survey 10
	End	1045	52	60	3-10		
3/15/2019	Start	0745	52	30	5-15	BL	Wet Season Survey 11
	End	0845	53	20	7-15		
3/22/2019	Start	0830	48	0	0-1	BL	Wet Season Survey 12
	End	0930	61	0	0-1		
3/29/2019	Start	0850	61	0	0-1	BL	Wet Season Survey 13
	End	0930	62	0	0-2		
5/31/2019	Start	1300	70	0	0-5	BL	Wet Season Survey 14
	End	1345	72	0	1-5		

RL: Ryan Layden

BL: Brian Lohstroh

2.2 Dry Season Survey

2.2.1 Soil Collection

On August 13, 2019, fairy shrimp biologist Brian Lohstroh (Permit# TE- 063608-6), assisted by Ryan Layden (permit application filed), collected soil samples for the dry season survey. Soil samples were collected when seasonally inundated depressions were dry. A hand trowel was used to collect soil samples from the top 1-3 centimeters of depressions soil. Whenever possible, soil samples were collected in chunks and the trowel was used to pry up intact chunks of sediment. Loosening the soil by raking or shoveling was avoided as such methods can damage cysts. For each of the 28 seasonally inundated depressions, two perpendicular transects were visually estimated, with one transect passing along the depressions lowest point and the second transect passing through the depressions second lowest point. Ten samples of approximately 100-milliliter (ml) aliquots were removed at each sub-sample site (for a total of 1 liter/ponded area), ensuring that no more than 10% of the sampled vernal pool's surface area was disturbed. Soil samples were taken as follows: two in the pool's lowest point, one at the pool's second lowest point, and two radiating in each of the four directions on the transect lines, at least 1.0 m from the pool center.

Ten 100-mililiter soil samples were collected from each pool. Each label included information necessary to identify the collection date, location of feature and name of collector for each sample.

2.2.2 Soil Processing and Analysis

Soil samples were processed by ICF fairy shrimp biologist and USFWS permitted cyst-identifier Dale Ritenour (Permit# TE-58888A-2.1) in accordance with the Guidelines. The soil samples were measured into ten individual plastic containers. These samples were hydrated in tap water then washed through a set of sieves. Material passing through a Number 45 (355 micrometer) USA Standard Testing Sieve, A.S.T.M.E.-11 specification was caught on a Number 70 (212 micrometer) Sieve. The 355-micrometer sieve allows the passage of cysts while the 212- micrometer sieves was selected as the appropriate size to collect cysts from large branchiopods whose ranges include the study area in San Diego County, including San Diego fairy shrimp, Lindahl's fairy shrimp, and Riverside fairy shrimp. The 212-micrometer sample material was rinsed into a container with approximately 300 milliliters of a saturated brine solution to float organic material, including fairy shrimp cysts. The material floating on the brine was decanted onto a paper filter. The organic material collected on the paper was examined under a stereo zoom microscope. Distinctive fairy shrimp cysts were counted if present. All sieves were soaked in a beach solution and then thoroughly cleaned after completion of the procedure for each depression, to ensure no cysts adhered to the surfaces of the sieves.

3.0 Results and Discussion

The study area can be characterized as a gradually sloped grassland with scrub vegetation associated with the slightly higher terrain that exists along the northern portion of the site. There is also a patchwork of hiking trails in the northern portion of the study area, along with some evidence of off-road vehicle activity. Dominant vegetation communities present within the study area include native grassland, non-native grassland and buckwheat scrub. Occasional Engelmann oaks (*Quercus engelmannii*) are also present in the northern portion of the study area.

The basins sampled onsite are primarily associated with the trails that exist along the northern perimeter of the study area. Two of the basins were located within the native grassland and did not appear to be affected by disturbance. However, they were relatively small basins that were associated with rock outcrops.

No fairy shrimp were observed during wet or dry season surveys of seasonally inundated basins within the study area.

3.1 Wet Season Survey

No fairy shrimp were observed in any of the 28 sampled pools in the 2018-19 wet season sampling (Table 2). Data sheets for Wet Season Sampling for Listed Large Branchiopods is included as Appendix B.

2018-19 was an exceptionally wet winter for coastal San Diego County and if any fairy shrimp existed onsite, they most likely would have been observed during the 2018-2018 wet season. Of the 28 basins that were observed in the study area in 2018-19, very few remained inundated long enough for either species of *Branchinecta* to reach maturity. In addition, the seasonally inundated basins on the Alpine Park site were generally shallow and are not expected to have inundation sufficient to be potential habitat for Riverside fairy shrimp.

Table 2. Wet Season Sampling Results

Basin	Basin Type	Basin Condition	Results	Other Observations
AP-001	Road rut	Disturbed, Tire Tracks	No Fairy Shrimp Observed	Collembola, Nematoda
AP-002	Road rut	Minor Disturbance	No Fairy Shrimp Observed	none
AP-003	Road rut	Disturbed, Tire Tracks	No Fairy Shrimp Observed	Ostracoda, Collembola, Culicidae, Chironomidae
AP-004	Road rut	Minor Disturbnace	No Fairy Shrimp Observed	Collembola
AP-005	Road rut	Disturbed, Tire Tracks	No Fairy Shrimp Observed	Collembola, Culicidae
AP-006	Road rut	Disturbed, Tire Tracks	No Fairy Shrimp Observed	Collembola, Culicidae, Chironomidae, Hydracharina
AP-007	Road rut	Disturbed, Tire Tracks	No Fairy Shrimp Observed	Western Spadefoot eggs, Ostracoda, Collembola, Culicidae, Chironomidae, Hydracharina
AP-008	Road rut	Disturbed, Tire Tracks	No Fairy Shrimp Observed	Collembola, Culicidae, Chironomidae
AP-009	Road rut	Disturbed, Tire Tracks	No Fairy Shrimp Observed	Collembola, Culicidae
AP-010	Road rut	Disturbed, Tire Tracks	No Fairy Shrimp Observed	Collembola
AP-011	Road rut	Disturbed, Tire Tracks	No Fairy Shrimp Observed	Collembola
AP-012	Road rut	Undisturbed	No Fairy Shrimp Observed	Collembola
AP-013	Road rut	Disturbed, Tire Tracks	No Fairy Shrimp Observed	Collembola
AP-014	Road rut	Undisturbed	No Fairy Shrimp Observed	Collembola
AP-015	Road rut	Disturbed, Tire Tracks	No Fairy Shrimp Observed	Collembola
AP-016	Road rut	Disturbed, Tire Tracks	No Fairy Shrimp Observed	Collembola
AP-017	Road rut	Undisturbed	No Fairy Shrimp Observed	Collembola
AP-018	Road rut	Disturbed, Tire Tracks	No Fairy Shrimp Observed	Collembola
AP-019	Road rut	Disturbed, Tire Tracks	No Fairy Shrimp Observed	Collembola
AP-020	Road rut	Undisturbed	No Fairy Shrimp Observed	Collembola
AP-020x	Road rut	Undisturbed	No Fairy Shrimp Observed	none
AP-021	Road rut	Undisturbed	No Fairy Shrimp Observed	Collembola
AP-021x	Road rut	Undisturbed	No Fairy Shrimp Observed	none
AP-022	Road rut	Undisturbed	No Fairy Shrimp Observed	Collembola
AP-022x	Road rut	Disturbed, Tire Tracks	No Fairy Shrimp Observed	none
AP-023	Natural	Undisturbed	No Fairy Shrimp Observed	Collembola
AP-023x	Road rut	Undisturbed	No Fairy Shrimp Observed	none
AP-024	Natural	Undisturbed	No Fairy Shrimp Observed	Collembola

3.2 Dry Season Survey

No fairy shrimp cysts were observed in any of the 28 sampled pools in the 2019 dry season sampling (Table 3). The Data sheet for Dry Season Sample Analysis for Listed Large Branchiopods is included as Appendix C.

Table 3. Dry Season Sampling Results

Basin	Shrimp cysts observed	Cyst Abundance
AP-1	None	None
AP-2	None	None
AP-3	None	None
AP-4	None	None
AP-5	None	None
AP-6	None	None
AP-7	None	None
AP-8	None	None
AP-9	None	None
AP-10	None	None
AP-11	None	None
AP-12	None	None
AP-13	None	None
AP-14	None	None
AP-15	None	None
AP-16	None	None
AP-17	None	None
AP-18	None	None
AP-19	None	None
AP-20	None	None
AP-20X	None	None
AP-21	None	None
AP-21X	None	None
AP-22	None	None
AP-22X	None	None
AP-23	None	None
AP-23X	None	None
AP-24	None	None

4.0 References

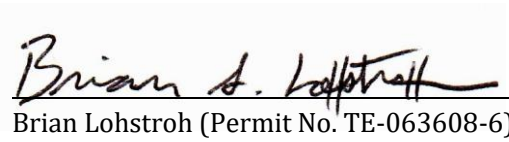
National Weather Service (NWS). 2018. Extended Forecast for Alpine, CA. https://www.weather.gov/sgx/ Accessed November 2018-June 2019.

Weather Underground (WU). 2018. Personal Weather Stations near Alpine, CA. https://www.wunderground.com/ Accessed November 2018-June 2019.

U.S. Fish and Wildlife Service (USFWS). 2017. Survey Guidelines for the Listed Large Branchiopods. November 13.

5.0 Certification

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



Brian Lohstroh (Permit No. TE-063608-6) October 2, 2019
Vernal Pool Biologist
Author and USFWS Permitted Biologist



Dale Ritenour (Permit No. TE-58888A-2.1) October 2, 2019
Vernal Pool Biologist
Author and USFWS Approved Cyst Identification

Appendix A
USFWS Notification

November 26, 2018

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

RE: 15-Day Notice for Protocol Surveys for Listed Vernal Pool Branchiopods at Alpine Park

Dear Ms. Love:

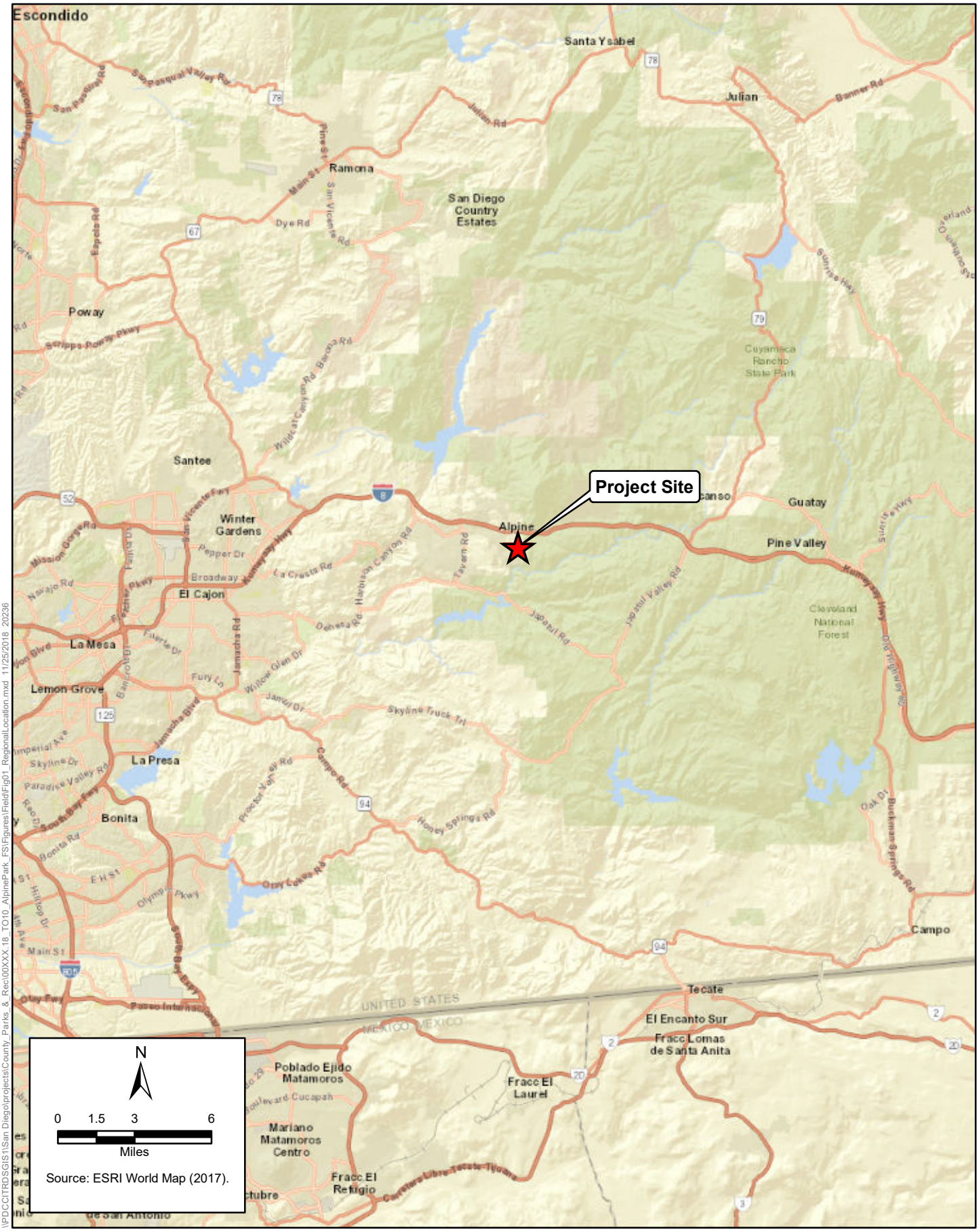
The County of San Diego Parks & Recreation Department (County Parks) has requested that ICF conduct wet season fairy shrimp surveys for listed vernal pool branchiopods within an open space parcel located in Alpine, California within the Alpine U.S. Geological Survey 7.5 minute topographic map (Figures 1 and 2) in San Diego County, California. Surveys are being conducted as part of County Parks' need to conduct due diligence surveys in advance of a possible land acquisition and not as part of any development project. I will conduct a habitat assessment, followed by wet season protocol-level surveys for all ephemerally-inundated features within the approximately 35-acre project site for federal-listed vernal pool fairy shrimp species. The site is estimated to support at least 15-20 features. The surveys will be conducted according to the United States Fish and Wildlife Service (USFWS) Survey Guidelines for Listed Large Brachiopods (United States Fish and Wildlife Service Rev. Nov 13, 2017).

Wet season surveys in accordance with the USFWS wet season survey guidelines will include conducting hydrology verification visits after storm events to determine when features have been inundated. Sampling surveys will begin no later than 7 days following the initial inundation and continue once every week until they are no longer inundated or until 120 days of continuous inundation. If the features dry and refill during the season, each feature will be sampled no later than 7 days after refilling. With permission from the USFWS, surveys will cease at a given feature if it is determined to be occupied by a listed large branchiopod species. I will conduct all of the surveys, with support from ICF support staff, as needed.

Please do not hesitate to contact me with any questions or comments.
Sincerely,



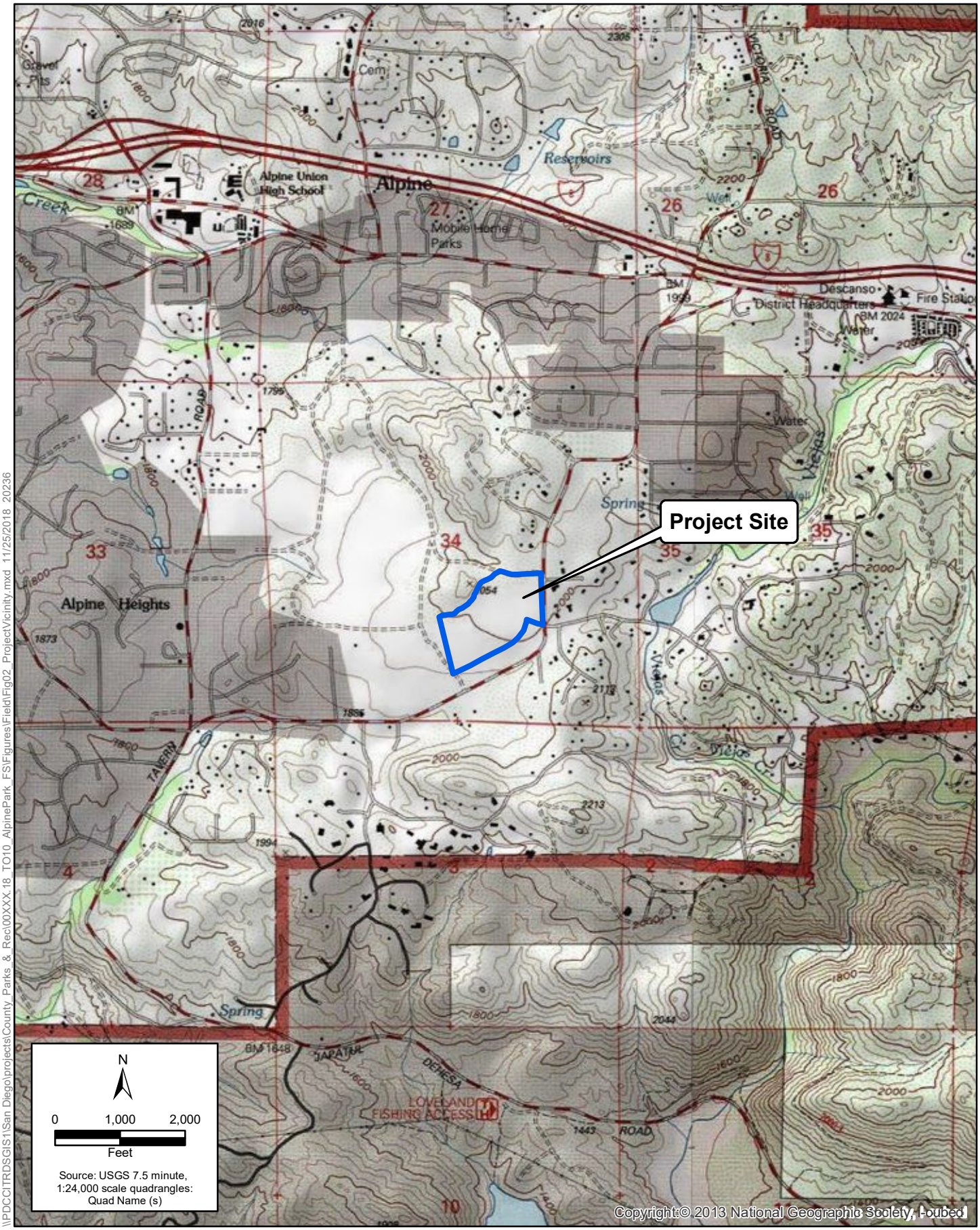
Brian Lohstroh
TE-063608-6
(858) 750-9300
brian@lohstrohbio.com



\\PDCCITRDSGIS1\San Diego\projects\County_Parks_&_Rec\00XXX.18_TO10_AlpinePark_FS\Figures\FieldFig01_RegionalLocation.mxd 11/25/2018 20236

ICF

Figure 1
Regional Location
Alpine Park Wet Season Branchiopod Surveys



\\PDCCITRDSGIS1\San Diego\projects\County_Parks_&_Rec\00XXX.18_TO10_AlpinePark_FSIFigures\Field\Fig02_ProjectVicinity.mxd 11/25/2018 20236

Figure 2
Project Vicinity
Alpine Park Wet Season Branchiopod Surveys

Appendix B
USFWS Wet Season Data Sheets

Fairy Shrimp Survey Form

Surveyor: BRIAN LOHSTROH Add'l Persons: — Date: 12/7/18

Project: Alpine Park Survey # 1

Start Time: 0740 T: 52 %CC: 30 Wind MPH: 3-5 General Weather Condition: Lite breezy Post Rain

End Time: 0810 T: 51 %CC: 0 Wind MPH: 3-5 General Weather Condition: "

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
AP-001				11	5	7.5	5	1

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae
0				None

Pool Type: Natural / Constructed / (Road Rut) **Pool Condition:** Undisturbed / (disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments: Series of 4 Ruts

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

General site Comments: Rain previous 2 days

Fairy Shrimp Survey Form

Surveyor: Lotts Trail Add'l Persons: None Date: Jan 1 2019

Project: Park Survey #: 2

Start Time: 1040 T: 48 %CC: 0 Wind MPH: 10-18 General Weather Condition: Wind + clear

End Time: 1230 T: 52 %CC: 0 Wind MPH: 12-14 General Weather Condition: "

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
1				11	5	9.5	3	1

Fairy Shrimp Species	# Collected	# Collected	Population Est
0			

Other species present (circle): Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae n/a

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments: Dried of 4 Pots (checked all)

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg Depth (cm)	Max Depth (cm)	Pool length (m)	Pool width (m)
2				11.6	-	1.5	1.5	1.5

Fairy Shrimp Species	# Collected	# Collected	Population Est
0			

Other species present (circle): Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
3				9.2		7	4	4

Fairy Shrimp Species	# Collected	# Collected	Population Est
Y			

Other species present (circle): Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments: Small Ext

Pool or Area ID	Latitude	Longitude	Air Temp (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
4				10.5	2	3.5	3	.16

Fairy Shrimp Species	# ♂ Collected	# Collected	Population Est
1			

Other species present (circle): Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments

General site Comments

Fairy Shrimp Survey Form (cont'd) Surveyor: P Lalicata Site: Alpine Park Date: Page - of

Pool or Area ID	Latitude	Longitude	Air Temp (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max Depth (cm)	Pool length (m)	Pool width (m)
5				1 1	1 -	- 7	1 5	1.2

Fairy Shrimp Species	# Collected	# Collected	Population Est	Other species present (circle): Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae
♂				

Pool Type: Natural / Constructed / Road Rut Pool Condition: Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments

Pool or Area ID	Latitude	Longitude	Air Temp (°C)	Water Temp (°C)	Avg Depth (cm)	Max Depth (cm)	Pool length (m)	Pool width (m)
6					6	8.5	3	2.5

Fairy Shrimp Species	# Collected	# Collected	Population Est	Other species present (circle): Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae
♀				

Pool Type: Natural / Constructed / Road Rut Pool Condition: Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments: Mites on surface

Pool or Area ID	Latitude	Longitude	Air Temp (°C)	Water Temp (°C)	Avg Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
7				9.4	6	9 5	5	3

Fairy Shrimp Species	# Collected	# Collected	Population Est	Other species present (circle): Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae
♂				

Pool Type: Natural / Constructed / Road Rut Pool Condition: Undisturbed / disturbed cks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp (°C)	Water Temp (°C)	Avg Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
-				10.4	4	6 5	3	1.5

Fairy Shrimp Species	# Collected	# Collected	Population Est	Other species present (circle): Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae
♂				

Pool Type: Natural / Constructed / Road Rut Pool Condition: Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments: Pool 5 fit Males

Pool or Area ID	Latitude	Longitude	Air Temp (°C)	Water Temp (°C)	Avg Depth (cm)	Max Depth (cm)	Pool length (m)	Pool width (m)
8				10 4	2	4	2	0.7

Fairy Shrimp pecies	# Collected	# Collected	Population Est	Other species present (circle): Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae
♂				

Pool Type: Natural / Constructed / Road Rut Pool Condition: Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments

Fairy Shrimp Survey Form (cont'd) Surveyor: BL Site: Alamo Pk Date: 1/1/19 Page 3 of 3

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
10				11.5	3	5.5	3	0.5

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	**Other species present (circle):** Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae
X				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
11				12.5	2	5.5	2.5	1

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	**Other species present (circle):** Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae
X				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments: Hiker/dog tracks

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	**Other species present (circle):** Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	**Other species present (circle):** Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	**Other species present (circle):** Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Fairy Shrimp Survey Form

Surveyor: BRIAN LOHSTROH Add'l Persons: RYAN LARSEN Date: 1/8/19

Project: Alpine Park Survey # 3

Start Time: 0930 T: 63°F %CC: 10 Wind MPH: 0-3 General Weather Condition: SUNNY AND CALM

End Time: 1050 T: 67°F %CC: 10 Wind MPH: 3-5 General Weather Condition: SUNNY W/ LIGHT WIND

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
AP-001			63°F	15.8		9	2.8	1

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae

Pool Type: Natural / Constructed / (Road Rut) Pool Condition: Undisturbed / (disturbed (tire tracks) trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments: 4 SEPARATE POOLS

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
003			63°F	14.2		14	3	2.5

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda (Collembola) Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae

Pool Type: Natural / Constructed / (Road Rut) Pool Condition: Undisturbed / (disturbed (tire tracks) trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) (algal blooms)

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
005			63°F	14.5		2	1	1

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae

Pool Type: (Natural) / Constructed / Road Rut Pool Condition: Undisturbed / (disturbed (tire tracks) trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) (algal blooms)

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
006			63°F	12.8		10	2	2.5

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracods Copepods Cladocera (Hydracharina) Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda (Collembola) Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae

Pool Type: Natural / Constructed / (Road Rut) Pool Condition: Undisturbed / (disturbed (tire tracks) trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

General site Comments: AP-002: DRY; AP-004: DRY

Fairy Shrimp Survey Form (cont'd) Surveyor: R. LOWSTROM Site: ALPINE PARK Date: 1/8/19 Page 2 of 2

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
007			63°F	12.9		14	4	2
Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	**Other species present (circle):** Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae				
Pool Type: Natural / Constructed / Road Rut	**Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments:								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
008			63°F	13.4		7	2.2	.9
Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	**Other species present (circle):** Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae				
Pool Type: Natural / Constructed / Road Rut	**Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments:								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
009			63°F	14.2		6	1.25	.2
Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	**Other species present (circle):** Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae				
Pool Type: Natural / Constructed / Road Rut	**Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments:								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
011			63°F	17.4		6	.5	.15
Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	**Other species present (circle):** Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae				
Pool Type: Natural / Constructed / Road Rut	**Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments: MAIN POOL DEPTH 2cm HORSE TRACK - 6cm								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	**Other species present (circle):** Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae				
Pool Type: Natural / Constructed / Road Rut	**Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments:								

AP-613: DRY

Fairy Shrimp Survey Form

Surveyor: BRIAN LOHSTROH Add'l Persons: BRIAN LARSEN Date: 1/15/19

Project: ALPINE PARK Survey # 4

Start Time: 0910 T: 48°F %CC: 100% Wind MPH: 3-5 General Weather Condition: LIGHT DRIZZLE

End Time: 1130 T: 49°F %CC: 100% Wind MPH: 3-5 General Weather Condition: CLOUDY & CALM

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
A POOL			48°F	9.8		13.2	3.5	2.5

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.

Other species present (circle): Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae

Pool Type: Natural / Constructed / Road Rut

Pool Condition: Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
002			48°F	10.4		2.5	1.3	2

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.

Other species present (circle): Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae

Pool Type: Natural / Constructed / Road Rut

Pool Condition: Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
003			48°F	10.1		9.8	5.2	3.75

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.

Other species present (circle): Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae

Pool Type: Natural / Constructed / Road Rut

Pool Condition: Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments: RUNOFF FROM 002

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
004			48°F	10.5		5.5	6.5	3.75

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.

Other species present (circle): Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae

Pool Type: Natural / Constructed / Road Rut

Pool Condition: Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments: RUNOFF FROM 003

General site Comments: ADDED 020, 021, OFFSITE PONDS. 022, 023

Fairy Shrimp Survey Form (cont'd) Surveyor: [illegible] Site: ALPINE TANK Date: Page 2 of 4

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
005			[illegible] °F	[illegible]		1.5	[illegible]	[illegible]
Fairy Shrimp Species	# Collected	# Collected	Population Est.	Other species present (circle): Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae				
Pool Type: Natural / Constructed / Road Rut	Pool Condition: Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments:								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
006			48°F	10.8		9.5	11	1.5
Fairy Shrimp Species	# Collected	# Collected	Population Est.	Other species present (circle): Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae				
Pool Type: Natural / Constructed / Road Rut	Pool Condition: Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments:								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
012			48°F	11.8				.8
Fairy Shrimp Species	# Collected	# Collected	Population Est	Other species present (circle): Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae				
Pool Type: Natural / Constructed / Road Rut	Pool Condition: Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments								

Pool or Area ID	Latitude	Longitude	Air Temp (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
007			[illegible] °F	[illegible]		[illegible]	418	
Fairy Shrimp Species	# Collected	# Collected	Population Est.	Other species present (circle): Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae				
Pool Type: Natural / Constructed / Road Rut	Pool Condition: Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
008			48°F	11.9		8.2		1.3
Fairy Shrimp Species	# Collected	# Collected	Population Est	Other species present (circle): Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae				
Pool Type: Natural / Constructed / Road Rut	Pool Condition: Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments								

Fairy Shrimp Survey Form (cont'd) Surveyor: B. Lonstein Site: Alpine Dam Date: 1/15/19

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
009			48°F	12.2		4.9	5	1.2
Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	**Other species present (circle):** Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae				
Pool Type: Natural / Constructed / Road Rut	**Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments:								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
013			48°F	12.2		5.6	3.2	.75
Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	**Other species present (circle):** Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae				
Pool Type: Natural / Constructed / Road Rut	**Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments:								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
014			48°F	12.3		5.1	2.4	1.8
Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	**Other species present (circle):** Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae				
Pool Type: Natural / Constructed / Road Rut	**Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments:								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
015			48°F	12.5		6.1	1.2	.8
Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	**Other species present (circle):** Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae				
Pool Type: Natural / Constructed / Road Rut	**Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments:								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
016			48°F	12.2		6.6	1	1
Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	**Other species present (circle):** Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae				
Pool Type: Natural / Constructed / Road Rut	**Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments:								

Fairy Shrimp Survey Form (cont'd) Surveyor: B. Loustalot Site: Alpine Dairy Date: 1/15/19 Page 4 of 4

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
010			48°F	12		8.1	4.5	.8
Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	**Other species present (circle):** Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae				
Pool Type: Natural / Constructed / Road Rut				**Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms				
Comments:								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
011			48°F	12.2		7	3.5	2
Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	**Other species present (circle):** Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae				
Pool Type: Natural / Constructed / Road Rut				**Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms				
Comments:								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
017			48°F	12.3		10.4	1.5	.9
Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	**Other species present (circle):** Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae				
Pool Type: Natural / Constructed / Road Rut				**Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms				
Comments:								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
018			49°F	13.1		9.5	5	.5
Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	**Other species present (circle):** Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae				
Pool Type: Natural / Constructed / Road Rut				**Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms				
Comments:								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
019			48°F	13.4		7	1.5	.15
Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	**Other species present (circle):** Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae				
Pool Type: Natural / Constructed / Road Rut				**Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms				
Comments:								

20X: No shrimp present
21X: "
22X: "
23X: "

} Basins on S. 4 boundary

Fairy Shrimp Survey Form

Surveyor: B Lohrmeh Add'l Persons: None Date: 1/22/19

Project: Alpine Park Survey # 5

Start Time: 0900 T: 52 %CC: 0 Wind MPH: 3-5 General Weather Condition: clear

End Time: 1045 T: 59 %CC: 0 Wind MPH: 3-5 General Weather Condition: clear

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
				5		6	1.5	1

Fairy Shrimp Species	# Collected	# Collected	Population Est.	Other species present (circle): Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
0				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments: Puddle 4

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
3				9.3	5	12	3.5	1.5

Fairy Shrimp Species	# Collected	# Collected	Population Est	Other species present (circle): Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
0				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments.

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
4				10.3		2.8	0.3	0.2

Fairy Shrimp Species	# Collected	# Collected	Population Est.	Other species present (circle): Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
1				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
5				10.1		2.5	1.3	

Fairy Shrimp Species	# Collected	# Collected	Population Est.	Other species present (circle): Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
0				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments

General site Comments:

DR 4:2

Fairy Shrimp Survey Form (cont'd) Surveyor: BL Site: Alpine Date: 1/22/19 Page 2 of 2

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
6				9.6	3	10.3	2.3	2

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
X				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
7				8.9	7	11.5	3	2

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
X				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
8				9.5	3	7.5	3	1.5

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
X				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
9				11.4	2	4.7	1.8	0.5

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
X				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

DEY: 12, 13, 14, 15, 16, 10, 11, 19, 18, 17

Fairy Shrimp / Vernal Pool Survey Data Sheet

Surveyor: B. Lobistcola Add'l Persons: None Date: 2/8/19

Project: Alpine Park Survey #: 6

Start Time: 0945 T: 54 %CC: 0 Wind MPH: 0-2 mph General Weather Condition: clear & cool

End Time: 1100 T: 55 %CC: 0 Wind MPH: 0-3 mph General Weather Condition:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
1				12.9		8	3	1.5

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
0				

Pool Type: Natural / Constructed / Road Rut Pool Condition: Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments: complex of 4 pools

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
3				13.0		13	4	5

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
0				

Pool Type: Natural / Constructed / Road Rut Pool Condition: Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
4				13.5		6	6	5

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
0				

Pool Type: Natural / Constructed / Road Rut Pool Condition: Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
5				14.2		5	2	1

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
0				

Pool Type: Natural / Constructed / Road Rut Pool Condition: Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

General site Comments:
Pool 2 dry.

Fairy Shrimp Survey Data (cont'd) Surveyor: BL Site: Alpine Park Date: 2/8/19

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
6				13.1		13	20	5

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
X				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
7				11.6		14	4	3

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
X				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
8				12.4		9	4	2.5

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
X				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
13				15.9		1	0.2	0.1

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
X				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
9				14.6		3	1	0.15

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
X				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

DRY: 12

Fairy Shrimp Survey Data (cont'd) Surveyor: BL Site: Alpine Pk Date: 2/8/19 Page 3 of 3

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
14				13.3		9	3	3

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
0				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
11				15.3		11	4	2

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
0				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
19				14.5		16	2	0.6

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
0				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

DRy: 15, 16, 10, 12, 18

Fairy Shrimp / Vernal Pool Survey Data Sheet

Surveyor: B. Lohmeh Add'l Persons: _____ Date: 2/15/19

Project: Alpine PL Survey #: 7

Start Time: 0675 T: 46 %CC: 100 Wind MPH: 0-2 mph General Weather Condition: cloudy

End Time: 0730 T: 45 %CC: 100 Wind MPH: 0-2 General Weather Condition: misty

Pool or Area ID	Latitude	Longitude	Air Temp (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
				15		7.1	1.5	1.2

Fairy Shrimp Species	# Collected	# Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
X				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments: 4 Ruts

Pool or Area ID	Latitude	Longitude	Air Temp (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
2				7		42	2.5	1

Fairy Shrimp Species	# Collected	# Collected	Population Est	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
0				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
3				9.5		75	2	6

Fairy Shrimp Species	# Collected	# Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracha ptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda bola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/S rvae/Eggs
X				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments

Pool or Area ID	Latitude	Longitude	Air Temp (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
4				9.4		71	5	3

Fairy Shrimp Species	# Collected	# Collected	Population Est	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
X				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

General site Comments

Fairy Shrimp Survey Data (cont'd) Surveyor: Site: Date: 7/15/19 Page _ of _

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
						10 C		

Fairy Shrimp Species	# Collected	# Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
N				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
				9.2		8.4	-	?

Fairy Shrimp Species	# Collected	# Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
0				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
				9.3		8.3	1 -	1

Fairy Shrimp Species	# Collected	# Collected	Population Est	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
0				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
				9.3		11.7	6	

Fairy Shrimp Species	# Collected	# Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
N				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments: No Cysts

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)

Fairy Shrimp Species	# Collected	# Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Fairy Shrimp Survey Data (cont'd) Surveyor: BL Site: APL Date: 2/15/19

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
9				9.0		85	3	2.5
Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	**Other species present (circle):** Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs				
0								
Pool Type: Natural / Constructed / Road Rut	**Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments:								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
13				8.7		5	4	1.5
Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	**Other species present (circle):** Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs				
0								
Pool Type: Natural / Constructed / Road Rut	**Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments:								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
9				7.9		6.5	6	1.5
Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	**Other species present (circle):** Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs				
Pool Type: Natural / Constructed / Road Rut	**Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments:								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
21				9.4		12.7	4	2.5
Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	**Other species present (circle):** Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs				
0								
Pool Type: Natural / Constructed / Road Rut	**Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments: NEW								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
14				9.4		12.5	6	3
Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	**Other species present (circle):** Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs				
0								
Pool Type: Natural / Constructed / Road Rut	**Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments:								

Fairy Shrimp Survey Data (cont'd) Surveyor: BL Site: Alpine Park Date: 2/15/19 Page 4 of 5

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
15				9.3		5.5	1.5	0.6

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
0				

Pool Type: Natural / Constructed / Road Rut Pool Condition: Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
22				9.5		12	4	1

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs

Pool Type: Natural / Constructed / Road Rut Pool Condition: Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
16				9.3		5	1	1

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
0				

Pool Type: Natural / Constructed / Road Rut Pool Condition: Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
10				9.9		11.4	6	2

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
0				

Pool Type: Natural / Constructed / Road Rut Pool Condition: Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
11				9.7		9	4	2.5

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
0				

Pool Type: Natural / Constructed / Road Rut Pool Condition: Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Fairy Shrimp Survey Data (cont'd) Surveyor: BL Site: APark Date: 2/15/19 Page 5 of 5

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
18				10.1		9.5	20	04
Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	**Other species present (circle):** Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs				
Pool Type: Natural / Constructed / Road Rut				**Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms				
Comments:								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
17				10.1		11	2	0.5
Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	**Other species present (circle):** Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs				
2								
Pool Type: Natural / Constructed / Road Rut				**Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms				
Comments:								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
19				10.9		22	2	1.5
Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	**Other species present (circle):** Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs				
2								
Pool Type: Natural / Constructed / Road Rut				**Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms				
Comments:								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	**Other species present (circle):** Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs				
Pool Type: Natural / Constructed / Road Rut				**Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms				
Comments:								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	**Other species present (circle):** Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs				
Pool Type: Natural / Constructed / Road Rut				**Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms				
Comments:								

Fairy Shrimp / Vernal Pool Survey Data Sheet

Surveyor: B. Lohsroth Add'l Persons: none Date: 2/22/19

Project: Alpine Pit Survey # 8

Start Time: 0740 T: 36 %CC: 10% Wind MPH: 0-2 mph General Weather Condition: clearing + cold snow in shade

End Time: 0900 T: 52 %CC: 0 Wind MPH: 0-1 General Weather Condition: "

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
1				0.6		8	2.5	1.5
Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs				
0								
Pool Type: Natural / Constructed / Road Rut	Pool Condition: Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments:								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
2				1.0		4	3	2
Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs				
0								
Pool Type: Natural / Constructed / Road Rut	Pool Condition: Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments:								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
3				0.3		7	6	4
Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs				
0								
Pool Type: Natural / Constructed / Road Rut	Pool Condition: Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments:								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
4				0.6		10.5	5.5	2.5
Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs				
0								
Pool Type: Natural / Constructed / Road Rut	Pool Condition: Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments:								

General site Comments:

thin layer of ice on pools, scattered snow adj

Fairy Shrimp Survey Data (cont'd) Surveyor: BL Site: Alpine Park Date: 7/22/19

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
5				0.1		10.5	35	3

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
0				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
6				0.2		9	12	2.5

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
0				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
12				0.3		9	1.5	1

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
7				3.1		14	2.5	4

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
10				0.5		15	4	2.5

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
0				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Fairy Shrimp Survey Data (cont'd) Surveyor: Site: 2/22 1 Date: Page of

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
21				0.6		15	27	2

Fairy Shrimp Species	# Collected	# Collected	Population Est	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs

Pool Type: Natural / Constructed / Road Rut **Pool Condition**: Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
7							25	

Fairy Shrimp Species	# Collected	# Collected	Population Est	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
X				

Pool Type: Natural / Constructed / Road Rut **Pool Condition**: Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
5				0.9			4	1

Fairy Shrimp Species	# Collected	# Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs

Pool Type: Natural / Constructed / Road Rut **Pool Condition**: Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
9				2.5		9	3	1.5

Fairy Shrimp Species	# Collected	# Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
X				

Pool Type: Natural / Constructed / Road Rut **Pool Condition**: Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
14				1.6		13.5	6	

Fairy Shrimp Species	# Collected	# Collected	Population Est	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
X				

Pool Type: Natural / Constructed / Road Rut **Pool Condition**: Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments

Fairy Shrimp Survey Data (cont'd) Surveyor: [illegible] Site: Alpine Park Date: 2/22/19 Page [illegible] of [illegible]

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
1						-	2	0.6

Fairy Shrimp Species	# Collected	# Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
X				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
2						-		1

Fairy Shrimp Species	# Collected	# Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
X				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
6				0.9		6		1

Fairy Shrimp Species	# Collected	# Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
X				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
10				1.1		11.2	7	2

Fairy Shrimp Species	# Collected	# Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
X				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
1				2.1		10	4	2.5

Fairy Shrimp Species	# Collected	# Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
X				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Fairy Shrimp Survey Data (cont'd) Surveyor: BL Site: APark Date: 7/22/19 Page 5 of 5

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
Rut 19				36		6.5	2.5	0.1

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
0				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
18				1.2		10	5	1

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
0				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
17				0.6		10	1	0.5

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
0				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
23				3.6		30	4	1.7

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
4				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Fairy Shrimp / Vernal Pool Survey Data Sheet

Surveyor: B. Johnston Add'l Persons: None Date: 3/1/19

Project: Alpine Pk Survey # 9

Start Time: 0800 T: 60 %CC: 20 Wind MPH: 0-1 General Weather Condition: pc calm

End Time: 0845 T: 64 %CC: 20 Wind MPH: 0-1 General Weather Condition: "

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
3				13.9		5	0.1	0.1

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
0				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
6				14.1		5.8	.25	0.2

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
0				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
7				13.7		10	2.5	1.5

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
0				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
2				14.2		4		

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

General site Comments:

DI4: 1, 2, 4, 5, 12, 20, 21, 13, 9, 15, 22, 16, 10, 11, 17, 18, 19, 14

Fairy Shrimp Survey Data (cont'd) Surveyor: - Site: Alpine Park Date: 7/1/19 Page 2 of 2

Pool or Area ID	Latitude	Longitude	Air Temp (°C)	Water Temp (°C)	Avg Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
22				12.6				12

Fairy Shrimp Species	# ♂ Collected	# Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
\				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp (°C)	Water Temp (°C)	Avg. Depth (cm)	Max Depth (cm)	Pool length (m)	Pool width (m)

Fairy Shrimp Species	# Collected	# Collected	Population Est	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)

Fairy Shrimp Species	# Collected	# Collected	Population Est	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments

Pool or Area ID	Latitude	Longitude	Air Temp (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)

Fairy Shrimp Species	# Collected	# Collected	Population Est	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg Depth (cm)	Max Depth (cm)	Pool length (m)	Pool width (m)

Fairy Shrimp Species	# ♂ Collected	# Collected	Population Est	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments.

Fairy Shrimp / Vernal Pool Survey Data Sheet

Surveyor: B. Johnson Add'l Persons: None Date: 3/8/19

Project: Pine Park Survey # 10

Start Time: 0915 T: %CC: 100 Wind MPH General Weather Condition: cloudy

End Time: 1045 T. %CC: 60 Wind MPH General Weather Condition: raining

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg Depth (cm)	Max Depth (cm)	Pool length (m)	Pool width (m)
				12.2				0

Fairy Shrimp Species	# Collected	# Collected	Population Est	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
4				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments

Pool or Area ID	Latitude	Longitude	Air Temp (°C)	Water Temp. (°C)	Avg Depth (cm)	Max Depth (cm)	Pool length (m)	Pool width (m)

Fairy Shrimp Species	# Collected	# Collected	Population Est	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs

Pool Type: Natural / Constructed / Road Rut **Pool Condition.** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments

Pool or Area ID	Latitude	Longitude	Air Temp (°C)	Water Temp. (°C)	Avg Depth (cm)	Max Depth (cm)	Pool length (m)	Pool width (m)
2								

Fairy Shrimp Species	# Collected	# Collected	Population Est	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs

Pool Type: Natural / Constructed / Road Rut **Pool Condition.** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments

Pool or Area ID	Latitude	Longitude	Air Temp (°C)	Water Temp (°C)	Avg Depth (cm)	Max Depth (cm)	Pool length (m)	Pool width (m)
1				9				

Fairy Shrimp Species	# Collected	# Collected	Population Est	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
1				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

General site Comments.

Fairy Shrimp Survey Data (cont'd) Surveyor: BL Site: Alpine Park Date: 3/8/19 Page 3 of 5

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
5				12.6		6	2	1.5

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
?				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
6				13.3		9.5	15	4

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
?				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
12				13.2		4.5	0.5	0.3

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
?				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
7				12.5		15	6	4

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
?				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
20				14.1		3	0.3	0.08

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
?				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Fairy Shrimp Survey Data (cont'd) Surveyor: Site: Alpine Park Date: 3/8/19 Page of 5

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
8				13		10	3	2
Fairy Shrimp Species	# Collected	# Collected	Population Est	**Other species present (circle):** Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs				
∅								
Pool Type: Natural / Constructed / Road Rut	**Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments:								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
								1
Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est	**Other species present (circle):** Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs				
Pool Type: Natural / Constructed / Road Rut	**Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments:								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
								1
Fairy Shrimp Species	# Collected	# Collected	Population Est	**Other species present (circle):** Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs				
Pool Type: Natural / Constructed / Road Rut	**Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments:								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
11							5	
Fairy Shrimp Species	# Collected	# Collected	Population Est	**Other species present (circle):** Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs				
Pool Type: Natural / Constructed / Road Rut	**Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
10				2		5	5	2.5
Fairy Shrimp Species	# Collected	# Collected	Population Est.	**Other species present (circle):** Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs				
∅								
Pool Type: Natural / Constructed / Road Rut	**Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments								

Fairy Shrimp Survey Data (cont'd) Surveyor: Site: Date: Page of

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
Fairy Shrimp Species	# Collected	# Collected	Population Est	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs				
Pool Type: Natural / Constructed / Road Rut	Pool Condition: Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments:								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
				/				
Fairy Shrimp Species	# Collected	# Collected	Population Est	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs				
Pool Type: Natural / Constructed / Road Rut	Pool Condition: Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
16				13		2	2	
Fairy Shrimp Species	# Collected	# Collected	Population Est	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs				
Y								
Pool Type: Natural / Constructed / Road Rut	Pool Condition: Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
				12.6				
Fairy Shrimp Species	# Collected	# Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs				
Pool Type: Natural / Constructed / Road Rut	Pool Condition: Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments:								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
Fairy Shrimp Species	# Collected	# Collected	Population Est	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs				
Pool Type: Natural / Constructed / Road Rut	Pool Condition: Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments								

Fairy Shrimp Survey Data (cont'd) Surveyor: BL Site: APark Date: 3/8/19 Page 3 of 5

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
19				13.3		7	2.5	0.1

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	**Other species present (circle):** Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
♂				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
18				14.2		2.5	0.2	0.1

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	**Other species present (circle):** Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
♂				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
21				12.3		12	0.5	0.5

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	**Other species present (circle):** Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
♂				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
17				15.1		5.8	0.2	0.1

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	**Other species present (circle):** Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
♂				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
23				13.4		19	2	1

Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	**Other species present (circle):** Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
♂				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

St. 52°F 36% 5-15 mph 0745 Survey # 11
END 53°F 20% 7-15 mph 0845

Fairy Shrimp Survey Data (cont'd) Surveyor: B. Lobstein Site: Alpine pk Date: 3/15/19 Page 1 of 2

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
1				6.9		8	3	1.5
Fairy Shrimp Species	**# ♂ Collected**	**# ♀ Collected**	**Population Est.**	**Other species present (circle):** Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs				
&								
Pool Type: Natural / Constructed / Road Rut	**Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments:								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
3				7.2		14	5	3.5
Fairy Shrimp Species	**# ♂ Collected**	**# ♀ Collected**	**Population Est.**	**Other species present (circle):** Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs				
&								
Pool Type: Natural / Constructed / Road Rut	**Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments:								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	**Max. Depth (cm)**	Pool length (m)	Pool width (m)
4				7.7		6.5	2.5	0.6
Fairy Shrimp Species	**# ♂ Collected**	**# ♀ Collected**	**Population Est.**	**Other species present (circle):** Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs				
&								
Pool Type: Natural / Constructed / Road Rut	**Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments:								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
5				7.9		3.5	1	0.5
Fairy Shrimp Species	**# ♂ Collected**	**# ♀ Collected**	**Population Est.**	**Other species present (circle):** Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs				
&								
Pool Type: Natural / Constructed / Road Rut	**Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments:								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
6				7.2		10.5	3.5	2
Fairy Shrimp Species	**# ♂ Collected**	**# ♀ Collected**	**Population Est.**	**Other species present (circle):** Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs				
&								
Pool Type: Natural / Constructed / Road Rut	**Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments:								

Dfg. 2,12

Fairy Shrimp Survey Data (cont'd) Surveyor: Site: Alamo Lake Date: 3/13/19 Page 1 of 2

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
7				7			6	3

Fairy Shrimp Species	# Collected	# . Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
2				7.2		10	2	2

Fairy Shrimp Species	# Collected	# . Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
0				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
1				8.0		3.5	1	3

Fairy Shrimp Species	# Collected	# . Collected	Population Est	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
0				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
24				9.2		5	0.1	

Fairy Shrimp Species	# Collected	# . Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydrachar ra Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda C Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
1				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
				7.7		12		0.3

Fairy Shrimp Species	# Collected	# . Collected	Population Est.	Other species present (circle): Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
2				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

DRY 20, 21, 14, 13, 15, 22, 16, 10, 11, 19, 18, 17

Start 0830 48°F CLR 0-1mph
END 0930 61° CLR 0-1mph

Survey # 12

Fairy Shrimp Survey Form (cont'd) Surveyor: BLohstroh SdO Site: Alpine pk Date: 3/22/19 Fri Page 1 of 1

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
7				10.3		10	2.5	2
Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	**Other species present (circle):** Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae				
1								
Pool Type: Natural / Constructed / Road Rut		**Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms						
Comments: only pool wet prior to rain event								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
8						5	2	0.4
Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	**Other species present (circle):** Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae				
Pool Type: Natural / Constructed / Road Rut		**Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms						
Comments:								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
12						5	2.5	0.7
Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	**Other species present (circle):** Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae				
Pool Type: Natural / Constructed / Road Rut		**Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms						
Comments:								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
9						4	2	0.3
Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	**Other species present (circle):** Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae				
Pool Type: Natural / Constructed / Road Rut		**Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms						
Comments:								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
10						5	.2	0.15
Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	**Other species present (circle):** Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae				
Pool Type: Natural / Constructed / Road Rut		**Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms						
Comments:								

7 only pool wet prior to rain Wed + Thurs night. Hydro Rep

DRY: 20, 21, 14, 15, 22, 16, 11, 24, 18, 12, 5, 4, 17, 19

tridax: 23: 0.1 × 0.05, 4cm depth
6' 1.9 × 1, 6cm²
3: 3.5 × 2, 12cm

2: 2×1, 2cm
1: 2.5 × 1.4, 15cm

Start: 0850 60°F CLR 2-1mph
END: 0930 62°F CLR 0-2mph

Survey # 13

Fairy Shrimp Survey Form (cont'd) Surveyor: R. Lohstroh Site: Alpine Plc Date: 3/29/19 Page 1 of 1

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
1				15.2		4	.30	.30
Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae				
∅								
Pool Type: Natural / Constructed / Road Rut	Pool Condition: Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments: 1 Rut Still inundated.								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
7				17.9		1	.7	.25
Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae				
∅								
Pool Type: Natural / Constructed / Road Rut	Pool Condition: Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments:								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae				
Pool Type: Natural / Constructed / Road Rut	Pool Condition: Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments:								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae				
Pool Type: Natural / Constructed / Road Rut	Pool Condition: Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments:								

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg. Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
Fairy Shrimp Species	# ♂ Collected	# ♀ Collected	Population Est.	Other species present (circle): Ostracods Copepods Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Gastropods Ephemeroptera Zygoptera Anisoptera PSHY / SPHA Larvae				
Pool Type: Natural / Constructed / Road Rut	Pool Condition: Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms							
Comments:								

DP: 2, 3, 4, 5, 6, 12, 8, 20, 13, 9, 14, 21, 15, 22, 16, 10, 11, 24, 23, 17, 18, 19

Fairy Shrimp / Vernal Pool Survey Data Sheet

Surveyor: BRIAN LOHSTROH Add'l Persons: — Date: 5/31/19

Project: Alpine Park Survey # 14

Start Time: 1300 T: 70 %CC: CLR Wind MPH: 0-5 General Weather Condition: clear & calm

End Time: 1345 T. 72 %CC: CLR Wind MPH: 1-5 General Weather Condition: "

Pool or Area ID	Latitude	Longitude	Air Temp (°C)	Water Temp (°C)	Avg Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)
1				30.1		6.5	1	2

Fairy Shrimp Species	# Collected	# Collected	Population Est.	**Other species present (circle):** Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs
0				

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments

Pool or Area ID	Latitude	Longitude	Air Temp (°C)	Water Temp (°C)	Avg Depth (cm)	Max. Depth (cm)	Pool length (m)	Pool width (m)

Fairy Shrimp Species	# Collected	# . Collected	Population Est	**Other species present (circle):** Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments

Pool or Area ID	Latitude	Longitude	Air Temp. (°C)	Water Temp. (°C)	Avg Depth (cm)	Max Depth (cm)	Pool length (m)	Pool width (m)

Fairy Shrimp Species	# Collected	# Collected	Population Est	**Other species present (circle):** Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments

Pool or Area ID	Latitude	Longitude	Air Temp (°C)	Water Temp (°C)	Avg Depth (cm)	Max Depth (cm)	Pool length (m)	Pool width (m)

Fairy Shrimp Species	# Collected	# Collected	Population Est	**Other species present (circle):** Ostracoda Copepoda Cladocera Hydracharina Diptera Culicidae Coleoptera Notonectidae Corixidae Platyhelminthes Nematoda Collembola Chironomidae Gastropoda Ephemeroptera Zygoptera Anisoptera PSHY/SPHA Larvae/Eggs

Pool Type: Natural / Constructed / Road Rut **Pool Condition:** Undisturbed / disturbed (tire tracks trash plowing) Ungrazed / Grazed (cattle horses sheep / H M L) algal blooms

Comments:

General site Comments:

Appendix C
USFWS Dry Season Data Sheets

Appendix 2. U.S. Fish and Wildlife Service – Data Sheet for Dry Season Sample Analysis for Listed Large Branchiopods

Project Information

Project Name: COUNTY S.D. DPR. Alpine Park
USFWS Project Number:
County: San Diego
Lat: 32.820443
Long: -116.761765
Quad: Alpine
Township: 15 S
Range: 2 E
Section: 34

Biologist Information

Name of Person(2) Who Conducted the Following Tasks and Permit Number(s):

Soil Collection: Brian Lohstroh TE-063608-6
Soil Processing: Dale Ritenour TE-58888A-2.1
Soil Analysis/Cysts ID: Dale Ritenour TE-58888A-2.1
Soil Collection Date: Sept. 13 2019

Pool/ Habitat/ Basin No.	Invertebrates Present (X)															Comments
	Insect Exo-Skeletons	Micro-Turbellaria Cysts	Cladocera Ephippia	Ostracods Live/Cysts/ Carapaces	Copepods Live/Cysts	Number of Large Branchiopod Cysts: *Branchinecta* sp.	*Lepidurus packardi*	*Streptocephalus woottoni*	*Linderiella occidentalis*	*Lynceus brachyurus*	*Cyzicus californicus*	Hydracarina Live	Nematoda	Collembola	Other Species	
AP-1 AP-2 AP-3						○ ○ ○		∅								
AP-4 AP-5 AP-6						○ ○ ○		∅								
AP-7 AP-8 AP-9						○ ○ ○		∅								
AP-10 AP-11 AP-12						○ ○ ○		∅								
AP-13 AP-14 AP-15						○ ○ ○		∅								
AP-16 AP-17 AP-18						○ ○ ○		∅								
AP-19 AP-20 AP-20X						○ ○ ○		∅								
AP-21 AP-21X AP-22						○ ○ ○		∅								
AP-22X AP-23 AP-23X						○ ○ ○		∅								
AP-24						○		∅								

Appendix D
Representative Photographs



Photo 1. (12/7/18) View facing northeast of Basin AP-001. The basin is a series of ruts that was regularly disturbed by vehicle traffic. This photo was taken during the first sampling visit to the Alpine site.



Photo 2. (12/7/18) View facing northeast of basin AP-003. This photo was taken during the first sampling visit to the Alpine site.



Photo 3. (1/1/19) View facing northwest of basin AP-007. This basin supported a high diversity of aquatic species, including seed shrimp (ostracods) and western spadefoot eggs. Note the recent vehicle tracks at upper left.



Photo 4. (3/18/19) View facing northeast of basin AP-007 in mid-March 2018. Dog footprints are visible at right.



Photo 5. (2/15/19) View facing west of basins AP-010 and AP-011 after a recent rain event.



Photo 6. (2/8/19) View facing west of basin AP-023, an undisturbed basin within the grassland.

Appendix C

2019 and 2020 Quino Checkerspot Butterfly Survey Reports

RESULTS OF THE 2019 QUINO CHECKERSPOT BUTTERFLY SURVEYS FOR THE ALPINE PARK PROJECT

PREPARED FOR:

Mr. Lorrie Bradley
County of San Diego, Department of Parks and Recreation
5500 Overland Avenue, Suite 410
San Diego, California 92123

PREPARED BY:

Dale Ritenour
ICF
525 B Street, Suite 1700
San Diego, California 92101

September 2019

ICF. 2019. 2019 Quino Checkerspot Butterfly Surveys for the Alpine Park Project. Prepared for the County of San Diego, Department of Parks and Recreation. San Diego, CA. September.

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Chapter 1
Introduction

ICF was retained by the County of San Diego Department of Parks and Recreation to conduct protocol surveys for the federally-listed endangered Quino checkerspot butterfly (*Euphydryas editha quino*; QCB) in support of the Alpine Park Project.

The Alpine Park property (site) is located adjacent to Wright's Field to the southeast of the community of Alpine, in San Diego County, CA (Figure 1). The site can be found on the *Alpine* USGS 7.5-minute quadrangle map (Figure 2). The study area consists of non-excludable areas throughout the entirety of the 96.3 acre site. The site is situated within the U.S. Fish and Wildlife Service (USFWS) recommended survey area for QCB (USFWS 2014). The study area includes rolling grasslands and openings in coastal sage scrub and Engelmann oak woodlands.

The entire parcel was inspected for suitable habitat for QCB. The survey area supported approximately 76.8 acres of non-excluded areas as defined by the USFWS (USFWS 2014). This report documents the results of the 2019 QCB focused surveys conducted in the non-excluded portions of the site.

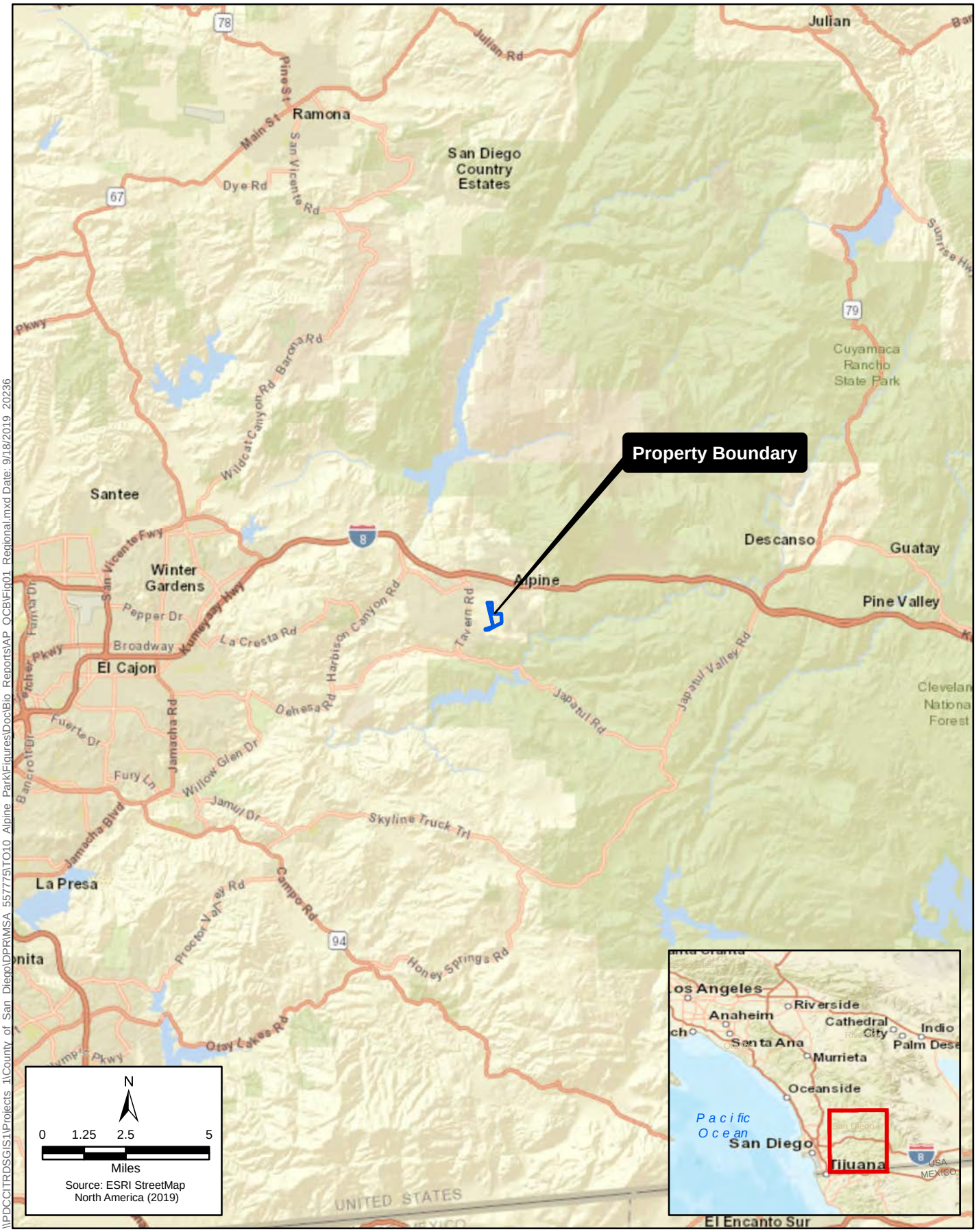

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Figure 1
Regional Location
Alpine Park Project

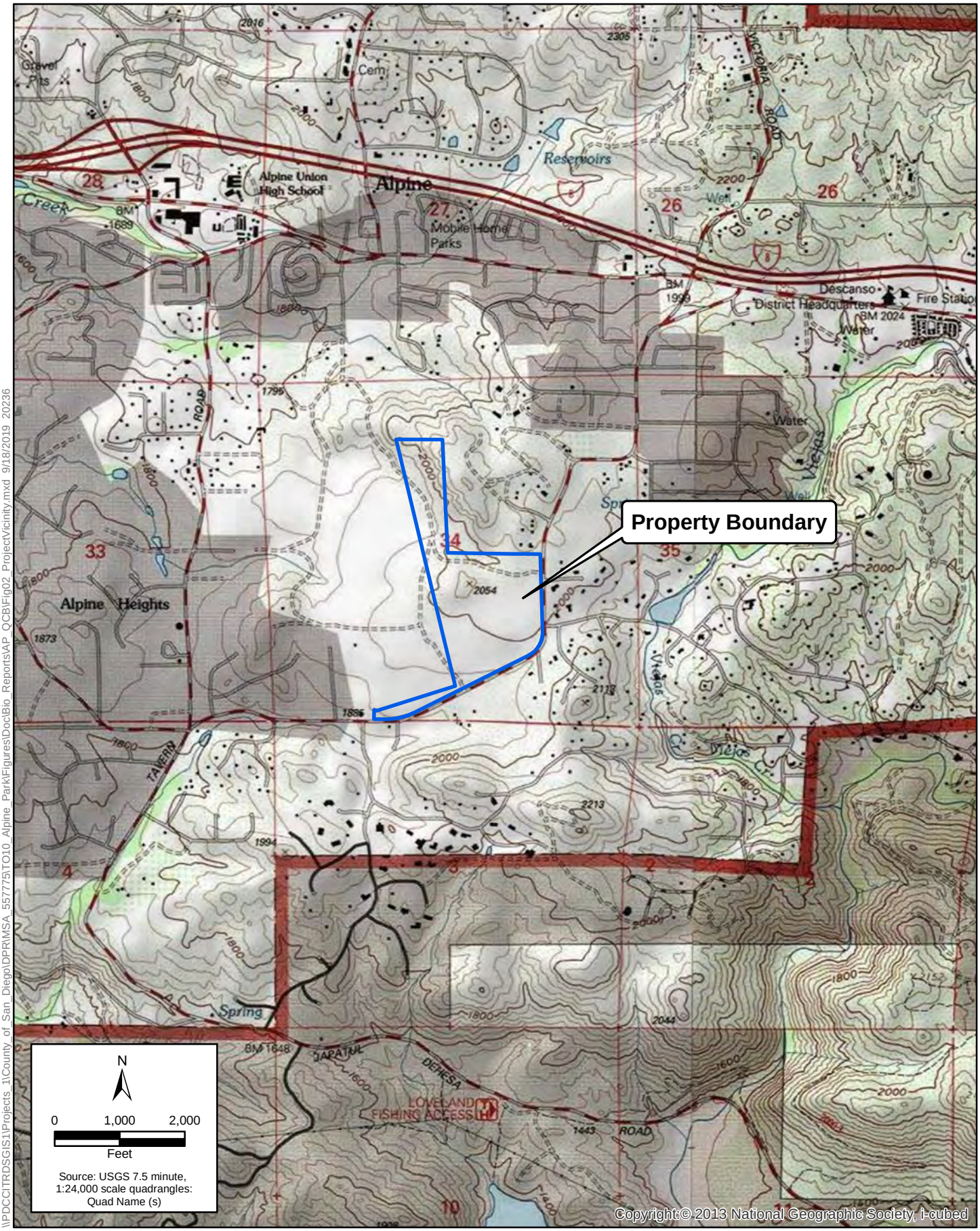

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Figure 2
Project Vicinity
Alpine Park Project

Chapter 2
Methods

Survey methodology follows the December 15, 2014 U.S. Fish and Wildlife Service (USFWS) Quino Checkerspot Butterfly Survey Guidelines (protocol; USFWS 2014). A site assessment was conducted by Brian Lohstroh on February 8, 2019, before the first QCB survey, to conduct a general field survey of the site and map excluded areas and proposed QCB survey areas.

Brian Lohstroh (TE-063608-6), James Hickman (TE-60218B-0) and Dale Ritenour (TE-58888A-2.1) conducted the surveys on a weekly basis under acceptable weather conditions as defined in the USFWS protocol (Table 1) (USFWS 2014). A total of 11 protocol surveys for adult QCB were conducted by ICF biologists between February 8 and May 3, 2019. In rainy weeks without appropriate weather conditions, two surveys were conducted in the following week with at least one day between surveys. During the last week of the survey window, no survey days met the required weather conditions. Because surveys cannot be made up after the survey window ends, no surveys were conducted in this last week. As described in Chapter 3, QCB was observed during the seventh week of surveys. Page 2 of the protocol states that surveys shall continue "until a Quino is detected". As a result, the surveys could have stopped after the seventh week, but the four additional surveys were conducted to provide additional depth and understanding of the degree to which QCB utilizes the site.

Each survey involved walking transects throughout all non-excluded portions of the survey area. A portion of the northern survey area initially included in the survey was determined, upon closer examination in the field, to be too dense to support QCB, and thus was determined to be a "closed canopy woody vegetation" stand as identified in the "Excluded Areas" definition on page 1 of the protocol. The surveys were conducted at rate of no more than 15 acres per hour. The surveyors stopped periodically to scan adjacent areas for moving butterflies. Butterflies were identified by sight with the aid of close-focus binoculars. All butterfly species observed were recorded.

Plant species flowering during the survey period were recorded and assessed as potential QCB nectar and/or larval host plants. A list of potential QCB nectar sources and larval host plants within the survey area is presented as Appendix A. Butterfly identification and nomenclature is based on Shiraiwa (2009). Vegetation communities are mapped based on Holland (1986) and Oberbauer (2008), and plant nomenclature is based on Baldwin et al. (2012).

Table 1. Survey Conditions

Survey Type	Date	Time Onsite		Temp (ºF)	Sky Cover (%)	Wind (MPH)	Personnel
Habitat Assessment	8-Feb-2019	Start	0930	54	0	0-2	B. Lohstroh
		End	1430	61	0	0-3	
Protocol Survey	27-Feb-2019	Start	0930	62	0	0-3	B. Lohstroh, J. Hickman
		End	1430	66	0	3-6	
Protocol Survey	1-Mar-2019	Start	0815	64	20	0-1	B. Lohstroh, J. Hickman
		End	1315	68	30	0-5	
Protocol Survey	5-Mar-2019	Start	0850	68	0	0-1	B. Lohstroh, J. Hickman
		End	1315	73	5	2-4	
Protocol Survey	14-Mar-2019	Start	0945	61	0	3-8	B. Lohstroh, J. Hickman
		End	1510	67	0	3-5	
Protocol Survey	18-Mar-2019	Start	0900	72	0	0-1	B. Lohstroh, J. Hickman
		End	1330	74	0	1-3	
Protocol Survey	29-Mar-2019	Start	0830	62	0	0-2	B. Lohstroh, J. Hickman
		End	1345	65	10	3-6	
Protocol Survey	8-Apr-2019	Start	1145	84	15	3-6	B. Lohstroh, D. Ritenour
		End	1730	84	10	3-6	
Protocol Survey	10-Apr-2019	Start	0915	63	0	0-2	B. Lohstroh, D. Ritenour
		End	1445	72	0	3-7	
Protocol Survey	17-Apr-2019	Start	0910	64	0	1-4	B. Lohstroh, D. Ritenour
		End	1500	81	0	2-6	
Protocol Survey	26-Apr-2019	Start	0730	67	0	2-4	B. Lohstroh, J. Hickman
		End	1330	78	0	3-6	
Protocol Survey	3-May-2019	Start	0715	63	0	2-5	B. Lohstroh, J. Hickman
		End	1300	77	0	1-5	

Chapter 3
Results

Two Adult QCB were observed within the survey area during on April 8, 2019 (Figure 3). The first QCB observed on April 8 was a female moving north and nectaring on blue dicks (*Dichelostemma capitatum*) (Appendix B; Photos 3-4). The second QCB was a male observed defending an area of nectar plants including blue dicks. No QCB host plants were observed within this area (Appendix B; Photos 5-6). These individuals were not observed during QCB surveys on April 10 or during any subsequent protocol surveys. Dale Ritenour conducted rare plant surveys on the site on April 12, revisited these locations during favorable weather conditions and did not observed these individuals.

The survey area supported a variety of potential nectar resources. While the grasslands onsite were dominated by native bunchgrasses and/or annual Mediterranean grasses, blue dick flowers were widespread and common in March and April (Appendix B; Photo 1). The site supported a variety of short-corolla popcornflowers including *Cryptanthas*, *Plagiobothrys*, and *Pectocaryas*.

Dot-seed plantain (*Plantago erecta*) and purple owl's clover (*Castilleja exserta*) were the only QCB host plants observed within the survey area. Dot-seed plantain was primarily limited to old dirt roads within the southern area of the survey area. Dot-seed plantain was largely absent from the clay soils onsite which support other clay-lens species such as Palmer's grapplinghook (*Harpagonella palmeri*).

The following 21 butterfly species were observed during the 11 protocol surveys: Acmon blue (*Plebejus acmon*), Behr's metalmark (*Apodemia mormo virgulti*), cabbage white (*Pieris rapae*), checkered skipper (*Pyrgus communis*), checkered white (*Pontia protodice*), common buckeye (*Junonia coenia grisea*), dainty sulphur (*Nathalis iole*), funereal duskywing (*Erynnis funeralis*), grayhairstreak (*Strymon melinus pudica*), Harford's sulphur (*Colias harfordii*), marine blue (*Leptotes marina*), Orange Sulphur (*Colias eurytheme*), Quino checkerspot, painted lady (*Vanessa cardui*), pale swallowtail (*Papilio eurymedon*), San Bernardino blue (*Euphilotes bernardino bernardino*), Sara orangetip (*Anthocharis sara*), southern blue (*Glaucopsyche lygdamus australis*), west coast lady (*Vanessa annabella*), western pygmy-blue (*Brephidium exila*), and western tiger blue (*Papilio rutulus*)(Table 2). Painted lady was by far the most commonly observed butterfly; up to 3,500 were observed during a single survey during migration in March. Sara's orangetip was also observed during every survey. It was also notable that no California ringlets (*Coenonympha tullia california*), a grassland species, were observed in the grasslands in the survey area.

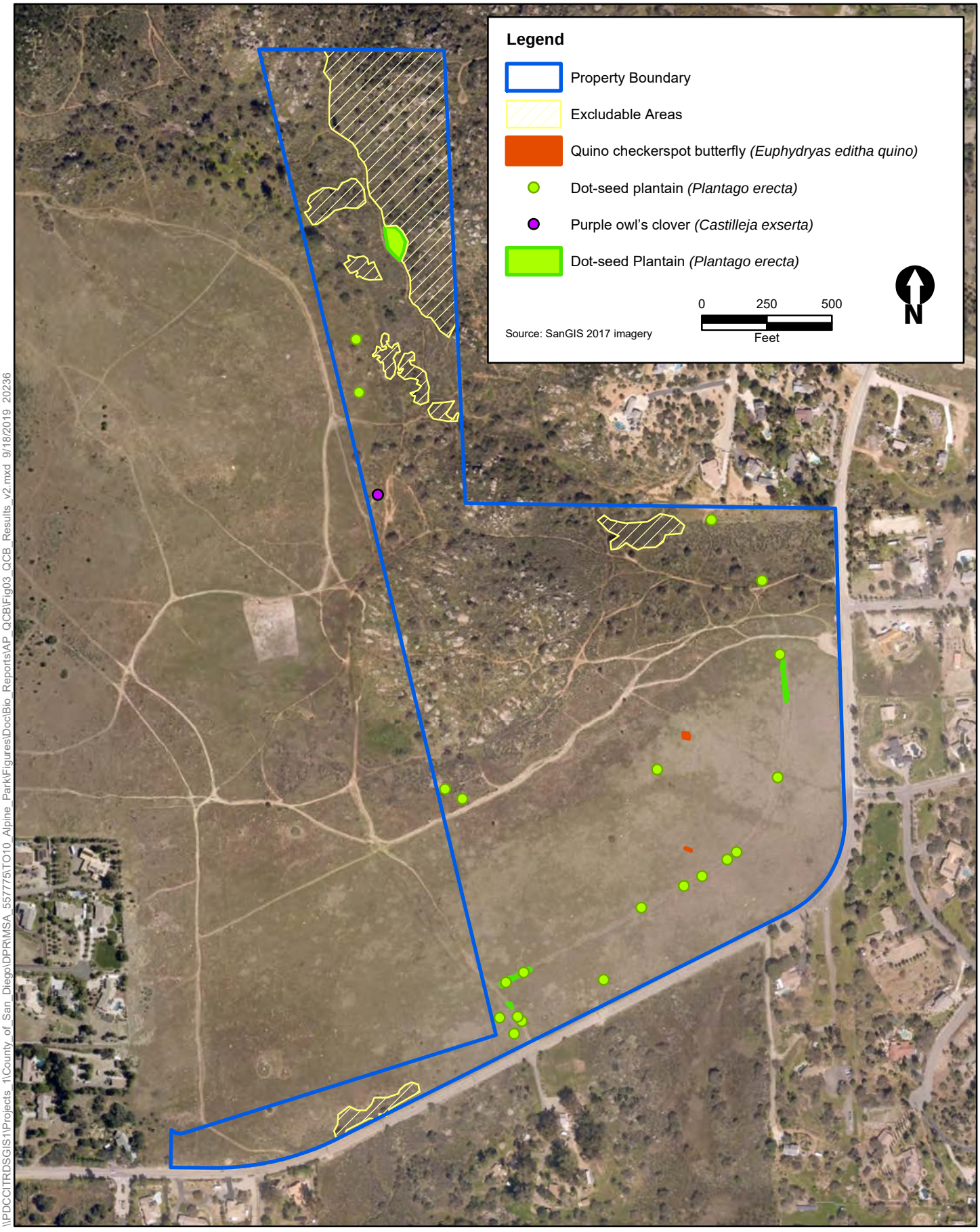

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Figure 3
QCB Survey Results
Alpine Park Project

Table 2. Butterflies Observed by Week

Common name	*Scientific name*	*2/8*	2/27	3/1	3/5	3/14	3/18	3/29	4/8	4/10	4/17	4/26	5/3	No. Surveys Observed	Max. No. Observed
FAMILY PAPILIONIDAE: Swallowtails															
Subfamily Papilioninae: True Swallowtails															
Western Tiger Swallowtail	*Papilio rutulus*						1							1	1
Pale Swallowtail	*Papilio eurymedon*					1	1			2				3	2
FAMILY PIERIDAE: Whites and Sulphurs															
Subfamily Pierinae: Whites															
Checkered White	*Pontia protodice*					1	2	3	10	3	9	33	54	8	54
Cabbage White	*Pieris rapae*								4					1	4
Subfamily Anthocharinae: Marbles & Orangetips															
Pacific Sara Orangetip	*Anthocharis sara sara*	6	14	9	7	2	5	3	14	11	36	59	30	12	59
Subfamily Coliadinae: Sulphurs															
Orange Sulphur	*Colias eurytheme*										5	1		2	5
Harford's Sulphur	*Colias harfordii*									2				1	2
Dainty Sulphur	*Nathalis iole*			1				2						2	2
FAMILY LYCAENIDAE: Gossamer-wing															
Subfamily Theclinae: Hairstreaks															
Gray Hairstreak	*Strymon melinus pudica*						1			2	1			3	2
Subfamily Polyommatinae: Blues															
Western Pygmy-blue	*Brephidium exila*								1					1	1
Marine Blue	*Leptotes marina*									1				1	1
San Bernardino Blue	*Euphilotes bernardino bernardino*											3		1	3
Southern Blue	*Glaucopsyche lygdamus australis*					1	1					3	9	4	9
Acmon Blue	*Plebejus acmon*					1	1	4		3	2		2	6	4

Common name	*Scientific name*	*2/8*	2/27	3/1	3/5	3/14	3/18	3/29	4/8	4/10	4/17	4/26	5/3	No. Surveys Observed	Max. No. Observed
FAMILY RIODINIDAE: Metalmarks															
Subfamily Riodinidae: Metalmarks															
Behr's Metalmark	*Apodemia mormo virgulti*						1	7	5	26	71	46	10	7	71
FAMILY LIBYTHEIDAE: Snouts															
Subfamily Melitaeinae: Crescents and Checkerspots															
Quino Checkerspot* (FE)	*Euphydryas editha quino*								2					1	2
Subfamily Nymphalinae: True Brushfoots															
Painted Lady	*Vanessa cardui*	*5*	20	164	79	3500	270	310	40	27	21	32	4	12	3500
West Coast Lady	*Vanessa annabella*			1				3	6	2	2			5	6
Common Buckeye	*Junonia coenia grisea*								3	6	3	4	1	5	6
FAMILY HESPERIIDAE: The Skippers															
Subfamily Pyrginae: Spread-wing Skippers															
Funereal Duskywing	*Erynnis funeralis*			1	2		23	15	12	21	4	5	1	9	23
White Checkered-Skipper	*Pyrgus albescens*						1			1				2	1
Number of Species Observed per Survey		2	2	5	3	6	11	8	10	13	10	9	8	*Total Number of Butterflies Observed*	
Total Number of Butterflies Observed per Survey		11	34	176	88	3506	307	347	97	107	154	186	111		*3758*

Chapter 4
References

Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken, editors. 2012. *The Jepson Manual: Vascular Plants of California*, second edition. University of California Press, Berkeley.

Holland, R.F. 1986. *Preliminary Descriptions of the Terrestrial Natural Communities of California*. Nongame-Heritage Program, California Department of Fish and Game.

Oberbauer, Thomas, Meghan Kelly, and Jeremy Buegge. March 2008. *Draft Vegetation Communities of San Diego County*. Based on "Preliminary Descriptions of the Terrestrial Natural Communities of California," Robert F. Holland, Ph.D., October 1986.

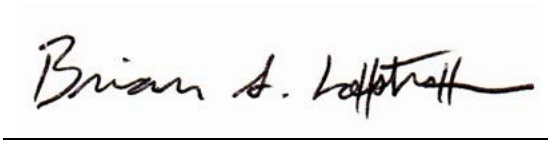
Opler, P. A., and A. B. Wright. 1999. *A Field Guide to Western Butterflies.* Boston, MA: Houghton Mifflin Co.

Shiraiwa, Kojiro. 2009. *The Butterflies of San Diego County Introduction and Identification Guide.* May.

U.S. Fish and Wildlife Service (USFWS). 2014. *Quino Checkerspot Butterfly Survey Protocol*. Carlsbad Fish and Wildlife Office. December 15.

Chapter 5
Certifications

We certify that the information in this survey report and attached exhibits fully and accurately represents my work.



Brian Lohstroh
Permit No. TE-063608-6



James Hickman
Permit No TE-60218B-0



Dale Ritenour
Permit No TE-58888A-2.1

Appendix A
Potential QCB Host and Nectar Plants

Appendix A Potential QCB Host and Nectar Plants

Scientific Name	Common Name	Special Status
EUDICOTS		
Apiaceae - Carrot family		
Daucus pusillus	Rattlesnake weed	
Sanicula arguta	Sharptooth sanicle	
Sanicula bipinnata	Poison sanicle	
Asteraceae - Sunflower family		
Amblyopappus pusillus	Dwarf coastweed	
* *Centaurea melitensis*	Tocalote	
Chaenactis artemisiifolia	White pincushion	
Cirsium occidentale	Cobwebby thistle	
Corethrogyne filaginifolia	Common sand aster	
Deinandra fasciculata	Fascicled tarplant	
* *Dimorphotheca sinuata*	Cape marigold	
Eriophyllum confertiflorum	Yarrow	
Gutierrezia californica	California matchweed	
* *Hedypnois cretica*	Crete weed	
* *Hypochaeris glabra*	Smooth cat's-ear	
Lasthenia californica ssp. californica	California goldfields	
Pseudognaphalium californicum	California everlasting	
* *Senecio vulgaris*	Common ragwort	
* *Sonchus asper ssp. asper*	Prickly sow thistle	
* *Sonchus oleraceus*	Common sow thistle	
Boraginaceae - Borage family		
Amsinckia menziesii	Menzies's fiddleneck	
Cryptantha intermedia	Clearwater cryptantha	
Emmenanthe penduliflora	Whispering bells	
Eucrypta chrysanthemifolia	Spotted hideseed	
Harpagonella palmeri	Palmer's grapplinghook	CRPR 4.2
Pectocarya linearis ssp. ferocula	Narrow-toothed pectocarya	
Pectocarya peninsularis	Baja pectocarya	
Phacelia cicutaria	Caterpillar phacelia	
Phacelia parryi	Parry's phacelia	
Plagiobothrys nothofulvus	Rusty popcornflower	

Scientific Name	Common Name	Special Status
Brassicaceae - Mustard family		
* *Brassica nigra*	Black mustard	
Descurainia pinnata	Western tansymustard	
* *Hirschfeldia incana*	Shortpod mustard	
Lepidium nitidum	Shining pepper-grass	
* *Lobularia maritima*	Sweet alyssum	
* *Sisymbrium irio*	London rocket	
Cactaceae - Cactus family		
Opuntia littoralis	Coastal prickly pear	
Caryophyllaceae - Pink family		
* *Silene gallica*	Windmill catchfly	
Convolvulaceae - Morning-glory family		
Calystegia macrostegia ssp. cyclostegia	Coast morning-glory	
Crassulaceae - Stonecrop family		
Crassula connata	Pygmyweed	
Cucurbitaceae - Gourd family		
Marah macrocarpa	Wild cucumber	
Fabaceae - Legume family		
Acmispon glaber	Deerweed	
Acmispon micranthus	San Diego lotus	
Acmispon strigosus	Strigose lotus	
Lathyrus vestitus	Canyon sweet pea	
Lupinus bicolor	Miniature lupine	
Lupinus hirsutissimus	Stinging lupine	
Lupinus succulentus	Arroyo lupine	
Lupinus truncatus	Cut leaf lupine	
* *Medicago polymorpha*	California burclover	
* *Melilotus indicus*	Indian sweetclover	
Vicia hassei	Slender vetch	
Gentianaceae - Gentian family		
Zeltnera venusta	California centaury	
Geraniaceae - Geranium family		
* *Erodium botrys*	Longbeak filaree	
* *Erodium cicutarium*	Redstem filaree	

Scientific Name	Common Name	Special Status
Lamiaceae - Mint family		
* *Lamium amplexicaule*	Henbit	
* *Marrubium vulgare*	Horehound	
Salvia columbariae	Chia	
Montiaceae - Purslane family		
Calandrinia menziesii	Red maids	
Claytonia parviflora	Small flowered miner's-lettuce	
Myrsinaceae - Myrsine family		
* *Anagallis arvensis*	Scarlet pimpernel	
Nyctaginaceae - Four O'clock family		
Mirabilis laevis	Wishbone plant	
Onagraceae - Evening Primrose family		
Camissoniopsis bistorta	California sun cup	
Camissoniopsis hirtella	Hairy suncup	
Clarkia purpurea	Purple clarkia	
Epilobium canum	California fuchsia	
Oxalidaceae - Oxalis family		
* *Oxalis pes-caprae*	Bermuda buttercup	
Paeoniaceae - Peony family		
Paeonia californica	California peony	
Phrymaceae - Lopseed family		
Mimulus aurantiacus	Bush monkeyflower	
Plantaginaceae - Plantain family		
Antirrhinum kelloggii	Climbing snapdragon	
Antirrhinum nuttallianum	Nuttall's snapdragon	
Nuttallanthus texanus	Blue toadflax	
Plantago erecta	Dot seed plantain	
Polemoniaceae - Phlox family		
Gilia angelensis	Chaparral gilia	
Navarretia hamata	Skunkweed	
Polygonaceae - Buckwheat family		
Eriogonum fasciculatum	California buckwheat	
Pterostegia drymarioides	Granny's hairnet	
Primulaceae - Primrose family		
Primula clevelandii	Padre's shooting star	

Scientific Name	Common Name	Special Status
Ranunculaceae - Buttercup family		
Clematis pauciflora	Few-flowered virgin's bower	
Rosaceae - Rose family		
Drymocallis glandulosa	Sticky woodbeauty	
Scrophulariaceae - Figwort family		
Scrophularia californica	California figwort	
Solanaceae - Nightshade family		
Solanum americanum	White nightshade	
Verbenaceae - Vervain family		
Verbena lasiostachys	Western vervain	
Violaceae - Violet family		
Viola pedunculata	Johnny-jump-up	
MONOCOTS		
Alliaceae - Onion or Garlic family		
Allium praecox	Early onion	
Iridaceae - Iris family		
Sisyrinchium bellum	Lovely blue-eyed-grass	
Liliaceae - Lily family		
Calochortus splendens	Splendid mariposa lily	
Fritillaria biflora var. biflora	Chocolate Lily	
Themidaceae - Brodiaea family		
Brodiaea terrestris ssp. kernensis	Dwarf brodiaea	
Dichelostemma capitatum	Blue dicks	

Scientific Name	Common Name	Special Status

Legend

*= Non-native or invasive species

Special Status:

Federal:
FE = Endangered
FT = Threatened

State:
SE = Endangered
ST =Threatened

CRPR – California Rare Plant Rank
1A. Presumed extinct in California and elsewhere
1B. Rare or Endangered in California and elsewhere
2A. Presumed extinct in California, more common elsewhere
2B. Rare or Endangered in California, more common elsewhere
3. Plants for which we need more information - Review list
4. Plants of limited distribution - Watch list

Threat Ranks
.1 - Seriously endangered in California
.2 – Fairly endangered in California
.3 – Not very endangered in California

Appendix B
Representative Photographs

	Photo 1. Representative Site Overview. March 29, 2019
	Photo 2. Overview - Quino checkerspot butterfly female nectaring on blue dicks (*Dichelostemma capitatum*). April 8, 2019.
	Photo 3. Quino checkerspot butterfly female nectaring on blue dicks. April 8, 2019.

	Photo 4. Quino checkerspot butterfly female nectaring on blue dicks. April 8, 2019.
	Photo 5. Overview - male Quino checkerspot butterfly territory overview. April 8, 2019.
	Photo 6. Male Quino checkerspot. April 8, 2019.

RESULTS OF THE 2020 QUINO CHECKERSPOT BUTTERFLY SURVEYS FOR THE ALPINE PARK PROJECT AND WRIGHT'S FIELD

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July 2020

ICF. 2020. 2020 Quino Checkerspot Butterfly Surveys for the Alpine Park Project and Wright's Field. Prepared for the County of San Diego, Department of Parks and Recreation. San Diego, CA. July.

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Chapter 1
Introduction

ICF was retained by the County of San Diego Department of Parks and Recreation to conduct protocol surveys for the federally-listed endangered Quino checkerspot butterfly (*Euphydryas editha quino*; QCB) in support of the Alpine Park project. As requested by the U.S. Fish and Wildlife Service (USFWS) and described in this report, surveys were conducted on the Alpine Park property, as well as on Wright's Field preserve and the County-owned parcels south of South Grade Road in 2020. These surveys represent a follow-up to the QCB surveys conducted in 2019 on just the Alpine Park property (ICF 2019), where QCB occurrences were documented.

The Alpine Park property and the adjacent Wright's Field preserve (study area) are located in the southern portion of the community of Alpine, in San Diego County, CA (Figure 1). They can be found on the *Alpine* USGS 7.5-minute quadrangle map (Figure 2). The 324.7-acre combined study area is situated within the U.S. Fish and Wildlife Service (USFWS) recommended survey area for QCB (USFWS 2014).

The study area was inspected for suitable QCB habitat during a habitat assessment conducted prior to the start of protocol surveys. The study area supports approximately 252.4 acres of non-excluded areas as defined by the USFWS (USFWS 2014). The non-excluded, suitable QCB habitat within the study area (*i.e.,* survey area) includes rolling grasslands and openings in coastal sage scrub and Engelmann oak woodlands. This report documents the results of the 2020 QCB focused surveys conducted in the non-excluded portions of the study area.

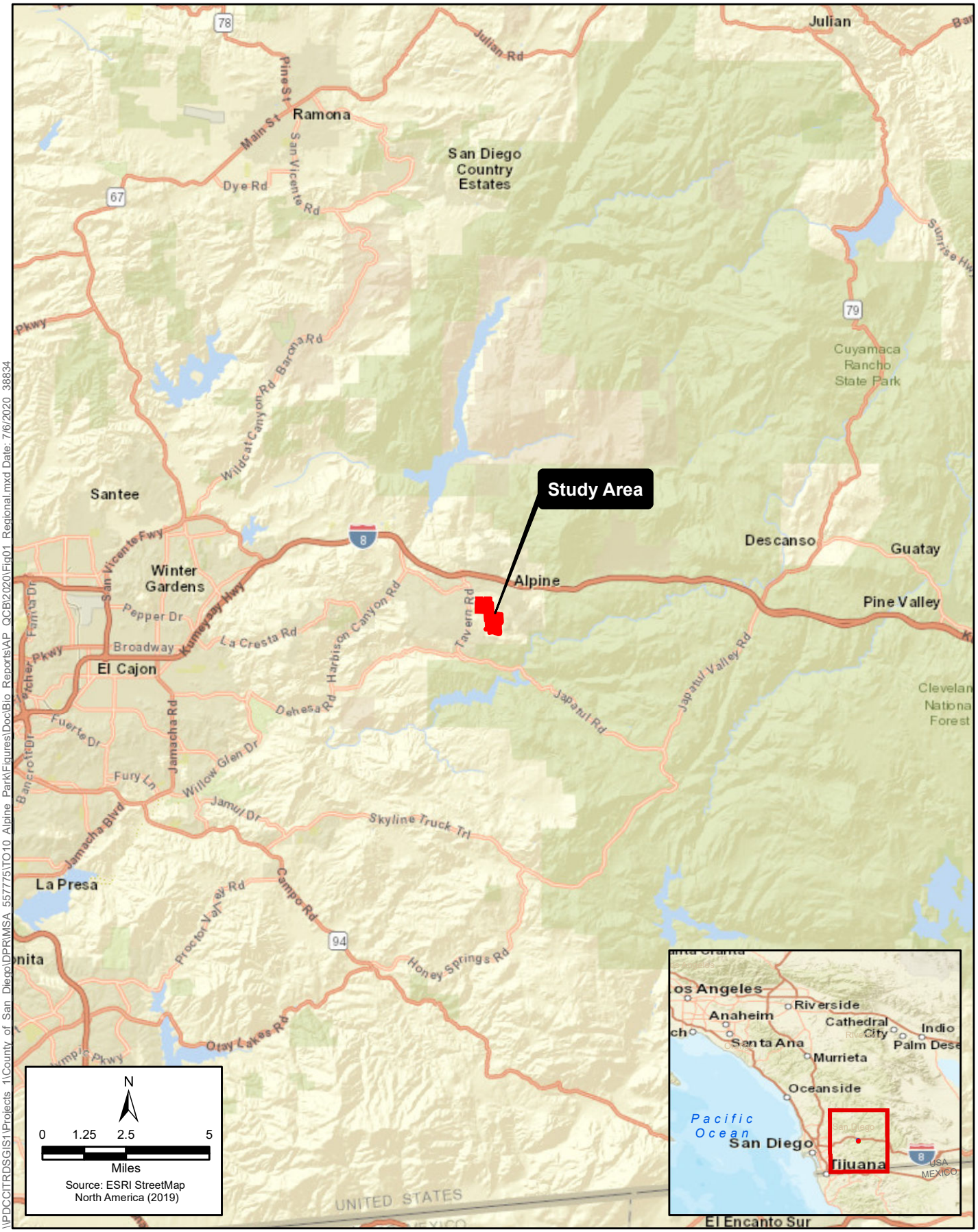

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Figure 1
Regional Location
Alpine Park and Wright's Field QCB Survey Report

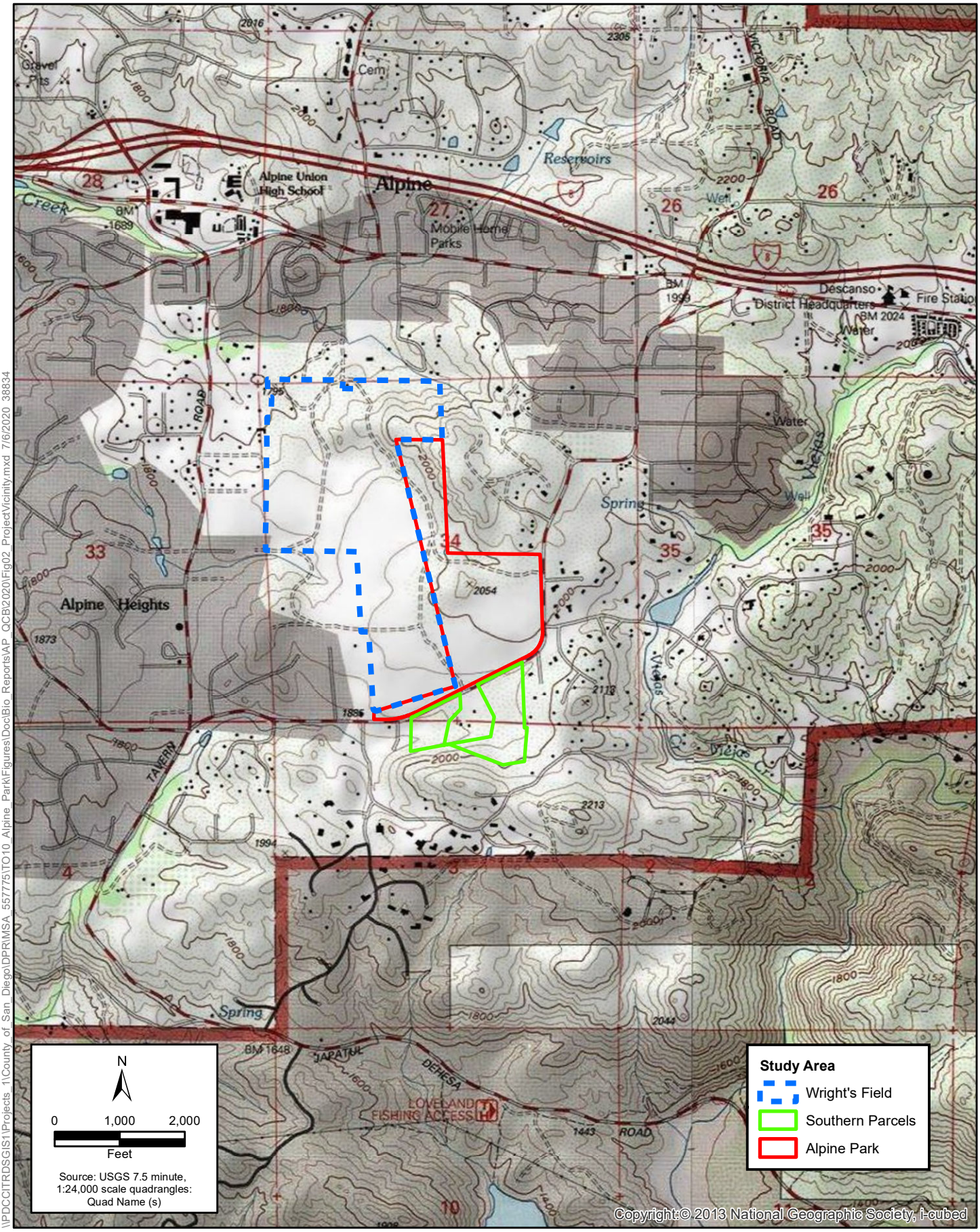

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Figure 2
Project Vicinity
Alpine Park and Wright's Field QCB Survey Report

Chapter 2
Methods

Survey methodology follows the December 15, 2014 U.S. Fish and Wildlife Service (USFWS) Quino Checkerspot Butterfly Survey Guidelines (protocol; USFWS 2014). A habitat assessment was conducted by Brian Lohstroh before the first QCB survey on February 10, 2020. The purpose of the assessment was to conduct a general field survey of the site, map excluded and non-excluded QCB survey areas. Areas mapped as excluded areas consisted primarily of closed-canopy, dense vegetation such as various forms of chaparral, oak woodlands, dense stands of California sagebrush (*Artemisia californica*) and dense stands of broom baccharis (*Baccharis sarothroides*). Additionally, fenced off populations of San Diego thorn mint (*Acanthomintha ilicifolia*) were also excluded from the QCB survey area to avoid trampling the protected plants. The 2020 habitat assessment focused on Wright's Field and the County-owned parcels south of South Grade Road, as the Alpine Park property was already assessed during the 2019 surveys.

Permitted biologists Brenda Bennett (TE-063230-5.4), Ian Hirshler (TE-063230-5.4), Korey Klutz (TE-036065-3), Brian Lohstroh (TE-063608-6), Ryan Meszaros (TE-20186A-3.1), and Melanie Rocks (TE-082908-2) conducted the surveys on a weekly basis under acceptable weather conditions as defined in the USFWS protocol (Table 1) (USFWS 2014). Protocol survey visits were made to the site by the above biologists between February 17 and April 1, 2020. ICF biologist and QCB trainee Kelsey Dix assisted with host plant mapping during the habitat assessment and during the March 31, 2020 survey.

The survey area was divided into three primary subareas to manage survey coverage, with each subarea requiring approximately two person-days to complete. The Alpine Park property (approximately 76.8 acres of survey area; eastern portion of the overall site) was considered one subarea, the northern portion of Wright's Field was the second subarea (approximately 91.3 acres of survey area), and the southern portion of Wright's Field, plus the county-owned parcels south of South Grade Road was the third subarea (approximately 81.5 acres of survey area).

Each survey involved walking transects throughout all non-excluded portions of the survey area. The surveys were conducted at rate of no more than 15 acres per hour. The surveyors stopped periodically to scan adjacent areas for moving butterflies. Butterflies were identified by sight with the aid of close-focus binoculars. All butterfly species observed were recorded.

Plant species flowering during the survey period were recorded and assessed as potential QCB nectar and/or larval host plants. A list of potential QCB nectar sources and larval host plants within the survey area is presented as Appendix A. Butterfly identification and nomenclature is based on Shiraiwa (2009) and plant nomenclature is based on Baldwin et al. (2012).

Due to continuous adverse weather conditions onsite from March 10 through March 23, 2020, it was not possible to follow the weekly survey schedule required by the QCB protocol during the 2020 surveys. In addition, the COVID-19 outbreak and subsequent shutdown of work for San Diego County Department of Parks and Recreation (DPR) projects on March 20, 2020, prevented strict adherence to the protocol survey schedule.

COVID-19 shutdown orders for this project were lifted on March 23, 2020, when the project was considered to be essential. However, after DPR's discussion with the USFWS on March 24, 2020, it was determined that surveys could be discontinued based on the positive survey results as of that date and because it was determined that peak QCB season had passed. A final survey visit was conducted during the week of March 29 to finalize host plant mapping and to determine the status of QCB on the site.

Table 1. Survey Conditions

Survey Type	Survey Area	Date	Time Onsite		Temp (°F)	Sky Cover (%)	Wind (MPH)	Personnel
Habitat Assessment	Wright's Field (Entire Property)	10-Feb-2020	Start	0800	43	100	2-5	B. Lohstroh, K. Dix
			End	1530	52	90	3-8	
Protocol Survey 1	Wright's Field (Southern Portion)	17-Feb-2020	Start	0900	65	0	0-1	B. Lohstroh
			End	1400	72	0	2-8	
Protocol Survey 1	Wright's Field (Southern Portion)	18-Feb-2020	Start	1100	67	40	0-1	B. Lohstroh
			End	1515	63	20	3-7	
Protocol Survey 1	Wright's Field (Northern Portion)	19-Feb-2020	Start	1000	62	0	1-4	Ian Hirshler, B. Bennett
			End	1430	72	0	1-4	
Protocol Survey 1	Alpine Park Property	20-Feb-2020	Start	1000	73	50	0-8	K. Klutz
			End	1600	79	50	0-8	
Protocol Survey 1	Alpine Park Property	21-Feb-2020	Start	1000	72	0	0-2	K. Klutz
			End	1230	79	25	0-2	
Protocol Survey 2	Wright's Field (Southern Portion)	24-Feb-2020	Start	0930	63	0	0-2	B. Lohstroh
			End	1500	73	0	1-2	
Protocol Survey 2	Wright's Field (Southern Portion)	25-Feb-2020	Start	0900	72	0	7-12	B. Lohstroh
			End	1330	78	0	4-7	
Protocol Survey 2	Wright's Field (Northern Portion)	26-Feb-2020	Start	1015	63	0	2-9	B. Bennett, R. Meszaros
			End	1500	71	5	3-15	
Protocol Survey 2	Alpine Park Property	27-Feb-2020	Start	0900	73	25	2-10	K. Klutz
			End	1600	77	25	2-10	
Protocol Survey 2	Alpine Park Property	28-Feb-2020	Start	0900	70	0	0-4	K. Klutz
			End	1130	79	0	0-4	
Protocol Survey 3	Wright's Field (Northern Portion)	3-Mar-2020	Start	0935	62	0	0-2	Ian Hirshler, R. Meszaros
			End	1415	73	0	3-8	
Protocol Survey 3	Wright's Field (Southern Portion)	4-Mar-2020	Start	0930	65	0	0-3	B. Lohstroh
			End	1445	76	0	0-9	
Protocol Survey 3	Wright's Field (Southern Portion)	5-Mar-2020	Start	0900	71	10	0-2	B. Lohstroh
			End	1530	80	15	0-10	
Protocol Survey 3	Alpine Park Property	5-Mar-2020	Start	1100	75	10	0-8	K. Klutz
			End	1530	81	15	0-8	
Protocol Survey 3	Alpine Park Property	6-Mar-2020	Start	0900	63	0	0-8	K. Klutz
			End	1100	70	0	0-8	
Protocol Survey 4	Wright's Field (Southern Portion)*	9-Mar-2020	Start	0930	61	30	0-1	B. Lohstroh
			End	1500	71	70	2-10	
Protocol Survey 4	Wright's Field (Northern Portion)	9-Mar-2020	Start	1025	61	30	1-4	M. Rocks, R. Meszaros
			End	1515	70	90	2-5	
Protocol Survey 4	Alpine Park Property	29-Mar-2020	Start	1200	65	0	0-7	K. Klutz
			End	1600	73	0	0-7	
Protocol Survey 5	Wright's Field (Northern Portion)*	30-Mar-2020	Start	0900	60	0	0-2	R. Meszaros
			End	1430	66	0	3-7	
Protocol Survey 5	Wright's Field (Southern Portion)	31-Mar-2020	Start	1100	70	100	0-1	B. Lohstroh, K. Dix
			End	1600	71	100	2-7	
Protocol Survey 5	Wright's Field (Southern Portion)	1-Apr-2020	Start	1100	68	20	2-5	B. Lohstroh
			End	1600	75	0	2-9	
Protocol Survey 4	Alpine Park Property	1-Apr-2020	Start	1100	67	20	0-7	K. Klutz
			End	1630	74	0	0-7	

*Partial coverage achieved due to personnel and weather constraints, resulting in a survey rate greater than 10 acres/hour/suveyor

Chapter 3
Results

Surveyors observed QCB on both the Alpine Park property and Wright's Field portions of the survey area. On March 5, 2020, one fresh and one worn adult QCB were observed on the southern portion of the Alpine Park property. The two individuals were associated with a disturbed area supporting a large population of dot-seed plantain. On the same date, two fresh QCB were also observed in the central portion of Wright's Field, approximately 2,000 feet to the northwest. These individuals were associated with a gradual ridgeline with large areas of dot-seed plantain present in the vicinity. On the following day (March 6, 2020), a single individual QCB was observed at the same disturbed site on the Alpine Park property. It is likely this individual was one of the same individuals that was observed during the previous day. Based on these observations, a range of three to five QCB were observed within the survey area during the 2020 flight season.

Dot-seed plantain (*Plantago erecta*) and purple owl's clover (*Castilleja exserta* ssp. *exserta*) were the only QCB host plants observed within the survey area. Dot-seed plantain was distributed throughout the survey area, with the largest concentrations found within the southern portion of Wright's Field Preserve. Purple owl's clover was uncommon within the survey area, becoming apparent later in the flight season.

The survey area supported a variety of potential QCB nectar resources, with a total of 92 species recorded in flower during the surveys (Appendix A). While the grasslands onsite were dominated by native bunchgrasses and/or annual Mediterranean grasses, blue dicks flowers were common in March. The site supported a variety of short-corolla popcorn flowers including *Cryptanthas*, *Plagiobothrys*, and *Pectocaryas*.

Site photographs are provided in Appendix B, which show typical habitat onsite as well as the QCB observations in early March.

A total of 25 butterfly species were observed during all the survey visits to entire survey area, as shown in Table 2. Commonly observed species included painted lady (*Vanessa cardui*), funereal duskywing skipper (*Erynnis funeralis*), gray buckeye (*Junonia coenia grisea*), Sara orangetip (*Anthocharis sara sara*), Behr's metalmark (*Apodemia virgulti virgulti*), and Acmon blue (*Plebejus acmon*). Butterfly activity peaked during Survey 3, with 254 individuals observed across 17 species.

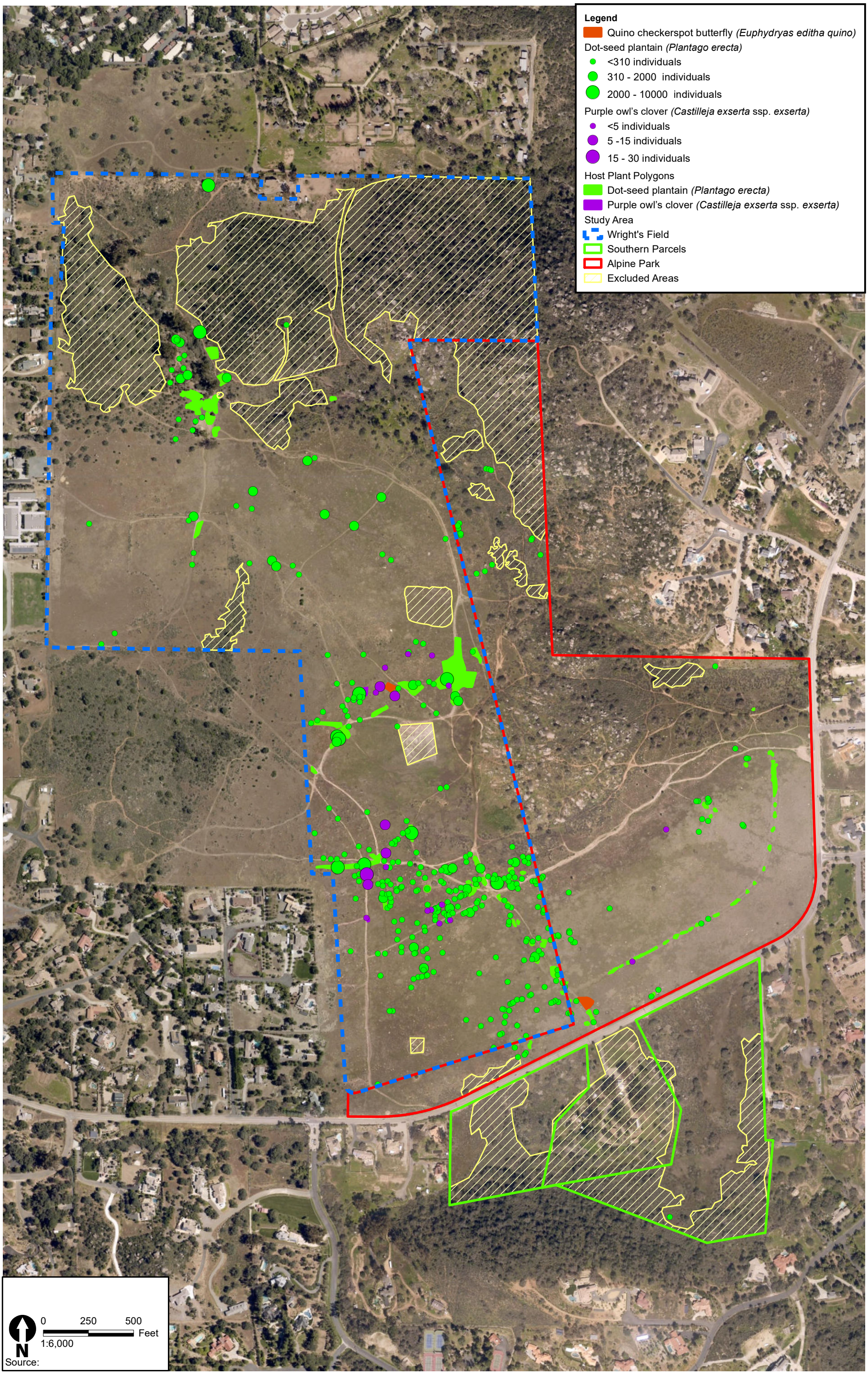


Figure 3
QCB Survey Results
Alpine Park and Wright's Field QCB Survey Report

Table 2. Butterflies Observed by Survey

Common Name	*Scientific Name*	Survey 1	Survey 2	Survey 3	Survey 4	Survey 5	No. Surveys Observed	Max No. Observed
FAMILY PAPILIONIDAE: Swallowtails								
Anise Swallowtail	*Papilio zelicaon*	2					**1**	**2**
Western Tiger Swallowtail	*Papilio rutulus*				1		**1**	**1**
Pale Swallowtail	*Papilio eurymedon*			2	1		**2**	**2**
FAMILY PIERIDAE: Whites and Sulphurs								
Subfamily Anthocharinae: Marbles & Orangetips								
Sara Orangetip	*Anthocharis sara sara*	15	12	26	14	2	**5**	**26**
Subfamily Coliadinae: Sulphurs								
Orange Sulphur	*Colias eurytheme*			2			**1**	**2**
Harford's Sulphur	*Colias harfordii*		1				**1**	**1**
Southwestern Cloudless Sulphur	*Phoebus sennae marcellina*		1			2	**2**	**2**
Unidentified Sulphur		1		1			**2**	**1**
FAMILY LYCAENIDAE: Gossamer-wing								
Subfamily Theclinae: Hairstreaks								
Immaculate Bramble Hairstreak	*Callophrys perplexa perplexa*			1			**1**	**1**
Western Elfin	*Callophrys augustinus iroides*	3					**1**	**3**
Subfamily Polyommatinae: Blues								
Southern Silvery Blue	*Glaucopsyche lygdamus australis*	2		1			**2**	**2**
Acmon Blue	*Plebejus acmon*	7	7	7	2	6	**5**	**7**
Unidentified Blue				5	1		**2**	**5**
Clemence's Blue	*Plebejus lupini monticola*			6	22	5	**3**	**22**
FAMILY RIODINIDAE: Metalmarks								
Behr's Metalmark	*Apodemia virgulti virgulti*	5	4	22	19	4	**5**	**22**
FAMILY NYMPHALIDAE: Brushfoots								
Subfamily Melitaeinae: Crescents and Checkerspots								
Quino Checkerspot* (FE)	*Euphydryas editha quino*			5			**1**	**5**
Subfamily Nymphalinae: True Brushfoots								
Mourning Cloak	*Nymphalis antiopa antiopa*	2	3				**2**	**3**
Painted Lady	*Vanessa cardui*	52	29	100	38	113	**5**	**113**
West Coast Lady	*Vanessa annabella*					2	**1**	**2**
American Red Admiral	*Vanessa atalanta rubria*			10			**1**	**10**
Unidentified Lady	*Vanessa* sp.	1	2	10	2		**4**	**10**
Gray Buckeye	*Junonia coenia grisea*	31	24	23	10	12	**5**	**31**
FAMILY HESPERIIDAE: The Skippers								
Subfamily Pyrginae: Spread-wing Skippers								
Propertius Duskywing	*Erynnis propertius*				1		**1**	**1**
Funereal Duskywing	*Erynnis funeralis*	2	4	32	15	18	**5**	**32**
Subfamily Herperiinae: Grass Skippers								
Fiery Skipper	*Hylephila phyleus phyleus*			1	1		**2**	**1**
Number of Species Observed Per Survey		**12**	**10**	**17**	**13**	**9**	**Total Number of Species**	
Total Number of Butterflies Observed Per Survey		**123**	**87**	**254**	**127**	**164**	**Observed:**	**25**

Chapter 4
References

Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken, editors. 2012. *The Jepson Manual: Vascular Plants of California*, second edition. University of California Press, Berkeley.

Holland, R.F. 1986. *Preliminary Descriptions of the Terrestrial Natural Communities of California*. Nongame-Heritage Program, California Department of Fish and Game.

ICF. 2019. 2019 Quino Checkerspot Butterfly Surveys for the Alpine Park Project. Prepared for the County of San Diego, Department of Parks and Recreation. San Diego, CA. September.

Oberbauer, Thomas, Meghan Kelly, and Jeremy Buegge. March 2008. *Draft Vegetation Communities of San Diego County*. Based on "Preliminary Descriptions of the Terrestrial Natural Communities of California," Robert F. Holland, Ph.D., October 1986.

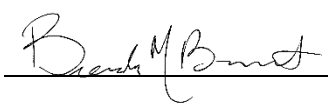
Opler, P. A., and A. B. Wright. 1999. *A Field Guide to Western Butterflies.* Boston, MA: Houghton Mifflin Co.

Shiraiwa, Kojiro. 2009. *The Butterflies of San Diego County Introduction and Identification Guide.* May.

U.S. Fish and Wildlife Service (USFWS). 2014. *Quino Checkerspot Butterfly Survey Protocol*. Carlsbad Fish and Wildlife Office. December 15.

Chapter 5
Certifications

We certify that the information in this survey report and attached exhibits fully and accurately represents our work.



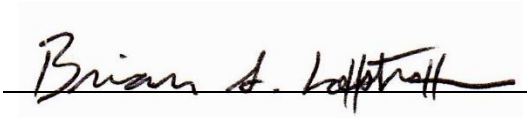
Brenda Bennett
Permit No. TE-063230-5.6



Ian Hirshler
Permit No. TE-063230-5.6



Korey Klutz
Permit No. TE-036065-3



Brian Lohstroh
Permit No. TE-063608-6



Ryan Meszaros
Permit No. TE-20186A-3.1



Melanie Rocks
Permit No. TE-082908-2

Appendix A
QCB Host Plants and Potential Nectar Sources

Scientific Name	Common Name	Status
Adoxaceae - Adoxa Family		
Sambucus nigra subsp. caerulea	Blue Elderberry	
Agavaceae - Century Plant Family		
Hesperoyucca whipplei	Chaparral Candle	
Alliaceae - Onion Family		
Allium praecox	Early Onion	
Anacardiaceae - Sumac Family		
Rhus ovata	Sugar Bush	
Apiaceae - Carrot Family		
Daucus pusillus	Rattlesnake Weed	
Lomatium dasycarpum subsp. dasycarpum	Woolly-Fruit Lomatium	
Sanicula arguta	Sharp-Tooth Sanicle	
Sanicula bipinnatifida	Purple Sanicle	
Asteraceae - Sunflower Family		
Chaenactis artemisiifolia	White Pincushion	
Cirsium occidentale var. californicum	California Thistle	
Deinandra fasciculata	Fascicled Tarweed	
*Dimorphotheca sinuata**	Blue-Eye Cape-Marigold	
Eriophyllum confertiflorum var. confertiflorum	Long-Stem Golden-Yarrow	
Gutierrezia californica	California Matchweed	
*Hedypnois cretica**	Crete Hedypnois	
Heterotheca grandiflora	Telegraph Weed	
*Hypochaeris glabra**	Smooth Cat's Ear	
Lasthenia gracilis	Common Goldfields	
Matricaria discoidea	Pineapple-Weed	
Pseudognaphalium californicum	California Everlasting	
*Senecio vulgaris**	Common Groundsel	
*Sonchus asper subsp. asper**	Prickly Sow-Thistle	
*Sonchus oleraceus**	Common Sow-Thistle	
Boraginaceae - Borage Family		
Amsinckia intermedia	Rancher's Fiddleneck	
Cryptantha intermedia var. intermedia	Nievitas Cryptantha	
Harpagonella palmeri	Palmer's Grappling-Hook	CRPR 4.2
Pectocarya linearis subsp. ferocula	Slender Combseed	
Plagiobothrys nothofulvus	Rusty Popcornflower	
Brassicaceae - Mustard Family		
*Brassica nigra**	Black Mustard	
Descurainia pinnata	Western Tansy-Mustard	
*Hirschfeldia incana**	Short-Pod Mustard	
Lepidium nitidum	Shining Peppergrass	
*Lobularia maritima**	Sweet Alyssum	
*Sisymbrium irio**	London Rocket	
Cactaceae - Cactus Family		
Opuntia littoralis	Coast Prickly-Pear	
Caryophyllaceae - Pink Family		
*Silene gallica**	Common Catchfly	
Convolvulaceae - Morning Glory Family		
Calystegia macrostegia subsp. cyclostegia	Coast Morning-Glory	
Cucurbitaceae - Gourd Family		
Marah macrocarpa	Manroot, Wild-Cucumber	
Ericaceae - Heath Family		
Xylococcus bicolor	Mission Manzanita	

Scientific Name	Common Name	Status
Fabaceae - Legume Family		
Acmispon micranthus	Grab Lotus	
Acmispon strigosus	Bishop's/Strigose Lotus	
*Genista monspessulana**	French Broom	
Lathyrus vestitus	San Diego Sweet Pea	
Lupinus bicolor	Miniature Lupine	
Lupinus hirsutissimus	Stinging Lupine	
Lupinus succulentus	Arroyo Lupine	
Lupinus truncatus	Collar Lupine	
*Medicago polymorpha**	Burclover	
*Melilotus indicus**	Indian Sweetclover	
*Trifolium hirtum**	Rose Clover	
Vicia hassei	Slender Vetch	
Gentianaceae - Gentian Family		
Zeltnera venusta	Canchalagua	
Geraniaceae - Geranium Family		
*Erodium botrys**	Long-Beak Filaree/Storksbill	
*Erodium cicutarium**	Red-Stem Filaree/Storksbill	
Hydrophyllaceae - Waterleaf Family		
Emmenanthe penduliflora var. penduliflora	Whispering Bells	
Eucrypta chrysanthemifolia var. chrysanthemifolia	Common Eucrypta	
Phacelia cicutaria var. hispida	Caterpillar Phacelia	
Phacelia parryi	Parry's Phacelia	
Iridaceae - Iris Family		
Sisyrinchium bellum	Blue-Eyed-Grass	
Lamiaceae - Mint Family		
*Lamium amplexicaule**	Henbit	
*Marrubium vulgare**	Horehound	
Salvia columbariae	Chia	
Liliaceae - Lily Family		
Calochortus splendens	Splendid Mariposa Lily	
Fritillaria biflora var. biflora	Chocolate Lily	
Montiaceae - Purslane Family		
Calandrinia menziesii	Red Maids	
Claytonia perfoliata subsp. perfoliata	Miner's-Lettuce	
Myrsinaceae - Myrsine Family		
*Lysimachia arvensis**	Scarlet Pimpernel	
Nyctaginaceae - Four O'Clock Family		
Mirabilis laevis var. crassifolia	Coastal Wishbone Plant	
Onagraceae - Evening Primrose Family		
Camissoniopsis bistorta	California Sun Cup	
Camissoniopsis hirtella	Field Sun Cup	
Clarkia purpurea	Four-Spot Clarkia	
Orobanchaceae - Broomrape Family		
Castilleja exserta subsp. exserta+	Purple Owl's-Clover	
Castilleja foliolosa	Woolly Indian Paintbrush	
Oxalidaceae - Oxalis Family		
Oxalis pes-caprae	Bermuda-Buttercup	
Paeoniaceae - Peony Family		
Paeonia californica	California Peony	
Phrymaceae - Lopseed Family		
Diplacus puniceus	Coast Monkey Flower	

Scientific Name	Common Name	Status
Plantaginaceae - Plantain Family		
Antirrhinum kelloggii	Climbing Snapdragon	
Nuttallanthus texanus	Large Blue Toadflax	
Plantago erecta+	Dot-seed Plantain	
Polemoniaceae - Phlox Family		
Gilia angelensis	Grassland Gilia	
Navarretia hamata subsp. hamata	Hooked Skunkweed	
Linanthus dianthiflorus	Farinose Ground Pink	
Polygonaceae - Buckwheat Family		
Eriogonum fasciculatum var. foliolosum	Inland California Buckwheat	
Primulaceae - Primrose Family		
Primula clevelandii subsp. clevelandii	Padre's Shooting Star	
Ranunculaceae - Buttercup Family		
Clematis pauciflora	Ropevine Clematis	
Rhamnaceae - Buckthorn Family		
Rhamnus crocea	Spiny Redberry	
Rosaceae - Rose Family		
Drymocallis glandulosa var. wrangelliana	Wrangel Cinquefoil	
Scrophulariaceae - Figwort Family		
Scrophularia californica	California Bee Plant	
Themidaceae - Brodiaea Family		
Brodiaea terrestris subsp. kernensis	Dwarf Brodiaea	
Dichelostemma capitatum subsp. capitatum	Blue Dicks, School Bells	
Verbenaceae - Verbena Family		
Verbena lasiostachys var. lasiostachys	Western Vervain	
Violaceae - Violet Family		
Viola pedunculata	Johnny Jump-Up	

CRPR: California Rare Plant Rank

4. Plants of limited distribution - Watch list; .2 – Fairly endangered in California

*non-native species

+QCB hostplant

Appendix B
Representative Photographs



Photo 1: (4/1/2020) View facing east from the central portion of Wright's Field. A large patch of dot-seed plantain is visible in the foreground. The hillside at left and center is a portion of Alpine Park Property.



Photo 2: (3/4/2020) View facing north from the southern portion of Wright's Field. Dot-seed plantain was commonly observed growing along the road/trail visible in the foreground and at right.



Photo 3: (3/5/2020) View facing north from the central portion of Wright's Field. This shows the location where QCB was observed onsite.



Photo 4: (3/5/2020) Adult QCB observed on Wright's Field.



Photo 5: (2/27/2019) View facing east from the southern portion of the Alpine Park property. QCB was observed at this location, which also supported a large patch of dot-seed plantain.



Photo 6: (3/5/2020) Worn adult QCB observed on the Alpine Park property.



Photo 7: (2/25/2020) View facing north from the southeastern boundary of the southern parcels. The Alpine Park property is visible in the background at left.



Photo 8: (3/9/2020) View facing south from the northwestern boundary of the southern parcels. Brush management recently occurred within this area.



Photo 9: (2/21/2020) View facing north of the north-central portion of Wright's Field. This area supports native grassland.



Photo 10: (2/19/2020) View facing northeast from the northern portion of Wright's Field. A large patch of dot-seed plantain is present in the foreground with dense, excluded chaparral habitat visible in the background at left.

Appendix D

2019 and 2020 Hermes Copper Butterfly Survey Reports

RESULTS OF THE 2019 HERMES COPPER BUTTERFLY SURVEYS FOR THE ALPINE PARK PROJECT

PREPARED FOR:

Ms. Lorrie Bradley
County of San Diego, Department of Parks and Recreation
5500 Overland Avenue, Suite 410
San Diego, California 92123

PREPARED BY:

Brian Lohstroh
ICF
525 B Street, Suite 1700
San Diego, California 92101

DRAFT

September 2019





DRAFT

ICF. 2019. Results of the 2019 Hermes Copper Butterfly Surveys for the Alpine Park Project. Prepared for the County of San Diego, Department of Parks and Recreation. San Diego, CA. September.

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Chapter 2 **Methods** **2-1**

Chapter 3 **Results** **3-1**

Chapter 4 **References** **4-1**

Chapter 5 **Certifications** **5-1**

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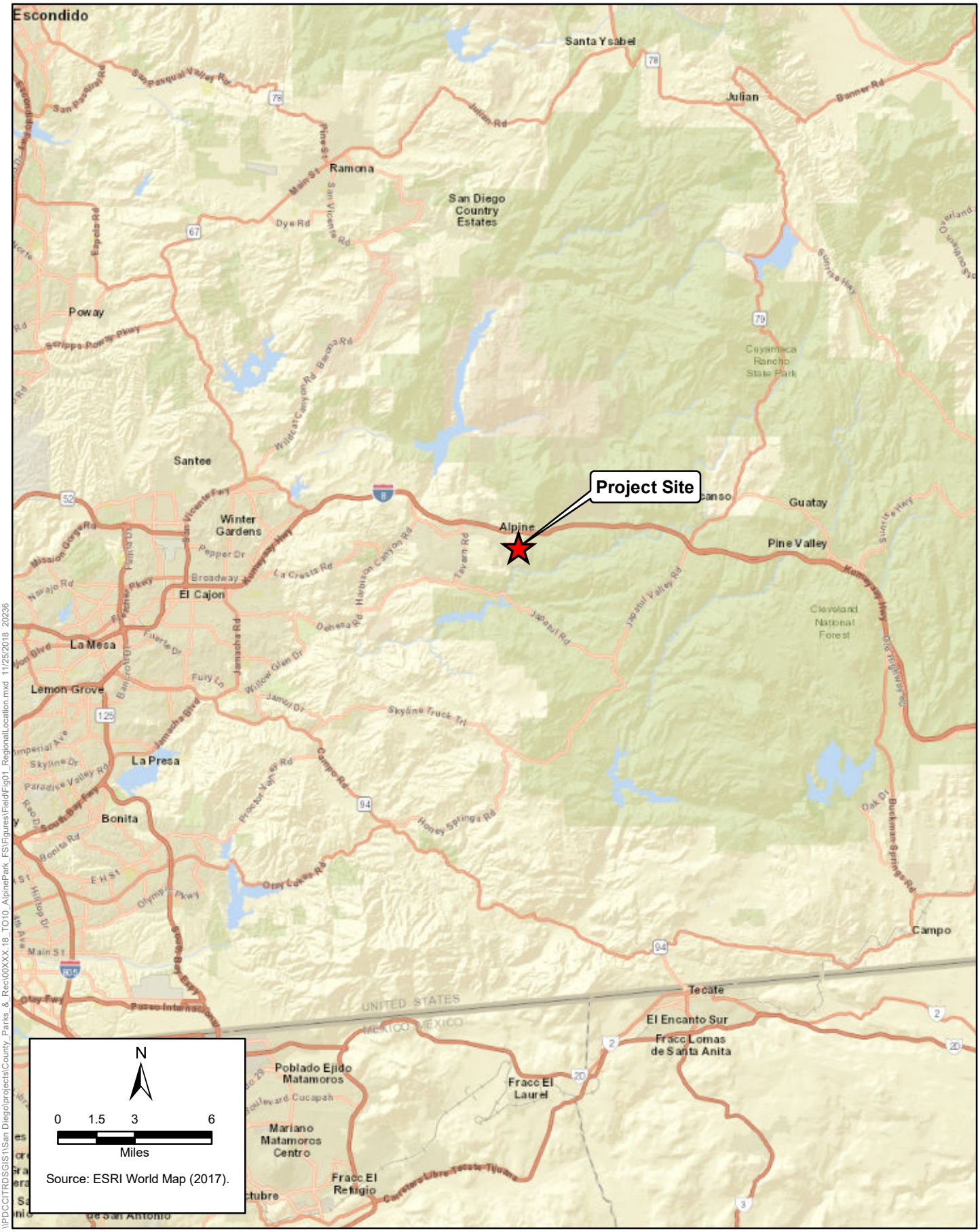
Chapter 1
Introduction

ICF was retained by the County of San Diego to conduct protocol surveys for the Hermes Copper butterfly (*Lycaena hermes*; HCB) in support of their Alpine Park Project. This report documents the results of the 2019 HCB focused surveys conducted at the site.

HCB is listed as a Candidate species for Threatened or Endangered status by the United States Fish and Wildlife Service (USFWS), but it does not have a federal survey protocol. Therefore, these HCB surveys followed a modified version of the County of San Diego Survey Guidelines to Hermes Copper (2010) combined with relevant portions of the USFWS Quino Checkerspot Butterfly (*Euphydryas editha quino*, QCB) Survey Guidelines (2014).

The Alpine Park property (site) is located adjacent to Wright's Field to the southeast of the community of Alpine, in San Diego County, CA (Figure 1). The site can be found on the USGS 7.5-minute quad map Alpine (Figure 2) and ranges in elevation from approximately 1900 feet at the southwestern edge of the site to approximately 2100 feet above mean sea level at the extreme northeastern corner.

The northern portion of study area consists of a mix of dense Diegan coastal sage scrub (CSS), open Engelmann oak woodland and mixed chaparral that supports occasional patches and solitary individuals of the HCB larval host, spiny redberry (*Rhamnus crocea*) (Figure 3). The central portion of the study area primarily consists of a large patchwork of native and non-native grassland and this area generally lacked HCB host plant. Lastly, an area of coastal sage-chaparral transition along the southern edge of the site supported several individuals of HCB host plant. No HCB were observed during the surveys onsite.



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ICF

Figure 1
Regional Location
Alpine Park Surveys

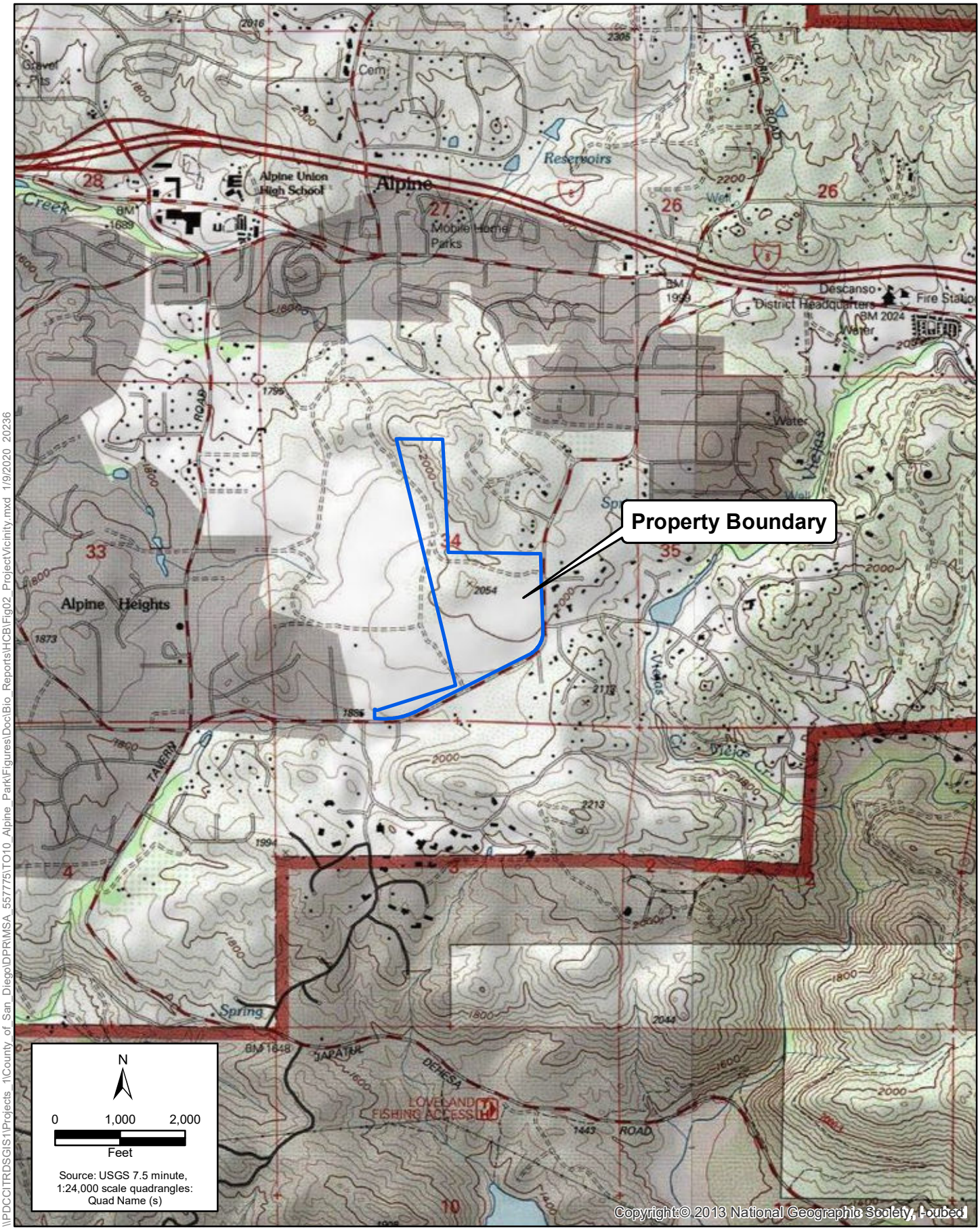

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Figure 2
Project Vicinity
Alpine Park Project

Chapter 2
Methods

Based on recent updates to the biology of the species and consensus of HCB surveyors, focused surveys for HCB followed a modified version of the guidelines prepared by the County of San Diego for evaluating the potential impacts within their jurisdiction (2010), combined with relevant portions of the USFWS QCB Survey Guidelines (2014). The County guidelines indicate that surveys for HCB need only be conducted in areas where their larval host plant, spiny redberry (*Rhamnus crocea*), occurs in close proximity (within 15 feet) to California buckwheat (*Eriogonum fasciculatum*), their primary nectar plant (*i.e.,* suitable habitat). It should be noted that HCB has been observed using various other species as a nectar source (Klein & Faulkner 2012), therefore, suitable habitat for HCB has been modified to include areas where the HCB's host plant occurs, regardless of whether it is found in proximity to California buckwheat.

The HCB surveys were conducted by QCB-permitted biologists because of their familiarity with the QCB survey protocol, as well as the local butterfly species. The HCB surveys followed the same survey frequency and weather requirements as the USFWS 2014 survey guidelines for QCB (*e.g.,* weekly surveys, air temperature at least 60ºF on clear days and 70ºF on cloudy days, winds below 15 mph).

Surveys were conducted during the HCB flight season, which spans from the third full week of May and with the last survey being during the first full week of July. A total of eight surveys for HCB were conducted by ICF biologists Brian Lohstroh (QCB permit #TE-063608-6), and James Hickman (QCB permit #TE-60218B-0) (Table 1). An additional eighth survey was conducted at the site with approval of the project proponent due to an observed extension of suitable phenological conditions and the relatively late emergence of HCB at reference sites (G. Huffman, personal communication).

HCB surveys were conducted on foot with the aid of close-focus binoculars. A list of plant species flowering within the survey area during the surveys (*i.e.,* potential nectar sources) is provided in Appendix A. Butterfly identification and nomenclature is based on Shiraiwa (2009). Vegetation communities are mapped based on Holland (1986) and Oberbauer (2008), and plant nomenclature is based on Baldwin et al. (2012).

Table 1. Survey Dates and Conditions

Date	Time Onsite		Temp (ºF)	Sky Cover (%)	Wind (MPH)	Personnel
24-May-2019	Start	1200	66	0	1-5	B. Lohstroh
	End	1430	71	0	2-6	
29-May-2019	Start	1100	70	10	1-5	B. Lohstroh
	End	1335	77	10	2-6	
5-Jun-2019	Start	1145	77	0	1-3	B. Lohstroh
	End	1445	82	0	2-5	
12-Jun-2019	Start	1220	86	0	2-6	B. Lohstroh
	End	1530	90	0	2-7	
18-Jun-2019	Start	0900	65	30	0-3	J. Hickman
	End	1230	74	30	0-3	
24-Jun-2019	Start	1030	73	0	0-2	B. Lohstroh
	End	1400	80	0	1-4	
3-Jul-2019	Start	1220	81	10	3-5	B. Lohstroh
	End	1445	81	10	2-6	
10-Jul-2019	Start	1000	72	0	1-4	B. Lohstroh
	End	1300	82	0	2-6	

Chapter 3
Results

No HCB were detected within the project site boundary during the surveys in 2019. Spiny redberry, the larval host plant of HCB is distributed in several discrete patches throughout the scrub habitat the project site (Figure 3), and many of these redberry patches were also in close proximity to patches of California buckwheat.

A total of 21 butterfly species were observed during the surveys, with checkered white (*Pontia protodice*), San Bernardino Blue (*Euphilotes bernardino bernardino*) Behr's Metalmark (*Apodemia mormo virgulti*), Marine Blue (*Leptotes marina*), and Orange Sulphur (*Colias eurytheme*) being among the most common during the HCB flight period (Table 2).

Suitable habitat for HCB is dependent on the locations of its host plant and generally occurs in the northern portion of the site, with a relatively smaller area of suitable habitat in the southwestern corner. The suitable habitat within the study area consists primarily of dense Diegan coastal sage scrub (CSS) and areas of coastal sage-chaparral transition (Figure 3). The CSS onsite is dominated by California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), and white sage (*Salvia apiana*), with occasional and sugar bush (*Rhus ovata*), spiny redberry (*Rhamnus crocea*) and poison oak (*Toxicodendron diversilobum*). The coastal sage-chaparral transition habitat is dominated by chamise (*Adenostema fasciculatum*), broom baccharis (*Baccharis sarothroides*) California buckwheat, California sagebrush, spiny redberry and white sage. The understory throughout these habitat types is dominated by tocalote (*Centaurea melitensis*), short-pod mustard (*Hirschfeldia incana*), bromes (*Bromus* spp.), and navarretia (*Navarretia hamata* ssp*. hamata, N. h.* ssp*. leptantha*).

54 plants were observed in flower, including the HCB's primary nectar plant, California buckwheat, as well as other potential nectar sources such as chamise, golden yarrow (*Eriophyllum confertiflorum*), and short-pod mustard (*Hirshfeldia incana*). (Appendix A).

Site photographs are provided in Appendix B.

Table 2. Butterflies Observed by Week

Common Name	*Scientific Name*	Survey Date								No. Surveys Observed	Max No. Observed
		24-May-2019	29-May-2019	5-Jun-2019	12-Jun-2019	18-Jun-2019	24-Jun-2019	3-Jul-2019	10-Jul-2019		
FAMILY PIERIDAE: Whites and Sulphurs											
Subfamily Pierinae: Whites											
Checkered White	*Pontia protodice*	7	13	13	21	15	27	43	56	8	56
Subfamily Anthocharinae: Marbles & Orangetips											
Pacific Sara Orangetip	*Anthocharis sara sara*	1								1	1
Subfamily Coliadinae: Sulphurs											
Orange Sulphur	*Colias eurytheme*	1	3	4	4	2	3	10	10	8	10
Dainty Sulphur	*Nathalis iole*	3		1	2		2	1	1	6	3
FAMILY LYCAENIDAE: Gossamer-wing											
Subfamily Theclinae: Hairstreaks											
Brown Elfin	*Callophrys augustinus*	3								1	3
Subfamily Polyommatinae: Blues											
Western Pygmy-Blue	*Brephidium exila*				1					1	1
Marine Blue	*Leptotes marina*	3		11	16	5	15		15	6	16
Edward's Blue	*Hemiargus ceraunus gyas*				1					1	1
San Bernardino Blue	*Euphilotes bernardino bernardino*	2	1	1	26		23	27	2	7	27
Acmon Blue	*Plebejus acmon*		5	3	1	3	11	11	2	7	11
Clemence's Blue	*Plebejus lupini monticola*						1		2	2	2
FAMILY RIODINIDAE: Metalmarks											
Behr's Metalmark	*Apodemia mormo virgulti*	4	12	23	23	18	5	8	4	8	23
FAMILY NYMPHALIDAE: Brushfoots											
Subfamily Argynninae: Argynnis											
Variegated Fritillary	*Euptoieta claudia*		1							1	1
Subfamily Nymphalinae: True Brushfoots											
Mourning Cloak	*Nymphalis antiopa*		2							1	2
Painted Lady	*Vanessa cardui*	1	3						1	3	3
West Coast Lady	*Vanessa annabella*						1			1	1
Gray Buckeye	*Junonia coenia grisea*	4	5	1		1	1	2	1	7	5
Subfamily Danainae: Milkweed Butterflies											
Monarch	*Danaus plexippus*			1						1	1
FAMILY HESPERIIDAE: The Skippers											
Subfamily Pyrginae: Spread-wing Skippers											
Funereal Duskywing	*Erynnis funeralis*	1				2	5	5	5	5	5
White Checkered-Skipper	*Pyrgus albescens*		1							1	1
Fiery Skipper	*Hylephila phyleus muertovalle*							1		1	1
Number of Species Observed Per Survey		11	10	9	9	7	11	9	11	Total Number of Species	
Total Number of Butterflies Observed Per Survey		30	46	58	95	46	94	108	99	Observed:	21

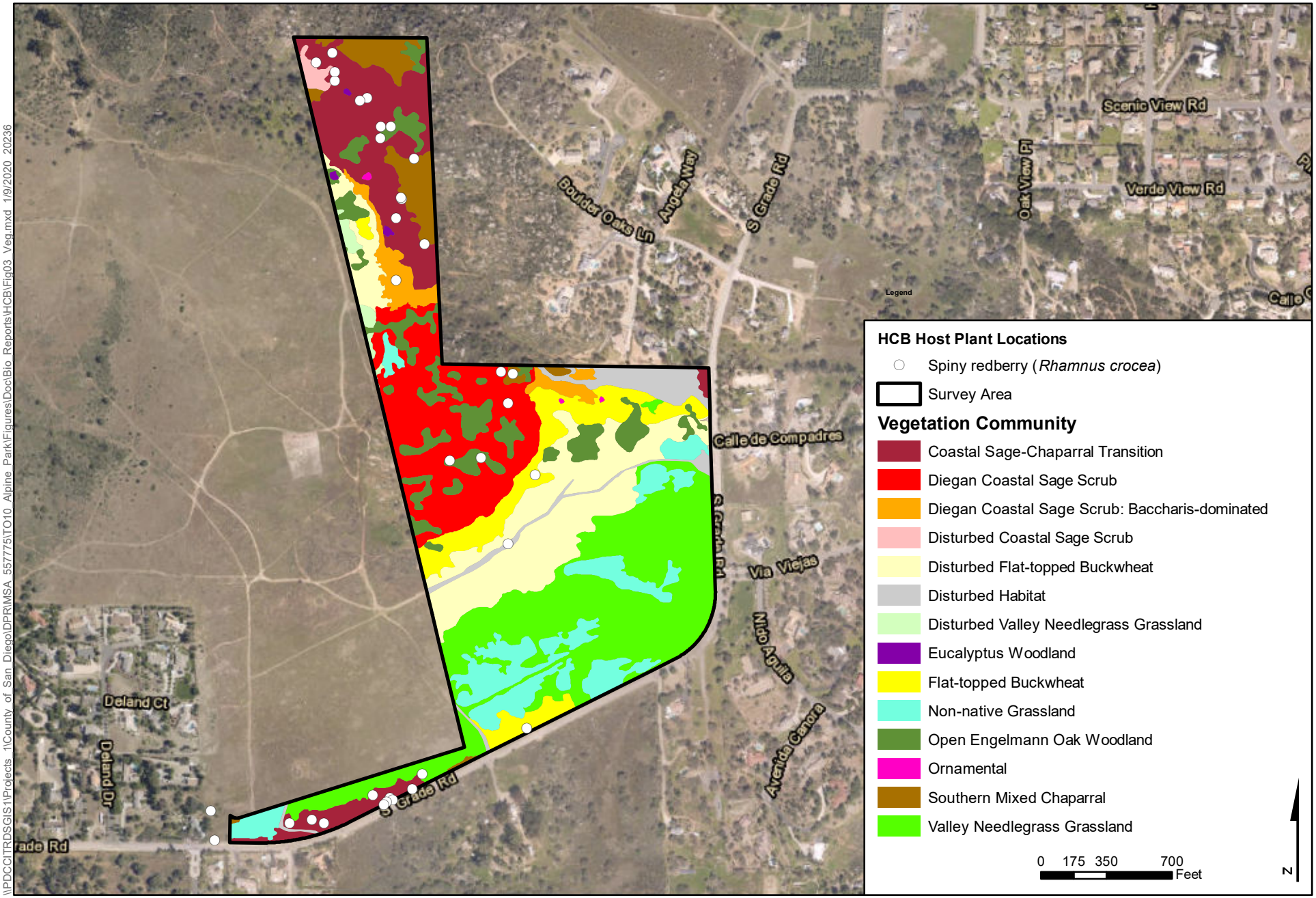

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Figure 3
Vegetation Communities
Alpine Park

Chapter 4
References

Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken, editors. 2012. *The Jepson Manual: Vascular Plants of California*, second edition. University of California Press, Berkeley.

County of SD. 2010. Guidelines for Hermes Copper (*Lycaena hermes*). Department of Planning and Land Use. San Diego County. California.

Holland, R.F. 1986. *Preliminary Descriptions of the Terrestrial Natural Communities of California*. Nongame-Heritage Program, California Department of Fish and Game.

Huffman, G. 2019. Personal communication with B. Lohstroh regarding HCB phenology. July 7.

Klein, Michael. Faulkner, David. 2012. Sensitive Butterflies of San Diego County, California. FLITE Tours, Inc.

Oberbauer, Thomas, Meghan Kelly, and Jeremy Buegge. March 2008. *Draft Vegetation Communities of San Diego County*. Based on "Preliminary Descriptions of the Terrestrial Natural Communities of California," Robert F. Holland, Ph.D., October 1986.

Opler, P. A., and A. B. Wright. 1999. *A Field Guide to Western Butterflies.* Boston, MA: Houghton Mifflin Co.

Shiraiwa, Kojiro. 2009. *The Butterflies of San Diego County Introduction and Identification Guide.* May. Shiraiwa.

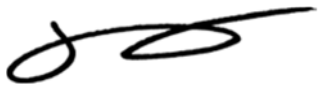
U.S. Fish and Wildlife Service (USFWS). 2014. *Quino Checkerspot Butterfly Survey Protocol*. Carlsbad Fish and Wildlife Office. December 15.

Chapter 5
Certifications

We certify that the information in this survey report and attached exhibits fully and accurately represents my work.



Brian Lohstroh
USFWS Permit No. TE-063608-6



James Hickman
USFWS Permit No. TE-60218B-0

Appendix A
Plant Species in Flower During HCB Surveys

Family	*Scientific Name*	Common Name	CRPR
Dicots			
Adoxaceae			
	Sambucus nigra subsp. caerulea	Blue Elderberry	
Anacardiaceae			
	Malosma laurina	Laurel Sumac	
Asteraceae			
	Bahiopsis laciniata	San Diego Sunflower	4.2
	Centaurea melitensis	Tocalote	
	Cirsium vulgare	Bull Thistle	
	Deinandra fasciculata	Fascicled Tarweed	
	Erigeron foliosus var. foliosus	Leafy Daisy	
	Eriophyllum confertiflorum var. confertiflorum	Long-Stem Golden-Yarrow	
	Grindelia camporum	Gumplant	
	Hedypnois cretica	Crete Hedypnois	
	Helianthus annuus	Western Sunflower	
	Osmadenia tenella	Osmadenia	
	Stephanomeria exigua subsp. exigua	Small Wreath-Plant	
Boraginaceae			
	Cryptantha intermedia var. intermedia	Nievitas Cryptantha	
Brassicaceae			
	Hirschfeldia incana	Short-Pod Mustard	
Cactaceae			
	Opuntia littoralis	Coast Prickly-Pear	
Convolvulaceae			
	Calystegia macrostegia	Coast Morning-Glory	
Crassulaceae			
	Dudleya pulverulenta	Chalk Dudleya	
Fabaceae			
	Acmispon americanus var. americanus	Spanish-Clover	
	Acmispon glaber var. brevialatus	Short-Wing Deerweed	
	Acmispon micranthus	Grab Lotus	
Gentianaceae			
	Zeltnera venusta	Canchalagua	
	Erodium botrys	Long-Beak Filaree/Storksbill	
	Erodium cicutarium	Red-Stem Filaree/Storksbill	
Hydrophyllaceae			
	Emmenanthe penduliflora var. penduliflora	Whispering Bells	
	Eucrypta chrysanthemifolia var. chrysanthemifolia	Common Eucrypta	
	Phacelia cicutaria var. hispida	Caterpillar Phacelia	
Iridaceae			
	Sisyrinchium bellum	Blue-Eyed-Grass	
Lamiaceae			
	Salvia apiana	White Sage	
	Salvia columbariae	Chia	
	Trichostema lanceolatum	Vinegar Weed	
Liliaceae			
	Calochortus splendens	Splendid Mariposa Lily	
	Calochortus weedii var. weedii	Weed's Mariposa Lily	
Myrsinaceae			
	Anagallis arvensis	Scarlet Pimpernel	
Onagraceae			
	Camissoniopsis hirtella	Field Sun Cup	
	Clarkia delicata	Delicate Clarkia	1B.2
	Clarkia purpurea subsp. quadrivulnera	Four-Spot Clarkia	
Phrymaceae			
	Diplacus longiflorus	Bush Monkey Flower	
Plantaginaceae			
	Antirrhinum nuttallianum subsp. nuttallianum	Nuttall's Snapdragon	
	Nuttallanthus texanus	Large Blue Toadflax	
Polemoniaceae			
	Eriastrum sapphirinum subsp. sapphirinum	Sapphire Woolly-Star	
	Navarretia hamata subsp. hamata	Hooked Skunkweed	
	Navarretia hamata subsp. leptantha	Hooked Pincushion Plant	
Polygonaceae			
	Chorizanthe fimbriata var. fimbriata	Fringed Spineflower	
	Chorizanthe procumbens	Prostrate Spineflower	
	Eriogonum fasciculatum var. foliolosum	Inland California Buckwheat	
Ranunculaceae			
	Delphinium parryi subsp. parryi	Parry's Larkspur	
Rosaceae			
	Adenostoma fasciculatum var. fasciculatum	Chamise	
	Drymocallis glandulosa var. glandulosa	Sticky Cinquefoil	
	Heteromeles arbutifolia	Toyon, Christmas Berry	
Scrophulariaceae			
	Scrophularia californica	California Bee Plant/Figwort	
Verbenaceae			
	Verbena lasiostachys var. lasiostachys	Western Vervain	
Monocots			
Agavaceae			
	Chlorogalum parviflorum	Small-Flower Soap-Plant/Amole	
Themidaceae			
	Brodiaea terrestris subsp. kernensis	Dwarf Brodiaea	

CRPR: California Rare Plant Rank

Appendix B
Representative Photographs



Photo 1: View facing west from the central portion of the site with coastal sage scrub and Engelmann oaks in the foreground and grassland in the background.



Photo 2: View facing southwest across the site near the edge of the grassland, with buckwheat at right and fascicled tarplant in the foreground and at left.



Photo 3. View facing east from along the southern edge of the site. A spiny redberry is visible at left, with coastal sage-chaparral transition habitat visible.



Photo 4. View facing north from the southern edge of the site. A patch of several spiny redberry individuals is visible in the background at left.

RESULTS OF THE 2020 HERMES COPPER BUTTERFLY SURVEYS FOR THE ALPINE PARK PROJECT AND WRIGHT'S FIELD

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August 2020

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Chapter 1
Introduction

ICF was retained by the County of San Diego Department of Parks and Recreation to conduct protocol surveys for the federally-proposed threatened Hermes copper butterfly (*Lycaena hermes*; HCB) in support of the Alpine Park project. As requested by the U.S. Fish and Wildlife Service (USFWS) and described in this report, surveys were conducted on the Alpine Park property as well as on Wright's Field preserve in 2020. These surveys represent a follow-up to the HCB surveys conducted in 2019 on just the Alpine Park property (ICF 2019) where no HCB was observed.

As of the start date of these surveys, HCB does not have a federal survey protocol. Therefore, these HCB surveys followed a modified version of the County of San Diego Survey Guidelines to Hermes Copper (2010) combined with relevant portions of the USFWS Quino Checkerspot Butterfly (*Euphydryas editha quino*, QCB) Survey Guidelines (2014).

The study area, which consists of the Alpine Park property, and Wright's Field preserve in 2020, is located in the southern portion of the community of Alpine, in San Diego County, CA (Figure 1). The study area can be found on the *Alpine* USGS 7.5-minute quadrangle map (Figure 2) and ranges in elevation from approximately 1800 feet above mean sea level at the northwestern corner of Wright's Field to approximately 2100 feet at the northeastern corner of the Alpine Park property.

Situated within the range of the species, historic HCB observations have been documented within the 324.7-acre combined study area and nearly the entire study area is proposed as critical habitat (CNDDB 2020, Deutschman *et. al.* 2011, USFWS 2020, Figure 3). A large portion of the northern and eastern regions of study area consists of a mix of dense Diegan coastal sage scrub (CSS), open Engelmann oak woodland and mixed chaparral that supports numerous individuals of the HCB larval host plant, spiny redberry (*Rhamnus crocea*) (Figure 3). The central portion of the study area primarily consists of a large patchwork of native and non-native grassland and this area generally lacked HCB host plant. Spiny redberry is also abundant within the CSS, Engelmann oak woodland and mixed chaparral found on the southern portion of Wright's Field south of South Grade Road.

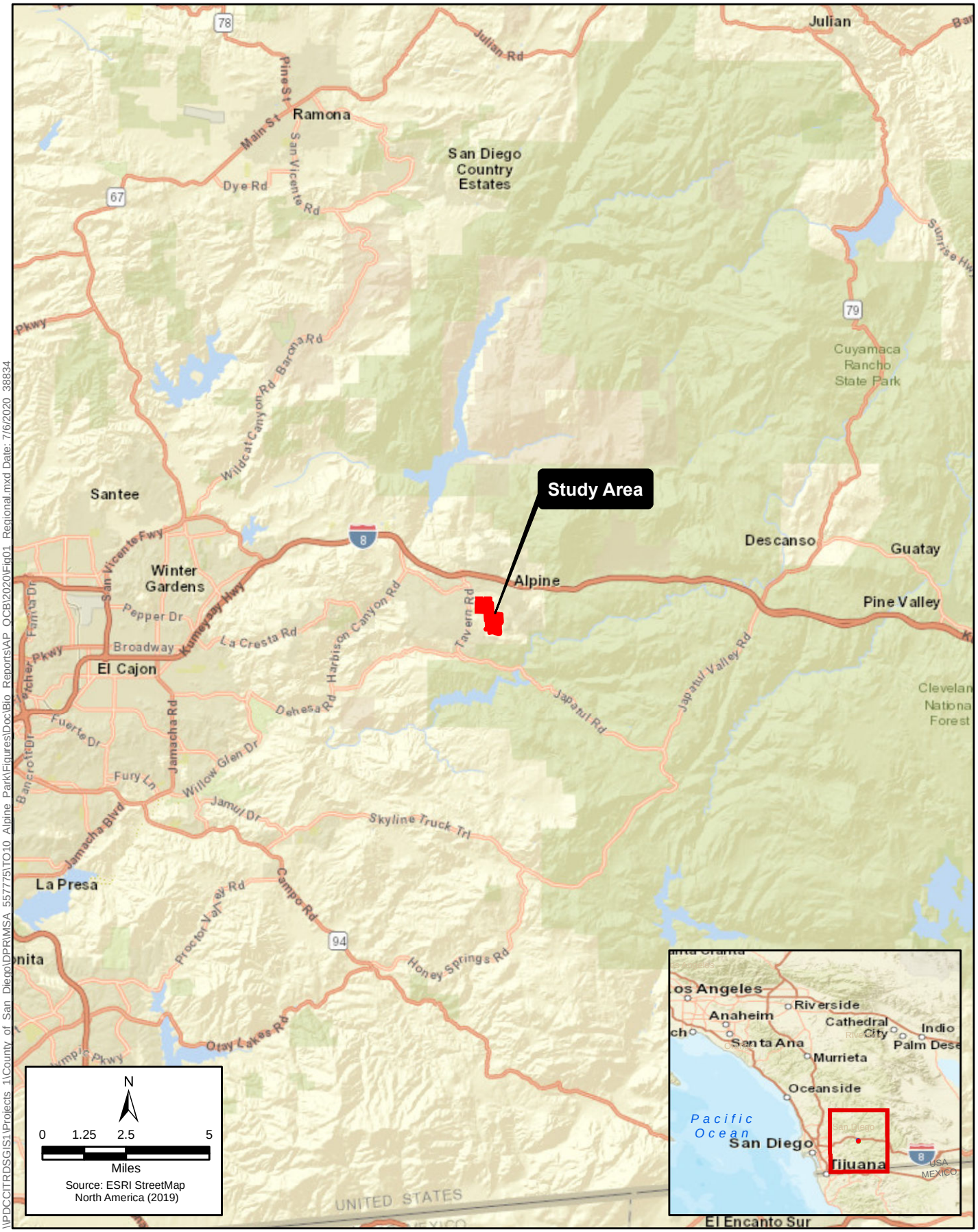

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Figure 1
Regional Location
Alpine Park and Wright's Field HCB Survey Report

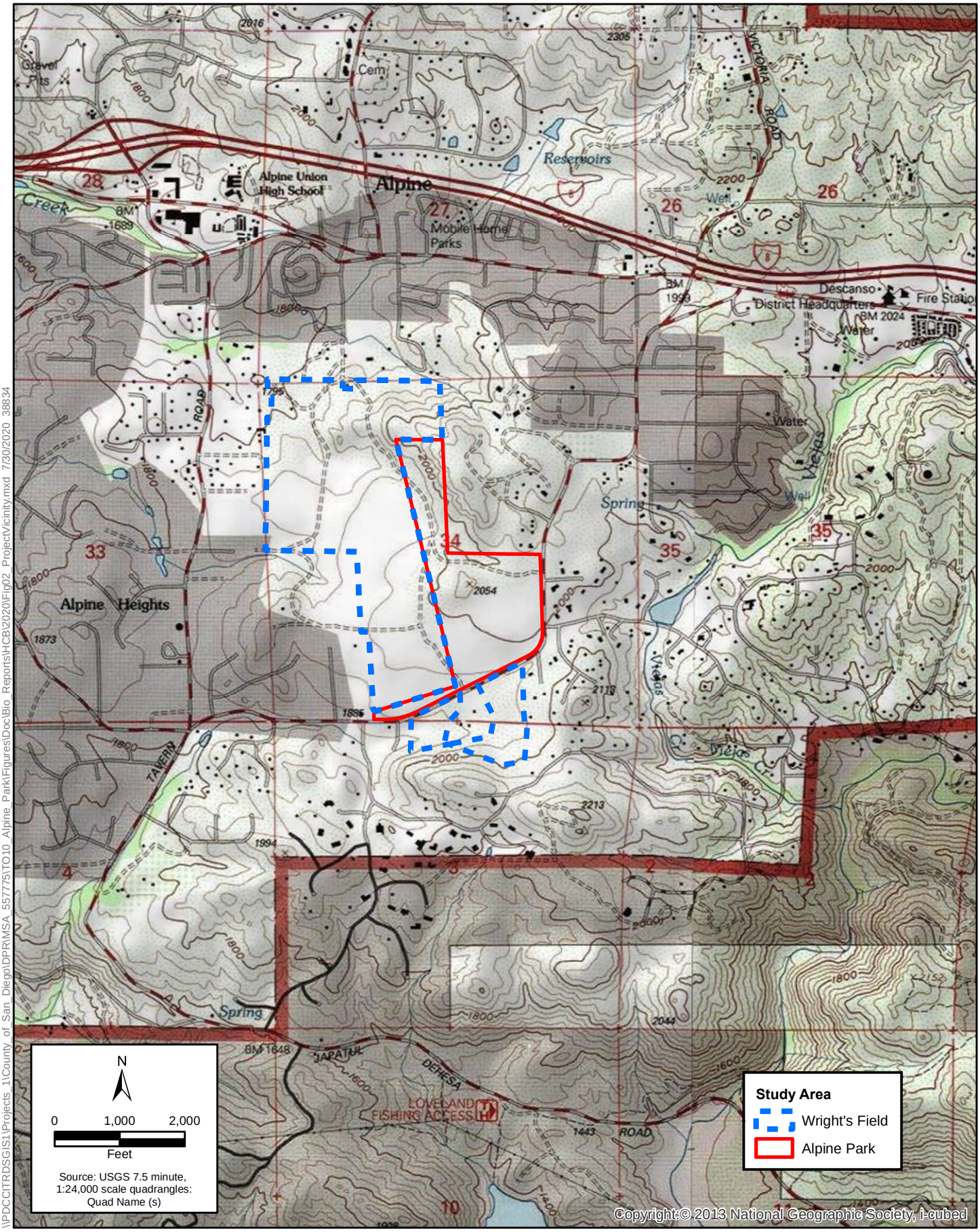

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Figure 2
Project Vicinity
Alpine Park and Wright's Field HCB Survey Report

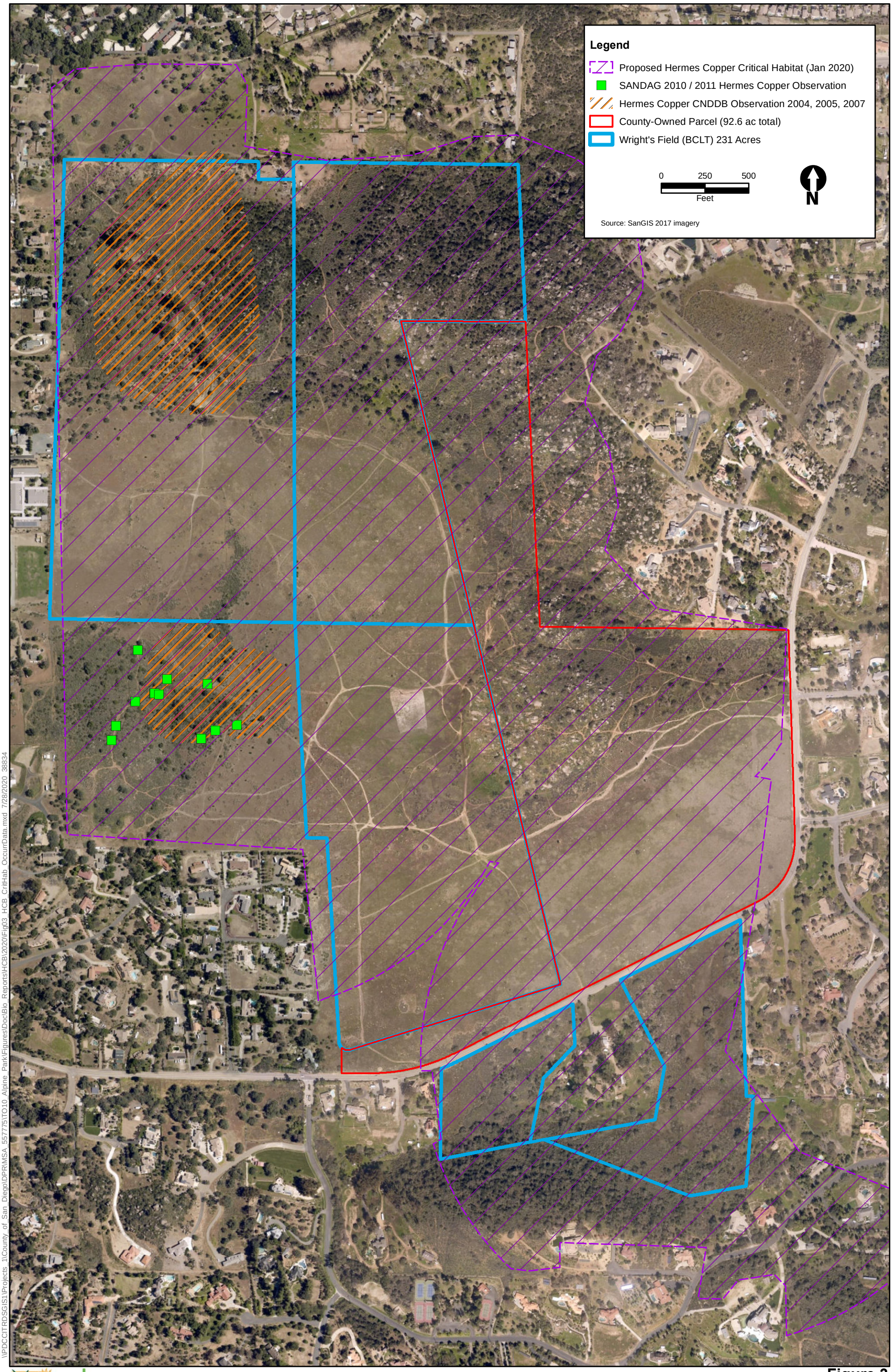

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Figure 3
Hermes Copper Proposed Critical Habitat and Known Occurrence Data
Alpine Park and Wright's Field HCB Survey Report

Chapter 2
Methods

Based on recent updates to the biology of the species and consensus of HCB surveyors, focused surveys for HCB followed a modified version of the guidelines prepared by the County of San Diego for evaluating the potential impacts within their jurisdiction (2010), combined with relevant portions of the USFWS Quino Checkerspot Butterfly Survey Guidelines (2014). The County guidelines indicate that surveys for HCB need only be conducted in areas where their larval host plant, spiny redberry (*Rhamnus crocea*), occurs in close proximity (within 15 feet) to California buckwheat (*Eriogonum fasciculatum*), their primary nectar plant (*i.e.,* suitable habitat). It should be noted that HCB has been observed using various other species as a nectar source (Klein & Faulkner 2012), therefore, suitable habitat for HCB has been modified to include areas where the HCB's host plant occurs, regardless of whether it is found in proximity to California buckwheat.

The HCB surveys were conducted by Quino Checkerspot Butterfly (QCB)-permitted biologists because of their familiarity with the QCB survey protocol, as well as the local butterfly species. The HCB surveys followed the same survey frequency and weather requirements as the USFWS 2014 survey guidelines for QCB (*e.g.,* weekly surveys, air temperature at least 60ºF on clear days and 70ºF on cloudy days, winds below 15 mph).

Surveys were conducted during the HCB flight season, which spans from the third full week of May and with the last survey being during the first full week of July. A total of eight surveys for HCB were conducted over the course of eleven visits by ICF biologists Brian Lohstroh (QCB permit #TE-063608-6), and Antonette Guteirrez (QCB permit #TE-50992B-1) (Table 1). Each survey took two person/days to complete.

HCB surveys were conducted on foot with the aid of close-focus binoculars. A list of plant species flowering within the survey area during the surveys (*i.e.,* potential nectar sources) is provided in Appendix A. Butterfly identification and nomenclature is based on Shiraiwa (2009) and plant nomenclature is based on Baldwin *et al.* (2012).

An HCB reference population near Descanso (approximately eight miles to the east of the study area) was visited by the surveyors during the peak flight period in early June. This reference population visit provided the surveyors with an opportunity to observe HCB behavior and develop a good search image for detecting the species. Numerous HCB individuals were observed during this reference site visit.

Table 1. Survey Conditions

Survey No.	Date	Time Onsite		Temp (ºF)	Sky Cover (%)	Wind (MPH)	Personnel
1A	20-May-2020	Start	0900	61	0	2-4	B. Lohstroh
		End	1515	75	0	2-7	
1B	21-May-2020	Start	0900	66	0	0-3	B. Lohstroh
		End	1715	77	0	3-10	
2A	26-May-2020	Start	0930	77	0	0-3	B. Lohstroh
		End	1600	91	0	2-11	
2B	28-May-2020	Start	0830	71	0	0-2	B. Lohstroh,
		End	1600	85	0	0-3	A. Gutierrez
3	3-Jun-2020	Start	0800	72	0	0-3	B. Lohstroh,
		End	1545	91	0	3-13	A. Gutierrez
4	8-Jun-2020	Start	0800	67	0	0-1	B. Lohstroh,
		End	1645	88	0	2-10	A. Gutierrez
5	17-Jun-2020	Start	0900	61	50	0-4	B. Lohstroh,
		End	1615	82	0	2-7	A. Gutierrez
6	22-Jun-2020	Start	0830	66	0	0-2	B. Lohstroh,
		End	1500	88	0	3-9	A. Gutierrez
7A	30-Jun-2020	Start	0945	70	0	1-7	B. Lohstroh
		End	1545	81	0	3-10	
7B	2-Jul-2020	Start	0800	63	10	0-1	A. Gutierrez
		End	1500	82	0	2-3	
8	6-Jul-2020	Start	0730	70	0	0-2	B. Lohstroh,
		End	1430	96	0	3-11	A. Gutierrez

Chapter 3
Results

No HCB were detected within the project site boundary during the surveys in 2020. Spiny redberry, the larval host plant of HCB, is distributed throughout the scrub, chaparral and oak woodland habitat (Figure 3), and many of these redberry patches were also in close proximity to patches of California buckwheat, a primary HCB nectar source.

A total of 35 butterfly species were observed during the surveys, with checkered white (*Pontia protodice*), San Bernardino blue (*Euphilotes bernardino bernardino*), Acmon blue (*Plebejus acmon*), Behr's metalmark (*Apodemia mormo virgulti*), gray buckeye (*Junonia coenia grisea*), and funereal duskywing (*Erynnis funeralis*) being among the most common during the HCB flight period (Table 2).

Suitable habitat for HCB is dependent on the locations of its host plant and generally occurs in the northern and southern regions of the study area. The suitable habitat within the study area consists primarily of CSS, chaparral and Engelmann oak woodland (Figure 3). The CSS onsite is dominated by California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), and white sage (*Salvia apiana*), with occasional sugar bush (*Rhus ovata*), spiny redberry (*Rhamnus crocea*) and poison oak (*Toxicodendron diversilobum*). The chaparral habitat is dominated by chamise (*Adenostema fasciculatum*), Mission manzanita (*Xylococcus bicolor*), toyon (*Heteromeles arbutifolia*), California buckwheat, spiny redberry and white sage. The Engelmann oak woodland is dominated by Engelmann oaks (*Quercus engelmannii*), California buckwheat, spiny redberry, poison oak and white sage. The understory throughout these habitat types is dominated by tocalote (*Centaurea melitensis*), short-pod mustard (*Hirschfeldia incana*), bromes (*Bromus* spp.), and navarretia (*Navarretia hamata* ssp. *hamata*, *N. h.* ssp. *leptantha*).

74 plant species were observed in flower, including California buckwheat, as well as other potential nectar sources such as chamise, golden yarrow (*Eriophyllum confertiflorum*), and short-pod mustard (*Hirshfeldia incana*). (Appendix A).

Site photographs are provided in Appendix B.

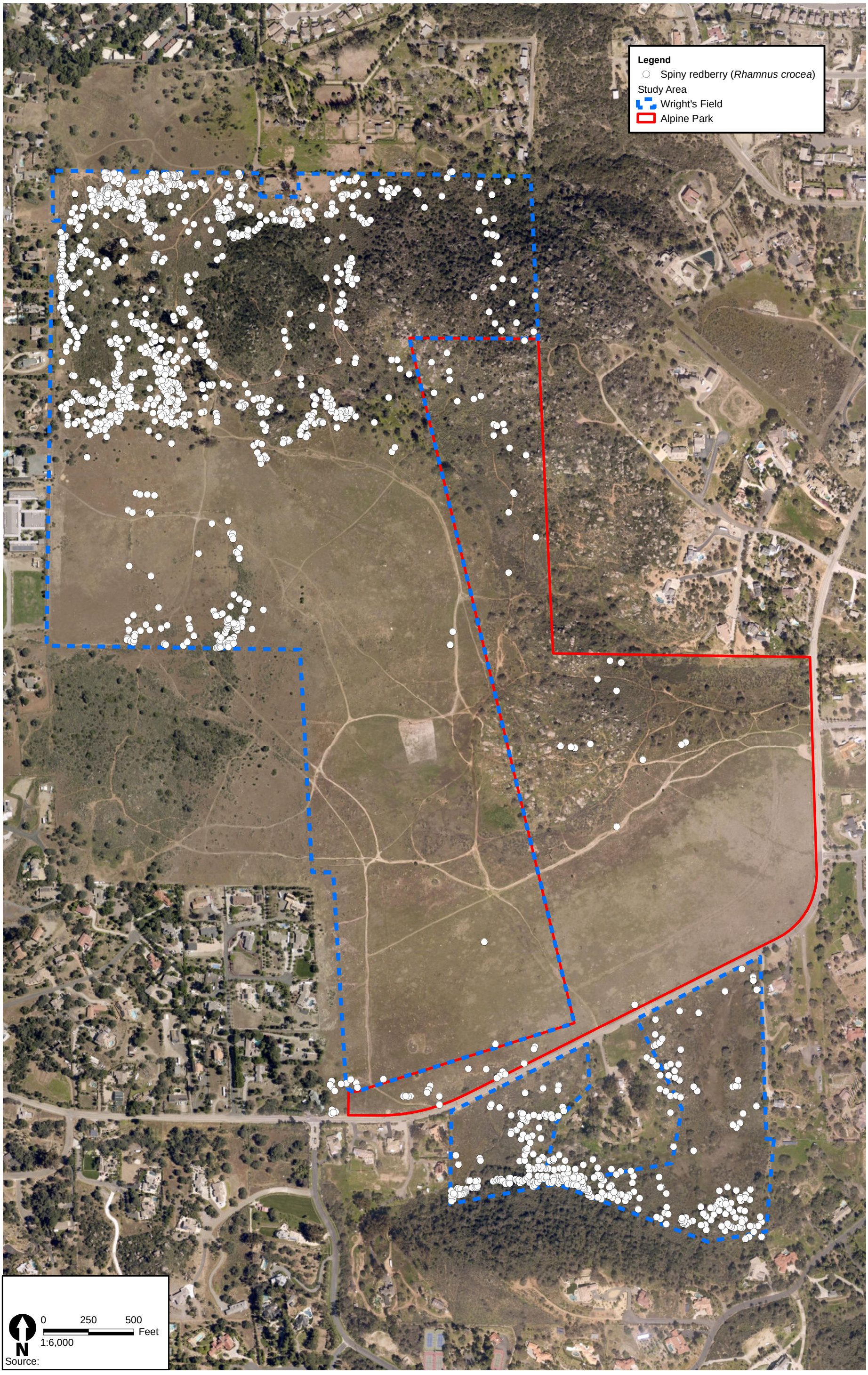


Figure 4
HCB Survey Results
Alpine Park and Wright's Field HCB Survey Report

Table 2. Butterflies Observed by Survey Date

Common name	*Scientific name*	Survey Date											No. Surveys Observed	Max No. Observed
		20-May-2020	21-May-2020	26-May-2020	28-May-2020	3-Jun-2020	8-Jun-2020	17-Jun-2020	22-Jun-2020	30-Jun-2020	2-Jul-2020	6-Jul-2020		
FAMILY PAPILIONIDAE: Swallowtails														
Subfamily Papilioninae: True Swallowtails														
Western Tiger Swallowtail	*Papilio rutulus*		2		1	2							3	2
Pale Swallowtail	*Papilio eurymedon*	1	2			3			2				4	3
FAMILY PIERIDAE: Whites and Sulphurs														
Subfamily Pierinae: Whites														
Spring White	*Pontia sisymbrii sisymbrii*					2							1	2
Checkered White	*Pontia protodice*	3	8	8	17	46	14	8	27	18	5	26	11	46
Cabbage White	*Pieris rapae rapae*				2	8	5	7	6		2	7	7	8
Unidentified White					7	5	5						3	7
Subfamily Coliadinae: Sulphurs														
Orange Sulphur	*Colias eurytheme*	2	2	3	4	3		7	8		1	6	9	8
Harford's Sulphur	*Colias harfordii*					1	1	1	3	3	1		6	3
California Dogface	*Zerene eurydice*						1		1			2	3	2
Southwestern Cloudless Sulphur	*Phoebus sennae marcellina*					4			4		1		3	4
Dainty Sulphur	*Nathalis iole*				1		1	1					3	1
Unidentified Sulphur					4	5	4						3	5
FAMILY LYCAENIDAE: Gossamer-wing														
Subfamily Theclinae: Hairstreaks														
Nut Brown Hairstreak	*Satyrium auretorum spadix*			2			3	1					3	3
Gray Hairstreak	*Strymon melinus pudica*					2		2			2	1	4	2
Bronzed Hedgerow Hairstreak	*Satyrium saepium chalcis*								1				1	1
Subfamily Polyommatinae: Blues														
Marine Blue	*Leptotes marina*						5		3		2	4	4	5
Edward's Blue	*Hemiargus ceraunus gyas*							3	4			8	3	8
Western Tailed-Blue	*Cupido amyntula amyntula*					1		1					2	1
San Bernardino Blue	*Euphilotes bernardino bernardino*	4	8	14	12	71	22	64	80	6	26	33	11	80
Acmon Blue	*Plebejus acmon*				25	16	17	28	39	33	4	30	8	39
Clemence's Blue	*Plebejus lupini monticola*		18	21	18	3		2					5	21
Unidentified Blue							10					12	2	12
FAMILY RIODINIDAE: Metalmarks														
Behr's Metalmark	*Apodemia virgulti virgulti*	15	14	17	14	53	46	30	25	16	5	5	11	53
FAMILY NYMPHALIDAE: Brushfoots														
Subfamily Melitaeinae: Crescents and Checkerspots														
California Patch	*Chlosyne californica*					1							1	1
Gabb's Checkerspot	*Chlosyne gabbii gabbii*					3	1						2	3
Subfamily Nymphalinae: True Brushfoots														
Mourning Cloak	*Nymphalis antiopa antiopa*	2	1			4					1	1	5	4
American Lady	*Vanessa virginiensis*									2	8		2	8
Painted Lady	*Vanessa cardui*	2	3	3	4		3	4	2				7	4
West Coast Lady	*Vanessa annabella*		1										1	1
Unidentified Lady	*Vanessa sp.*				6								1	6
Gray Buckeye	*Junonia coenia grisea*	13	14	15	34	38	38	19	25	11	15	18	11	38
Subfamily Limenitidinae: Admirals and Relatives														
Powell's Admiral	*Limenitis lorquini powelli*									1		1	2	1
California Sister	*Adelpha californica*				1	1		1					3	1
Subfamily Satyrinae: Satyrs														
California Ringlet	*Coenonympha tullia california*				3	3							2	3
Subfamily Danainae: Milkweed Butterflies														
Monarch	*Danaus plexippus plexippus*				1						1	1	3	1
FAMILY HESPERIIDAE: The Skippers														
Subfamily Pyrginae: Spread-wing Skippers														
Mournful Duskywing	*Erynnis tristis tristis*				2								1	2
Funereal Duskywing	*Erynnis funeralis*		4	2	9	5	4	3	2	3	2	1	10	9
White Checkered-Skipper	*Pyrgus albescens*						1				1	1	3	1
Subfamily Herperiinae: Grass Skippers														
Fiery Skipper	*Hylephila phyleus phyleus*							2	2				2	2
Number of Species Observed Per Survey*		8	12	9	16	21	15	18	17	9	16	16	Total Number of Species	
Total Number of Butterflies Observed Per Survey		42	77	85	165	280	181	184	234	93	77	157	Observed*:	35

Chapter 4
References

Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken, editors. 2012. *The Jepson Manual: Vascular Plants of California*, second edition. University of California Press, Berkeley.

California Natural Diversity Database (CNDDB). 2020. Database RareFind 3 Report.

County of SD. 2010. Guidelines for Hermes Copper (*Lycaena hermes*). Department of Planning and Land Use. San Diego County. California.

Deutschman, D.H., M.E. Berres, D.A. Marschalek and S.L. Strahm. 2011. Two-Year Evaluation Hermes Copper (*Lycaena hermes*) On Conserved Lands in San Diego County, Report for San Diego Association of Governments Contract: MOU#5001442. 53 pages.

ICF. 2019. 2019 Quino Checkerspot Butterfly Surveys for the Alpine Park Project. Prepared for the County of San Diego, Department of Parks and Recreation. San Diego, CA. September.

Klein, Michael. Faulkner, David. 2012. Sensitive Butterflies of San Diego County, California. FLITE Tours, Inc.

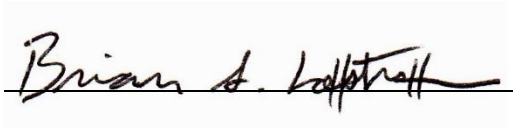
Shiraiwa, Kojiro. 2009. *The Butterflies of San Diego County Introduction and Identification Guide.* May.

U.S. Fish and Wildlife Service (USFWS). 2014. *Quino Checkerspot Butterfly Survey Protocol*. Carlsbad Fish and Wildlife Office. December 15.

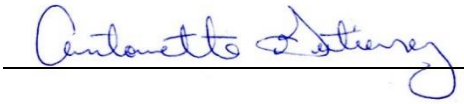
USFWS. 2020 Proposed Critical Habitat for the Hermes Copper Butterfly. Federal Register vol. 85 FR 1018. 50 CFR 17. pp. 1018-1050. January 8

Chapter 5
Certifications

We certify that the information in this survey report and attached exhibits fully and accurately represents our work.



Brian Lohstroh
Permit No. TE-063608-6



Antonette Gutierrez
Permit No. TE-50992B-1

Appendix A
Plants in Flower During 2020 HCB Surveys

Appendix A: Plants in Flower During 2020 HCB Surveys

Family	*Scientific Name*	Common Name	CRPR
Dicots			
Adoxaceae			
	Sambucus nigra ssp. caerulea	Blue Elderberry	
Anacardiaceae			
	Malosma laurina	Laurel Sumac	
	Rhus ovata	Sugar Bush	
	Toxicodendron diversilobum	Poison Oak	
Apiaceae			
	Apiastrum angustifolium	Mock Parsley	
	Daucus pusillus	American wild carrot	
Asteraceae			
	Achillea millefolium	Common Yarrow	
	Acourtia microcephala	Sacapellote	
	Bahiopsis laciniata	San Diego Sunflower	4.2
	*Carduus pycnocephalus**	Italian Thistle	
	*Centaurea melitensis**	Tocalote	
	*Cirsium vulgare**	Bull Thistle	
	Cirsium occidentale	Cobweb Thistle	
	Deinandra fasciculata	Fascicled Tarweed	
	Erigeron foliosus var. foliosus	Leafy Daisy	
	Eriophyllum confertiflorum var. confertifl	Long-Stem Golden-Yarrow	
	Grindelia camporum	Gumplant	
	Gutierrezia californica	Match Weed	
	*Hedypnois cretica**	Crete Hedypnois	
	Helianthus annuus	Western Sunflower	
	*Hypochaeris glabra**	Smooth Cats Ear	
	Isocoma menziesii var. decumbens	Decumbent goldenbush	
	Osmadenia tenella	Osmadenia	
	Pseudognaphalium californicum	Ladies Tobacco	
	*Sonchus oleraceus**	Sow Thistle	
	Stephanomeria exigua ssp. exigua	Small Wreath-Plant	
	Wyethia ovata	Southern Mule Ears	
Brassicaceae			
	*Hirschfeldia incana**	Short-Pod Mustard	
Cactaceae			
	Opuntia littoralis	Coast Prickly-Pear	
Caprifoliaceae			
	Lonicera subspicata	Southern honeysuckle	
Cistaceae			
	Crocanthemum scoparium	Peak Rush-rose	
Convolvulaceae			
	Calystegia macrostegia	Coast Morning-Glory	
Crassulaceae			
	Dudleya pulverulenta	Chalk Dudleya	
Euphorbiaceae			
	Crotonus setiger	Turkey-mullein	
Fabaceae			
	Acmispon americanus var. americanus	Spanish-Clover	
	Acmispon glaber var. brevialatus	Short-Wing Deerweed	
	Acmispon micranthus	Grab Lotus	
	Trifolium willdenovii	Tomcat Clover	

Appendix A: Plants in Flower During 2020 HCB Surveys

Family	*Scientific Name*	Common Name	CRPR
Gentianaceae			
	Zeltnera venusta	Charming Centaury	
Geraniaceae			
	*Erodium botrys**	Long-Beak Filaree/Storksbill	
	*Erodium cicutarium **	Red-Stem Filaree/Storksbill	
Hydrophyllaceae			
	Phacelia cicutaria var. hispida	Caterpillar Phacelia	
Iridaceae			
	Sisyrinchium bellum	Blue-Eyed-Grass	
Lamiaceae			
	*Marrubium vulgare**	Horehound	
	Salvia apiana	White Sage	
	Salvia columbariae	Chia	
	Trichostema lanceolatum	Vinegar Weed	
Malvaceae			
	Sidalcea sparsifolia	Southern Checkerbloom	
Montiaceae			
	Calandrinia menziesii	Red Maids	
Myrsinaceae			
	*Lysimachia arvensis**	Scarlet Pimpernel	
Onagraceae			
	Camissoniopsis hirtella	Field Sun Cup	
	Clarkia delicata	Delicate Clarkia	1B.2
	Clarkia purpurea subsp. quadrivulnera	Four-Spot Clarkia	
Orobanchaceae			
	Cordylanthus rigidus	Rigid Bird's Beak	
Phrymaceae			
	Diplacus longiflorus	Bush Monkey Flower	
Plantaginaceae			
	Antirrhinum nuttallianum ssp. nuttallianu	Nuttall's Snapdragon	
Polemoniaceae			
	Eriastrum sapphirinum ssp. sapphirinum	Sapphire Woolly-Star	
	Navarretia atractyloides	Holly-leaf Navarretia	
	Navarretia hamata ssp. hamata	Hooked Skunkweed	
	Navarretia hamata ssp. leptantha	Hooked Pincushion Plant	
Polygonaceae			
	Chorizanthe fimbriata var. fimbriata	Fringed Spineflower	
	Chorizanthe procumbens	Prostrate Spineflower	
	Eriogonum fasciculatum var. foliolosum	Inland California Buckwheat	
Ranunculaceae			
	Delphinium parryi ssp. parryi	Parry's Larkspur	
Rosaceae			
	Adenostoma fasciculatum var. fasciculatu	Chamise	
	Drymocallis glandulosa var. glandulosa	Sticky Cinquefoil	
	Heteromeles arbutifolia	Toyon, Christmas Berry	
Scrophulariaceae			
	Scrophularia californica	California Bee Plant/Figwort	
	Verbascum virgatum	Wand Mullien	
Verbenaceae			
	Verbena lasiostachys var. lasiostachys	Western Vervain	
<u>Monocots</u>			
Agavaceae			
	Chlorogalum parviflorum	Small-Flower Soap-Plant/Amole	
Liliaceae			
	Calochortus splendens	Splendid Mariposa Lily	
	Calochortus weedii var. weedii	Weed's Mariposa Lily	
Themidaceae			
	Brodiaea terrestris ssp. kernensis	Dwarf Brodiaea	

*Non-native; CRPR: California Rare Plant Rank

Appendix B
Representative Photographs



Photo 1: (7/6/2020) View facing North from the central portion of Wright's Field. Spiny red berry and California Buckwheat in bloom is visible in the foreground.



Photo 2: (5/26/2020) View facing south from the northern portion of Wright's Field with a spiny redberry in fruit in the foreground. Fascicled tarplant (yellow) is in the background.



Photo 3: (5/26/2020) A nut-brown hairstreak nectaring on California buckwheat in the northern portion of Wright's Field. Charming centaury is visible in the background (pink).



Photo 4: (6/30/2020) View facing north from the southern Wright's Field Parcels. Oak woodlands are visible in the background with the Alpine Park property visible in the background.

Appendix E

Western Spadefoot Survey Report

WESTERN SPADEFOOT SURVEY REPORT FOR THE ALPINE PARK PROJECT

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1.0 Introduction

The County of San Diego Department of Parks and Recreation retained ICF to conduct focused surveys for the western spadefoot (*Spea hammondii*) within an approximately 94-acre parcel located in Alpine, California within the Alpine U.S. Geological Survey 7.5-minute topographic map (Figures 1 and 2) in San Diego County, California.

The surveys were conducted within the County-owned property, with an emphasis on areas with appropriate topography and clay soils to allow for development of ponded areas. Surveys were also conducted within known breeding pools on the Wright's Field Preserve, adjacent to the County-owned parcel, to provide a frame of reference for local western spadefoot breeding activity. The goal of this survey was to determine if the seasonally inundated depressions within the study area represent viable breeding habitat for western spadefoot (Figure 3). In 2019, western spadefoot eggs were observed once in one ponded area (AP-7) along the existing access road within the County's property. This observation was made during protocol surveys conducted for listed large branchiopods (ICF 2019).

No evidence of western spadefoot breeding was observed in 2022 during surveys of seasonally inundated basins within the County-owned parcel. No western spadefoot individuals were observed within the proposed approximately 25-acre Alpine Park Project (proposed project) development footprint, proposed for the eastern portion of the County's parcel. Approximately 48 ponded areas were surveyed within or adjacent to dirt access roads, of which approximately 35 were mapped within the County's parcel and 13 were mapped on Wright's Field. Breeding activities were observed within the core population of western spadefoot on the Wright's Field Preserve, but no successful recruitment was observed. Adult western spadefoots were observed within the Wright's Field Preserve and within the western portion of the County's property, outside of the proposed development footprint.

2.0 Methods

2.1 Hydrology Checks and Basin Surveys

ICF conducted focused surveys within 35 seasonally-inundated basins observed within the study area (Figure 3) in 2022 during January to May, which is during the western spadefoot's typical breeding season (Jennings and Hayes 1994). Prior to surveying the basins, ICF biologist Brian Lohstroh conducted a hydrology check (*i.e.,* verification of basin inundation) and GPS survey of the entire 94-acre County parcel to determine the boundaries of any inundated basins with at least 3 centimeter (cm) of water within 24-hours of a rainfall event. Basins mapped during the previous vernal pool branchiopod surveys in 2018-2019 were also included in the survey, with their boundaries updated and/or modified as needed.

Rainfall events were tracked to ascertain when basins became inundated using National Weather Service forecasts and observations (NWS 2022), along with observations from nearby Weather Underground personal weather stations (WU 2022). On February 23, 2022, sufficient rainfall fell in the Alpine area that many of the seasonally-inundated basins (primarily within road ruts) supported water.

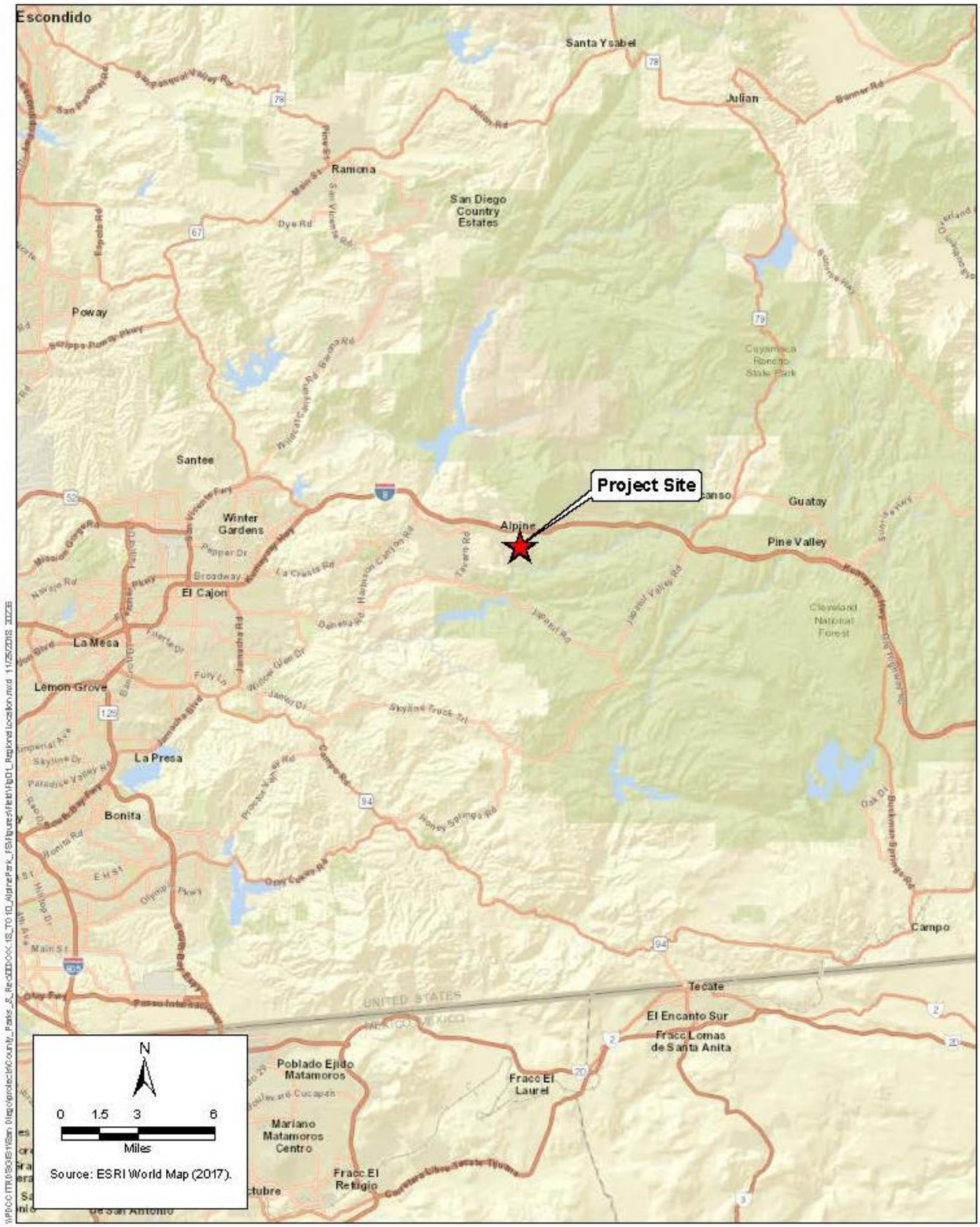


Figure 1
Regional Location
Alpine Park Wet Season Branchiopod Surveys

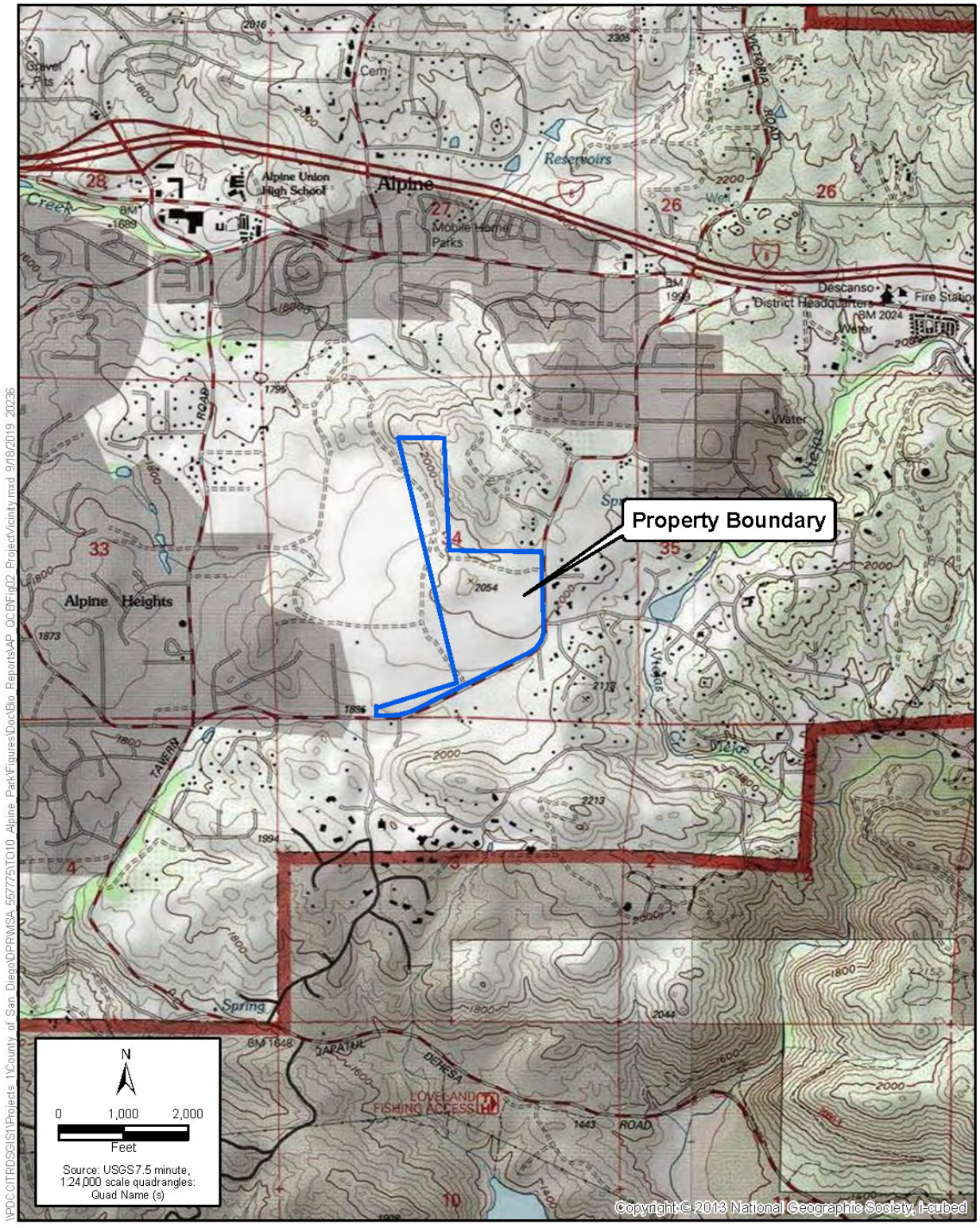


Figure 2
Project Vicinity
Alpine Park Project

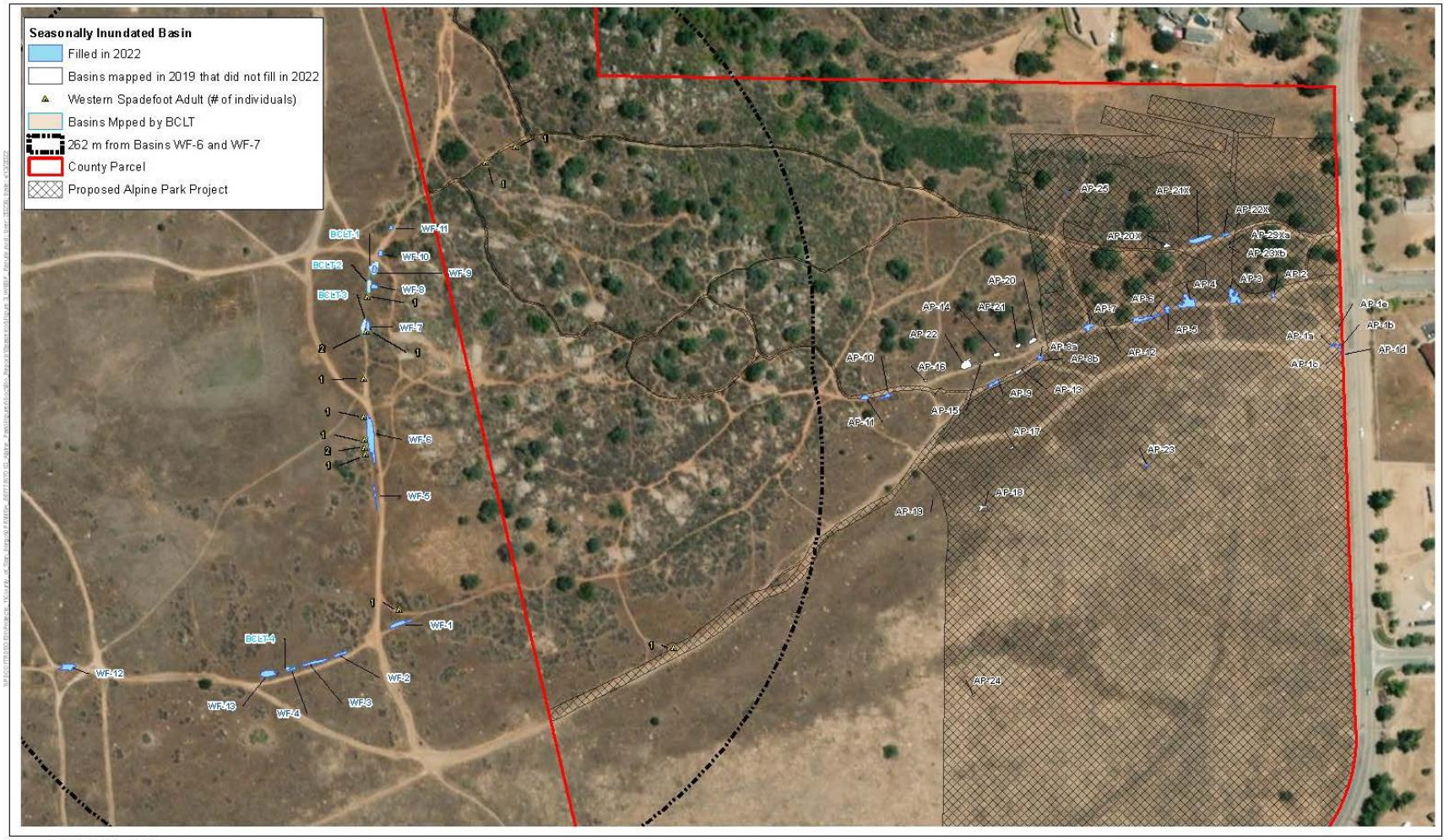


Figure 3
Western Spadefoot Survey Results
Alpine Park Project

Within 24 hours of this rainfall event, on February 24, 2022, the biologist mapped the basin perimeters or confirmed the 2019 mapping of the basins using an Arrow submeter Bluetooth GPS combined with the ArcGIS Field Maps mobile application. Additional data recorded included maximum depth for each inundated basin and representative photographs. The biologist returned to the site on a more or less weekly basis to visually search for egg masses or larvae (*i.e.,* direct evidence of spadefoot breeding) until all the basins became dry. Subsequent hydrology checks were performed when a significant rainfall event occurred (0.3" of rainfall of more), refilling basins, upon which the weekly survey visit schedule was reinitiated. Site visits conducted in 2022 are provided in Table 1, below.

Table 1. Western Spadefoot Sampling Dates and Types

Date	Personnel	Survey Type
1/10/2022	BL	Hydrology check (dry)
2/16/2022	BL	Hydrology check (dry)
2/24/2022	BL	Hydrology check, basin mapping and survey
2/28/22	BL	Hydrology check and basin surveys
3/4/2022	BL	Nocturnal adult survey during rain event
3/10/22	BL	Hydrology check and basin surveys
3/17/2022	BL	Hydrology check and basin surveys
3/21/2022	BL	Hydrology check and basin surveys
3/29/2022	BL	Hydrology check and basin surveys
4/1/22	BL	Hydrology check and basin surveys
4/8/22	BL	Hydrology check and basin surveys
4/14/22	BL	Hydrology check (dry)
4/26/22	BL	Hydrology check (dry)

2.2 Reference Population Surveys

A known breeding population of western spadefoot occurs on the adjacent Wright's Field Preserve. In January 2022, the Back Country Land Trust (BCLT), which manages the Wright's Field Preserve, provided some documented breeding pond location data to the County for this known population. During each of the surveys summarized in Table 1, above, the biologist visually surveyed the Wright's Field Preserve basins for signs of western spadefoot eggs, larvae, or adults.

2.3 Nocturnal Adult Breeding Season Survey

A nocturnal survey focused on detecting foraging and breeding western spadefoot adults was conducted on March 4, 2022 during a rain event. ICF biologist Brian Lohstroh surveyed portions of both the 94-acre County parcel and the adjacent Wright's Field Preserve, focusing on areas in the vicinity of the potential breeding basins and open areas amenable to spadefoot movement and foraging. The survey was conducted between the hours of 1930 to 2245 and the temperature ranged from 50ºF to 48ºF with occasional rain showers. The survey was conducted on foot, using a headlamp to facilitate detection of spadefoot eyeshine. The headlamp was used in a limited manner near known breeding basins on Wright's Field to minimize disturbance to actively breeding or amplexing spadefoot adults.

3.0 Results and Discussion

3.1 Site Conditions and Survey Summary

The study area can be characterized as a gradually sloped grassland with scrub vegetation associated with the slightly higher terrain that exists along the northern portion of the site. There is also a network of hiking trails in the northern portion of the study area, along with some evidence of off-road vehicle activity. Dominant vegetation communities present within the study area include native grassland, non-native grassland and buckwheat scrub. Occasional Engelmann oaks (*Quercus engelmannii*) are also present in the northern portion of the study area.

The basins within the County's parcel are primarily associated with the hiking trails that exist along the northern perimeter of the study area. Two of the basins were located within the native grassland and did not appear to be affected by disturbance. However, they were relatively small basins that were associated with rock outcrops.

No western spadefoot adults, larvae or eggs were observed during surveys of seasonally inundated basins within the County's parcels in 2022. Three adults were observed within the County's parcel but outside of the proposed development footprint during the nocturnal survey on March 4, 2022. All three were on the western side of the County's parcel within approximately 70 to 150 meters of the basins on Wright's Field and over 250 meters away from the closest inundation areas on the County's parcel.

A summary of the survey results by date follows:

- On January 10, 2022, all the basins on the County property were dry.
- On February 16, 2022, all the basins on the County's parcel were dry except for basin AP-1d, a road rut right at the entrance to the parking area off South Grade Road. It was evident that vehicles had recently driven through the basin and do so on a regular basis.
- On February 24, 2022, 18 distinct basins holding greater than 3 cm of water were documented. No evidence of any spadefoot eggs or larvae were observed. The basins onsite were mapped with a submeter GPS, resulting in a total of 35 basins tracked onsite.
- On February 28, 2022, all the basins on the County's parcel were dry except for AP-1b (2 cm max depth), AP-7 (5 cm max depth), and AP-21x (7 cm max depth). No evidence of any spadefoot eggs or larvae were observed.
- On March 4, 2022, three adult western spadefoots were observed foraging onsite during a nocturnal adult survey (See mapped observations on Figure 3). No evidence of active breeding observed onsite. One barred tiger salamander (Ambystoma mavortium) was also observed on the County property. This introduced species is known from the Alpine area and is believed to be associated with the use of their larval stage as fishing bait (SDNHM 2022).
- On March 10, 2022, all the basins on the County's parcel were dry except for AP-1a, AP-1b, AP-1c and AP-7. It is evident that the AP-1 basin complex, located at the eastern edge of the County parcel within an area used for parking, is being driven through on a regular basis. No evidence of any spadefoot eggs or larvae were found.
- On March 17, 2022, all the basins on the County's parcel were dry with no evidence of attempted spadefoot breeding.

- On March 21, 2022, after a quarter-inch of rain fell in Alpine, all the basins on the County's parcel were dry except for AP-1e at the entrance to the parking area off South Grade Rd.
- On March 29, 2022, after approximately one inch of rain fell in Alpine, 21 of the basins on the County parcel re-filled. No evidence of attempted spadefoot breeding was observed.
- On April 1, 2022, six basins were still inundated onsite due to some recent cool, cloudy weather. These included the deeper basins AP-7 and AP-21X, but no evidence of spadefoot breeding was observed.
- On April 8, 2022, all the basins on the County's parcel were dry with no evidence of attempted spadefoot breeding.
- On April 14, 2022 all the basins on the County's parcel were dry with no evidence of attempted spadefoot breeding.
- On April 26, 2022, despite 0.51" of recorded rainfall on 4/22/22, all the basins on the County's parcel were dry with no evidence of attempted spadefoot breeding.

A tracking table showing maximum depths for the inundated basins during the 2022 survey is included as Appendix A. Representative photographs are presented in Appendix B, and rainfall data (WRCC 2022) is presented in Appendix C. It is important to note that 14 of the basins held over from the vernal pool branchiopod surveys in 2018/2019 never filled in 2022. These included AP-12, AP-14 through AP-22, AP-20X, AP-23Xa, AP23Xb and AP-24. Therefore, a total of 21 basins onsite supported inundation for at least 24 hours after a rain event in 2022.

3.2 Reference Population Surveys

Thirteen basins were observed within the Wright's Field Preserve in the vicinity of where the BCLT mentioned western spadefoots had been observed in the past. A summary of observations within this area is as follows:

- On Monday, January 10, 2022, all the basins on Wright's Field were dry, including WF-6.
- On February 16, 2022, all the basins on Wright's Field were dry, including WF-6.
- On February 24, 2022, twelve basins holding greater than 3 cm of water were mapped in the vicinity of known western spadefoot occurrences following a rain event. One amplexing pair of western spadefoots was observed in basin WF-7 (See Appendix B for photo). Warmer daytime temperatures may have been the motivating factor for amplexing to occur during daytime.
- On February 28, 2022 most of the basins on Wright's Field were dry, except the largest basin, WF-6, which held a maximum depth of 6 cm. Spadefoot eggs masses were noted in WF-6, with an estimated count of 24 egg masses. WF-7, where the spadefoot pair was noted amplexing on February 24, was dry.
- On March 4, 2022, during the nocturnal adult survey, eight adult spadefoots were observed in or around the larger basins (WF-6 and WF-7) on Wright's Field during the nocturnal survey on March 4, 2022. Three of these individuals were observed within the water. No obvious breeding behaviors such as calling or amplexing were observed. All twelve of the reference basins were inundated at the time of the survey, with a rain event actively filling them.
- On March 10, 2022 most of the basins on Wright's Field were dry, except for WF-6 and WF-12. Both basins were inundated at the time of the survey. Spadefoot larvae were observed in WF-6,

and were approximately 6 mm in body length, not including the tail. No evidence of spadefoot breeding was observed in WF-12 or any other of the dry basins during this survey.

- On March 17, 2022 all of the basins on Wright's Field were dry except for WF-12, which held less than 1 cm of water within a footprint. The spadefoot larvae observed in WF-6 on March 10 did not survive; desiccated masses of dead larvae were visible within a few low points in basin WF-6.
- On March 21, 2022, after a quarter-inch of rain fell in Alpine, all of the basins on Wright's Field were still dry.
- On March 29, 2022, after approximately one inch of rain fell in Alpine, most of the basins on Wright's Field re-filled. No evidence of attempted spadefoot breeding was observed.
- On April 1, 2022, three basins on Wright's Field were still inundated, with an estimated 45 spadefoot egg masses observed in WF-6. No evidence of breeding was observed in the other basins (WF-1 and WF-12).
- On April 8, 2022, WF-6 and WF-12 were the only basins that were still inundated. WF6 was nearly dry with just 2 cm of water in low lying areas of the basin and these remaining ponded areas teemed with spadefoot larvae. Desiccated spadefoot larvae were observed in some dry portions of the basin.
- On April 14, 2022, WF-6 and WF-12 were dry, despite trace amounts of rainfall 2-3 days prior. Desiccated spadefoot larvae were observed in WF-6, throughout the lowest portions of the basin.
- On April 26, 2022, all basins were dry, despite 0.51" of recorded rainfall on 4/22/22. No recently desiccated egg masses or larvae were observed in any of the reference basins on Wright's Field.

See the tracking table in Appendix A for the maximum depth observed by survey date for each of the Wright's Field basins. Evidence of western spadefoot breeding was only observed in two basins: WF-6 and WF-7. However, no successful western spadefoot recruitment was observed during the 2022 survey period.

4.0 Discussion

Based on the surveys conducted in 2022, it is clear that WF-6 is the primary breeding pool for western spadefoot within the survey area, although successful western spadefoot recruitment was not observed in 2022. Basins within the County's parcel are too shallow and/or do not hold water long enough to support western spadefoot breeding activities during all but the wettest rain years. Western spadefoot larval development is completed in approximately 58 days, but can range from 30 to 79 days, closely tied to duration of inundation (USFWS 2004, Morey 1998). According to the survey visit schedule, the maximum inundation duration for any basin onsite in 2022 was between 15 days and 22 days (Appendix A: AP-7). However, it is likely the duration was much shorter (6 to 8 days) because the basin likely dried up after 2/28/22 and before the rain event on 3/4/22.

The winter of 2018-19 was an exceptionally wet winter for coastal San Diego County (10.41" in February 2019 alone [WRCC 2022]) and during fairy shrimp surveys in 2019, a western spadefoot egg mass was observed in basin AP-7. These eggs were discovered on February 8, 2019, and the basin was inundated through March 29, 2019, a total of seven weeks. It was dry after this date. No

evidence of western spadefoot breeding was observed in any other basins onsite during the surveys. Larvae were never observed in basin AP-7 during weekly checks from February 8 through March 29, 2019. The single attempted breeding within AP-7 during February 2019 was likely opportunistic in nature, and indicative of the exceptionally wet winter. The basins on the County parcel appear to be too small and ephemeral in nature to allow for complete larval development during all but perhaps record rainfall years and more often act as reproductive sinks for the species.

It appears that the County's parcel does provide upland habitat for western spadefoot, but only in the far western portions of the parcel. In Baumberger *et al.* (2019), researchers found that the mean distance of burrows from breeding pools was 40 meters with a range from 1 to 262 meters. The maximum distance spadefoot individuals were found from the pools ranged from 16 to 262 meters, with a mean maximum distance of 69 meters. The researchers also noted that travel distances (but not burrow distances) increased during wetter rain years.

Figure 3 shows a 262-meter buffer from basins WF-6 and WF-7, where breeding activities were documented during the 2022 survey. All adults observed during the nocturnal survey in March 2022 were observed within this 262-meter buffer. As a result, it is unlikely that areas within the proposed Alpine County Park development site support estivating western spadefoot individuals. As mentioned previously, during very high rainfall years, it is possible that small numbers of western spadefoots may travel into areas within the proposed Alpine County Park site to forage and opportunistically attempt to breed, but because this area does not support breeding ponds where successful recruitment has been documented recently, it is not expected that these individuals burrow and/or aestivate anywhere within the proposed development footprint.

5.0 References

Baumberger, Katherine L., M. V. Eitzel, M. E. Kirby, M. H. Horn. 2019. Movement and Habitat Selection of the Western Spadefoot (*Spea hammondii*) in Southern California. PLOS One. Available: https://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0222532&type=printable

ICF. 2019. 2018-2019 West and Dry Season Fairy Shrimp Surveys for Alpine Park. Prepared for County DPR. October.

Jennings, M. R., and M. P. Hayes. 1994. Amphibian and reptile species of special concern in California. California Department of Fish and Game, Sacramento, California.

Morey, S. 1998. Pool Duration Influences Age and Body Mass at Metemorphosis in the Western Spadefoot Toad: Implications for Vernal Pool Conservation. ed. C.W. Witham, E.T. Bauder, D. Belk, W. Ferren and R. Ornduff, 86-91, Ecology, Conservation, and Management of Vernal Pool Ecosystems: Proceedings from a 1996 conference. California Native Plant Society, Sacramento, California. Available: https://vernalpools.ucmerced.edu/sites/vernalpools.ucmerced.edu/files/page/documents/2.2_pool_duration_influences_age_and_body_mass_at_metamorphosis_in_the_western_spadefoot_toad-_implications_for_vernal_pool_conservation_by_steven_r._morey__0.pdf

National Weather Service (NWS). 2022. Extended Forecast for Alpine, CA. https://www.weather.gov/sgx/ Accessed January 2022-April 2022.

San Diego Natural History Museum (SDNHM). 2022. Amphibian and Reptile Atlas of Peninsular Southern California. Available: https://herpatlas.sdnhm.org/species/overview/barred-tiger-salamander/24/

Weather Underground (WU). 2022. Personal Weather Stations near Alpine, CA. https://www.wunderground.com/ Accessed January 2022-April 2022.

Western Regional Climate Center (WRCC). 2022. Remote Automated Weather Station (RAWS) data for Alpine, CA. Available: https://raws.dri.edu/cgi-bin/rawMAIN.pl?caCALP

U.S. Fish and Wildlife Service. (USFWS) 2004. Draft Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon. Portland, OR.

Appendix A
Survey Basin Table

Basin	Max Depth (cm)												
Date>>>	**1/10/22**	**2/16/22**	**2/24/22**	**2/28/22**	**3/4/22****	**3/10/22**	**3/17/22**	**3/21/22**	**3/29/22**	**4/1/22**	**4/8/22**	**4/14/22**	**4/26/22**
AP-1a	dry	dry	7	dry	inundated	6	dry	dry	9	6	dry	dry	dry
AP-1b	dry	dry	11	2	inundated	5	dry	dry	10	6	dry	dry	dry
AP-1c	dry	dry	5	dry	inundated	2	dry	dry	6	dry	dry	dry	dry
AP-1d	dry	dry	4.5	dry	inundated	dry	dry	dry	6	dry	dry	dry	dry
AP-1e	dry	6	7	dry	inundated	dry	dry	6	8	2.5	dry	dry	dry
AP-2	dry	dry	dry	dry	inundated	dry	dry	dry	1	dry	dry	dry	dry
AP-3	dry	dry	8	dry	inundated	dry	dry	dry	6	dry	dry	dry	dry
AP-4	dry	dry	5.5	dry	inundated	dry	dry	dry	4	dry	dry	dry	dry
AP-5	dry	dry	6	dry	inundated	dry	dry	dry	4	dry	dry	dry	dry
AP-6	dry	dry	8	dry	inundated	dry	dry	dry	6	dry	dry	dry	dry
AP-7	dry	dry	13	5	inundated	10	dry	dry	13	12	dry	dry	dry
AP-8a	dry	dry	10	dry	inundated	dry	dry	dry	7	dry	dry	dry	dry
AP-8b	dry	dry	7	dry	inundated	dry	dry	dry	11	dry	dry	dry	dry
AP-9	dry	dry	4	dry	inundated	dry	dry	dry	5	dry	dry	dry	dry
AP-10	dry	dry	dry	dry	inundated	dry	dry	dry	8	dry	dry	dry	dry
AP-11	dry	dry	3	dry	inundated	dry	dry	dry	8	dry	dry	dry	dry
AP-12	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry
AP-13	dry	dry	4	dry	inundated	dry	dry	dry	3	dry	dry	dry	dry
AP-14	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry
AP-15	dry	dry	dry	dry	dry	dry	dry	dry	3	dry	dry	dry	dry
AP-16	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry
AP-17	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry
AP-18	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry
AP-19	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry
AP-20	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry
AP-20x	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry
AP-21	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry
AP-21x	dry	dry	12	7	inundated	dry	dry	dry	16	12	dry	dry	dry
AP-22	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry
AP-22x	dry	dry	dry	dry	inundated	dry	dry	dry	4.5	dry	dry	dry	dry
AP-23	dry	dry	4	dry	inundated	dry	dry	dry	dry	dry	dry	dry	dry
AP-23xa	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry
AP-23xb	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry
AP-24	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry
AP-25	dry	dry	12	dry	inundated	dry	dry	dry	13	4	dry	dry	dry
Wright's Field (WF) Reference Basins:													
WF1	dry	dry	11	dry	inundated	1	dry	dry	12	6	dry	dry	dry
WF2	dry	dry	6	dry	inundated	dry	dry	dry	7	dry	dry	dry	dry
WF3	dry	dry	8	dry	inundated	dry	dry	dry	9	dry	dry	dry	dry
WF4	dry	dry	9	dry	inundated	dry	dry	dry	6	dry	dry	dry	dry
WF5	dry	dry	11	dry	inundated	dry	dry	dry	9.5	dry	dry	dry	dry
WF6*	dry	dry	20	9*	inundated*	11*	dry	dry	15	14*	2*	dry	dry
WF7*	dry	dry	7*	dry	inundated	dry	dry	dry	9	dry	dry	dry	dry
WF8	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry	dry
WF9	dry	dry	9	dry	inundated	dry	dry	dry	11	dry	dry	dry	dry
WF10	dry	dry	6	dry	inundated	dry	dry	dry	8	dry	dry	dry	dry
WF11	dry	dry	6	dry	inundated	dry	dry	dry	8	dry	dry	dry	dry
WF12	ND	ND	ND	11	inundated	12	1	dry	22	14	5	dry	dry
WF13	ND	ND	ND	dry	inundated	dry	dry	dry	9.5	dry	dry	dry	dry

**Night survey for adults during active rain event

*Spadefoot breeding

ND: No data/not a part of reference basins

Appendix B
Representative Photographs



Photo 1. (2/24/22) View facing south of basin AP-1e, with basins AP-1a in background (AP1b-d obscured). This basin is a series of ruts that was regularly disturbed by vehicle traffic, transitioning this area to park onsite at right.



Photo 2. (2/24/22) View facing west of basin AP-7 early in the survey period, after filling from a recent rain event. Spadefoot egg masses were observed in this basin in 2019.



Photo 3. (4/1/22) View facing northeast of basin AP-7 late in the survey period, with increased vegetation growth.



Photo 4. (2/24/22) View facing west of basin AP-8a and AP-8b. This is another example of the typical basins onsite, road ruts initially formed by vehicular traffic. These basins were dry four days later on 2/28/22.



Photo 5. (3/29/22) View facing west of basins AP-10 and AP-11 after a recent rain event. These basins were dry three days later on 4/1/22, after another minor rain event.



Photo 6. (3/29/22) View facing west of basin AP-21X, a large basin that captures runoff from the trail and slope at left. This basin was still inundated 3 days later, but there was no evidence of spadefoot breeding observed.



Photo 7. (3/10/22) View facing south of basin WF-6, a large basin on Wright's Field apparently created by a vehicle. Spadefoot breeding was regularly observed within this reference basin, which supported spadefoot larvae when this photo was taken.



Photo 8. (3/17/22) View facing south of basin WF-6 seven days later, when it was no longer inundated. Dead and desiccated spadefoot larvae were visible within the low spots of this basin.



Photo 9. (4/1/22) Western spadefoot egg masses within basin WF-6. This represents a second breeding attempt within this basin during the 2022 wet season.



Photo 10. (2/24/22) An amplexing western spadefoot pair within basin WF-7. This was an unusual diurnal observation of spadefoot breeding early in the season. This basin was dry four days later on 2/28/22.



Photo 11. (3/4/22) Foraging adult western spadefoot observed on the County parcel during on the nocturnal adult survey. This individual was observed in the southwestern portion of the site.



Photo 12. (3/4/22) A second foraging adult western spadefoot observed on the County parcel during the nocturnal adult survey. This individual was observed in the northwestern portion of the site near the breeding ponds on Wright's Field.

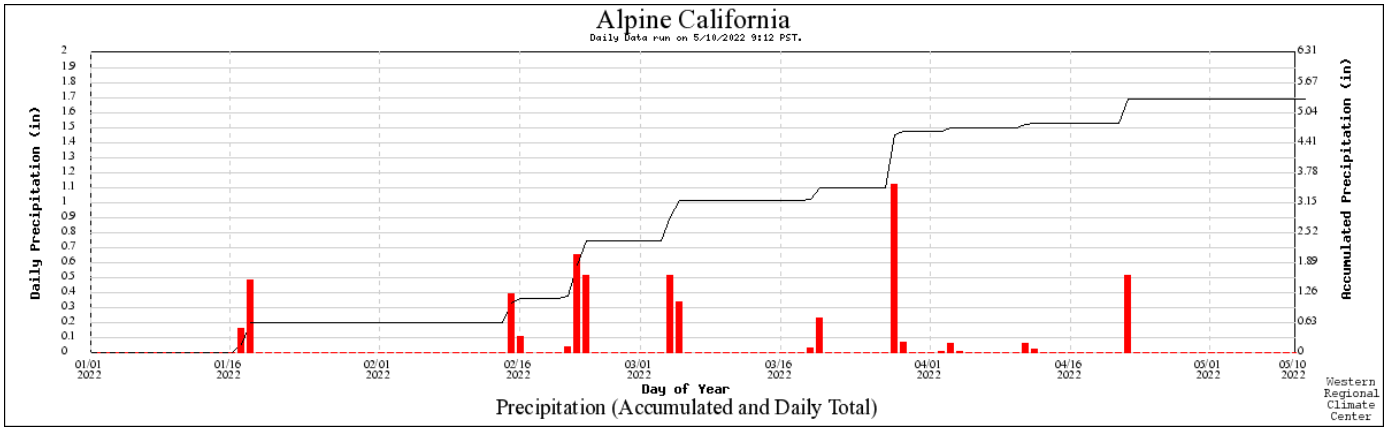


Photo 13. (3/4/22) Introduced barred tiger salamander observed within the County property during the nocturnal survey.



Photo 14. (4/8/22) Western spadefoot larvae within the last remaining ponded areas in WF-6.

Appendix C
2022 Alpine Rainfall Data (Alpine, CA RAWS)



Daily Precipitation Jan 1- May 10, 2022
Alpine, CA RAWS

Date	Year	Day of Year	Precipitation (inches)
1/1/2022	2022	1	0
1/2/2022	2022	2	0
1/3/2022	2022	3	0
1/4/2022	2022	4	0
1/5/2022	2022	5	0
1/6/2022	2022	6	0
1/7/2022	2022	7	0
1/8/2022	2022	8	0
1/9/2022	2022	9	0
1/10/2022	2022	10	0
1/11/2022	2022	11	0
1/12/2022	2022	12	0
1/13/2022	2022	13	0
1/14/2022	2022	14	0
1/15/2022	2022	15	0
1/16/2022	2022	16	0
1/17/2022	2022	17	0.16
1/18/2022	2022	18	0.48
1/19/2022	2022	19	0
1/20/2022	2022	20	0
1/21/2022	2022	21	0
1/22/2022	2022	22	0
1/23/2022	2022	23	0
1/24/2022	2022	24	0
1/25/2022	2022	25	0
1/26/2022	2022	26	0
1/27/2022	2022	27	0
1/28/2022	2022	28	0

Date	Year	Day of Year	Precipitation (inches)
1/29/2022	2022	29	0
1/30/2022	2022	30	0
1/31/2022	2022	31	0
2/1/2022	2022	32	0
2/2/2022	2022	33	0
2/3/2022	2022	34	0
2/4/2022	2022	35	0
2/5/2022	2022	36	0
2/6/2022	2022	37	0
2/7/2022	2022	38	0
2/8/2022	2022	39	0
2/9/2022	2022	40	0
2/10/2022	2022	41	0
2/11/2022	2022	42	0
2/12/2022	2022	43	0
2/13/2022	2022	44	0
2/14/2022	2022	45	0
2/15/2022	2022	46	0.39
2/16/2022	2022	47	0.11
2/17/2022	2022	48	0
2/18/2022	2022	49	0
2/19/2022	2022	50	0
2/20/2022	2022	51	0
2/21/2022	2022	52	0.04
2/22/2022	2022	53	0.65
2/23/2022	2022	54	0.51
2/24/2022	2022	55	0
2/25/2022	2022	56	0
2/26/2022	2022	57	0
2/27/2022	2022	58	0
2/28/2022	2022	59	0
3/1/2022	2022	60	0
3/2/2022	2022	61	0
3/3/2022	2022	62	0
3/4/2022	2022	63	0.51
3/5/2022	2022	64	0.34
3/6/2022	2022	65	0
3/7/2022	2022	66	0
3/8/2022	2022	67	0
3/9/2022	2022	68	0
3/10/2022	2022	69	0
3/11/2022	2022	70	0
3/12/2022	2022	71	0

Date	Year	Day of Year	Precipitation (inches)
3/13/2022	2022	72	0
3/14/2022	2022	73	0
3/15/2022	2022	74	0
3/16/2022	2022	75	0
3/17/2022	2022	76	0
3/18/2022	2022	77	0
3/19/2022	2022	78	0.03
3/20/2022	2022	79	0.23
3/21/2022	2022	80	0
3/22/2022	2022	81	0
3/23/2022	2022	82	0
3/24/2022	2022	83	0
3/25/2022	2022	84	0
3/26/2022	2022	85	0
3/27/2022	2022	86	0
3/28/2022	2022	87	1.12
3/29/2022	2022	88	0.07
3/30/2022	2022	89	0
3/31/2022	2022	90	0
4/1/2022	2022	91	0
4/2/2022	2022	92	0.01
4/3/2022	2022	93	0.06
4/4/2022	2022	94	0.01
4/5/2022	2022	95	0
4/6/2022	2022	96	0
4/7/2022	2022	97	0
4/8/2022	2022	98	0
4/9/2022	2022	99	0
4/10/2022	2022	100	0
4/11/2022	2022	101	0.06
4/12/2022	2022	102	0.02
4/13/2022	2022	103	0
4/14/2022	2022	104	0
4/15/2022	2022	105	0
4/16/2022	2022	106	0
4/17/2022	2022	107	0
4/18/2022	2022	108	0
4/19/2022	2022	109	0
4/20/2022	2022	110	0
4/21/2022	2022	111	0
4/22/2022	2022	112	0.51
4/23/2022	2022	113	0
4/24/2022	2022	114	0

Date	Year	Day of Year	Precipitation (inches)
4/25/2022	2022	115	0
4/26/2022	2022	116	0
4/27/2022	2022	117	0
4/28/2022	2022	118	0
4/29/2022	2022	119	0
4/30/2022	2022	120	0
5/1/2022	2022	121	0
5/2/2022	2022	122	0
5/3/2022	2022	123	0
5/4/2022	2022	124	0
5/5/2022	2022	125	0
5/6/2022	2022	126	0
5/7/2022	2022	127	0
5/8/2022	2022	128	0
5/9/2022	2022	129	0
5/10/2022	2022	130	0
Total	5.31		

Appendix F

Coastal California Gnatcatcher Report

August 20, 2019

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

Subject: **Coastal California Gnatcatcher 45-Day Summary Report for the Alpine Park Project in Alpine, San Diego County, California. Permit #TE-063608-6**

Dear Ms. Love:

This report documents the results of the U.S. Fish and Wildlife Service (USFWS) protocol presence/absence surveys for coastal California gnatcatcher (*Polioptila californica californica*; CAGN) conducted by ICF in 2019 for the Alpine Park Project (Project) in the unincorporated community of Alpine, San Diego County, California.

Project Location and Description

The approximately 98-acre project site is located adjacent to Wright's Field and South Grade Road, south of the community center of Alpine (Figures 1 and 2). The proposed project includes APN 404-171-12 and a portion of APN 404-170-61. The proposed Project exists within the Alpine U.S. Geological Survey (USGS) 7.5 Minute Quadrangle, and ranges in elevation from approximately 1900 feet at the southwestern edge of the site to approximately 2100 feet above mean sea level at the extreme northeastern corner. There are approximately 34.2 acres of suitable CAGN habitat onsite.

Habitat Description

Suitable habitat for CAGN generally occurs in the northern portion of the site, with some smaller areas of suitable habitat in the southwestern corner. The suitable habitat within the study area consists primarily of dense Diegan coastal sage scrub (CSS) and areas of coastal sage-chaparral transition (Figure 3). The CSS onsite is dominated by California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), and white sage (*Salvia apiana*), with occasional and sugar bush (*Rhus ovata*), spiny redberry (*Rhamnus crocea*) and poison oak (*Toxicodendron diversilobum*). The coastal sage-chaparral transition habitat is dominated by chamise (*Adenostema fasciculatum*), broom baccharis (*Baccharis sarothroides*) California buckwheat, California sagebrush and white sage. The understory throughout these habitat types is dominated by tocalote (*Centaurea melitensis*), short-pod mustard (*Hirschfeldia incana*), bromes (*Bromus* spp.), and navarretia (*Navarretia hamata* ssp*. hamata, N. h.* ssp*. leptantha*).

Methods

The Project study area exists within the County of San Diego's approved Multiple Species Conservation Plan - South County Subarea Plan (MSCP); thus, in accordance with USFWS (USFWS 1997) survey protocol, three surveys were conducted for the project. The presence/absence focused survey for CAGN was conducted for the project between July 10 and 24, 2019 under the authorization of permit holder Brian Lohstroh (TE-063608-6). Recorded CAGN vocalizations were broadcast only to initially locate CAGN, and the surveys were conducted on foot with the aid of binoculars. The survey was conducted according to the schedule provided below in Table 1.

Table 1. Survey Dates and Conditions

Date	7/10/2019	7/17/2019	7/24/2019
Time on site	0700-1000	0645-1000	0700-1030
Temp (ºF)	64-72	63-77	77-85
Sky Cover (%)	0	0	20-10
Wind Speed (MPH)	0-3	1-4	0-1
Personnel	B. Lohstroh	B. Lohstroh	B. Lohstroh

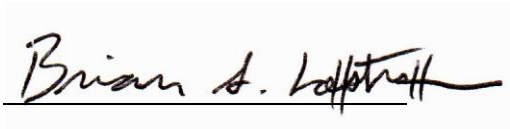
Results

No CAGN were detected during the protocol surveys at the project site, and no CAGN were incidentally detected during various other biological surveys of the site (butterfly surveys, rare plant surveys). A list of avian species detected and representative site photos are attached. This site is close to the edge of the known range of CAGN, and although suitable habitat is present onsite, the elevation and related weather extremes that can occur in the area may preclude occupation by CAGN.

Certification

I certify that the information in this survey report fully and accurately represents my work. Please do not hesitate to contact me at (858) 750-9300 or brian@lohstrohbio.com with any questions.

Sincerely,



Brian Lohstroh
Senior Biologist
TE-063608-6

References Cited

USFWS. 1997. Coastal California Gnatcatcher (*Polioptila californica californica*) Presence/Absence Survey Protocol. July 28, 1997.

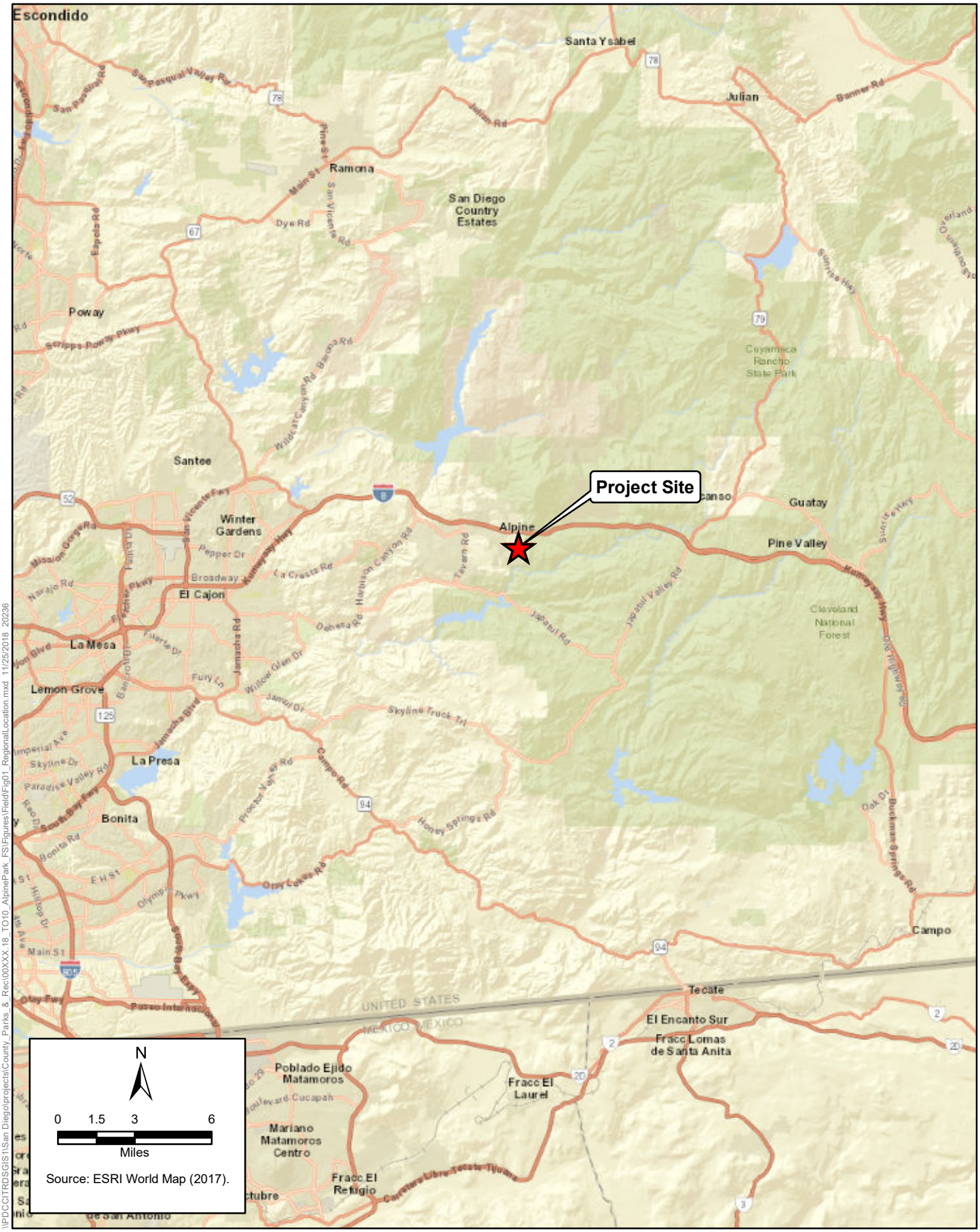


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Figure 1
Regional Location
Alpine Park Surveys

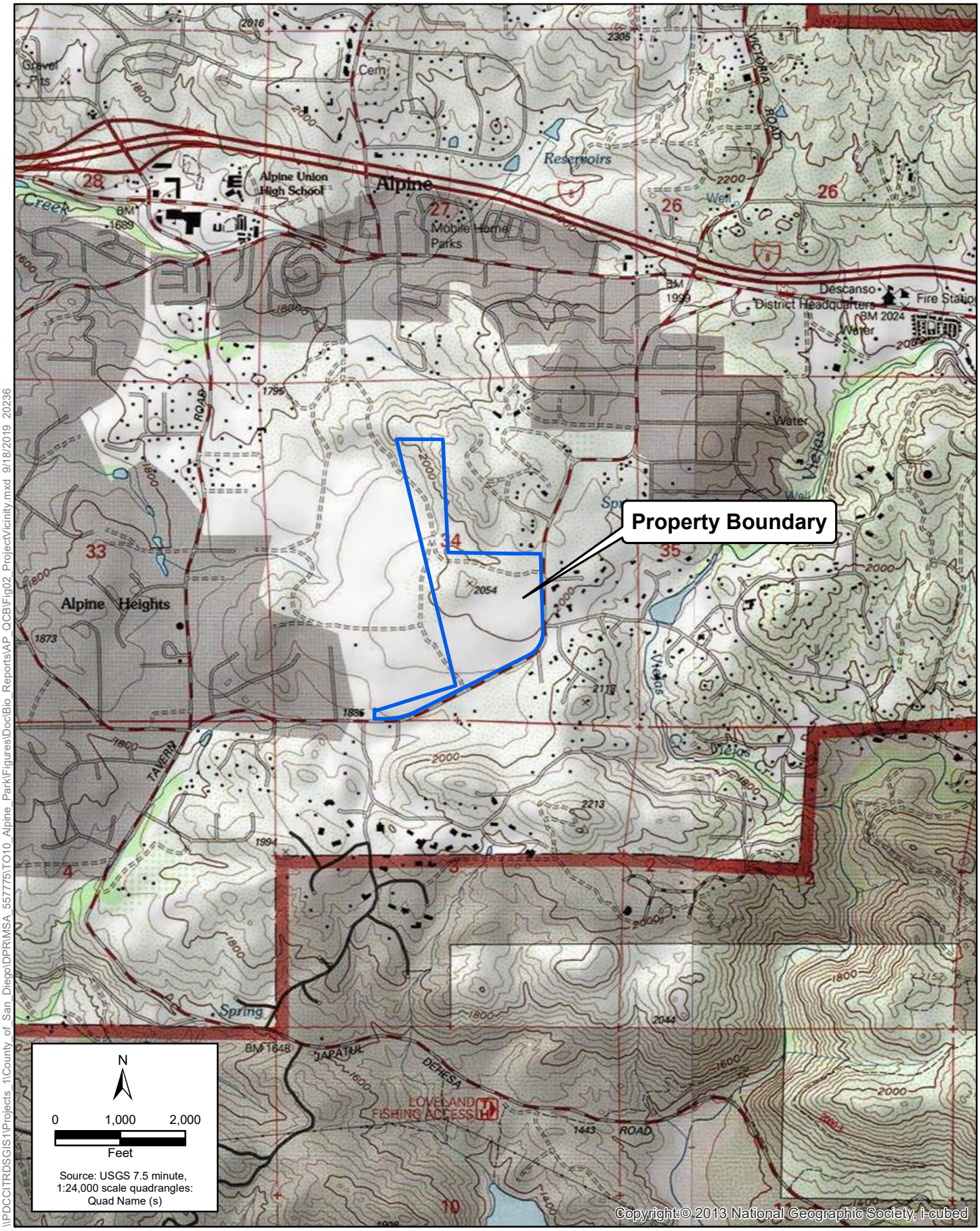

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Figure 2
Project Vicinity
Alpine Park Project

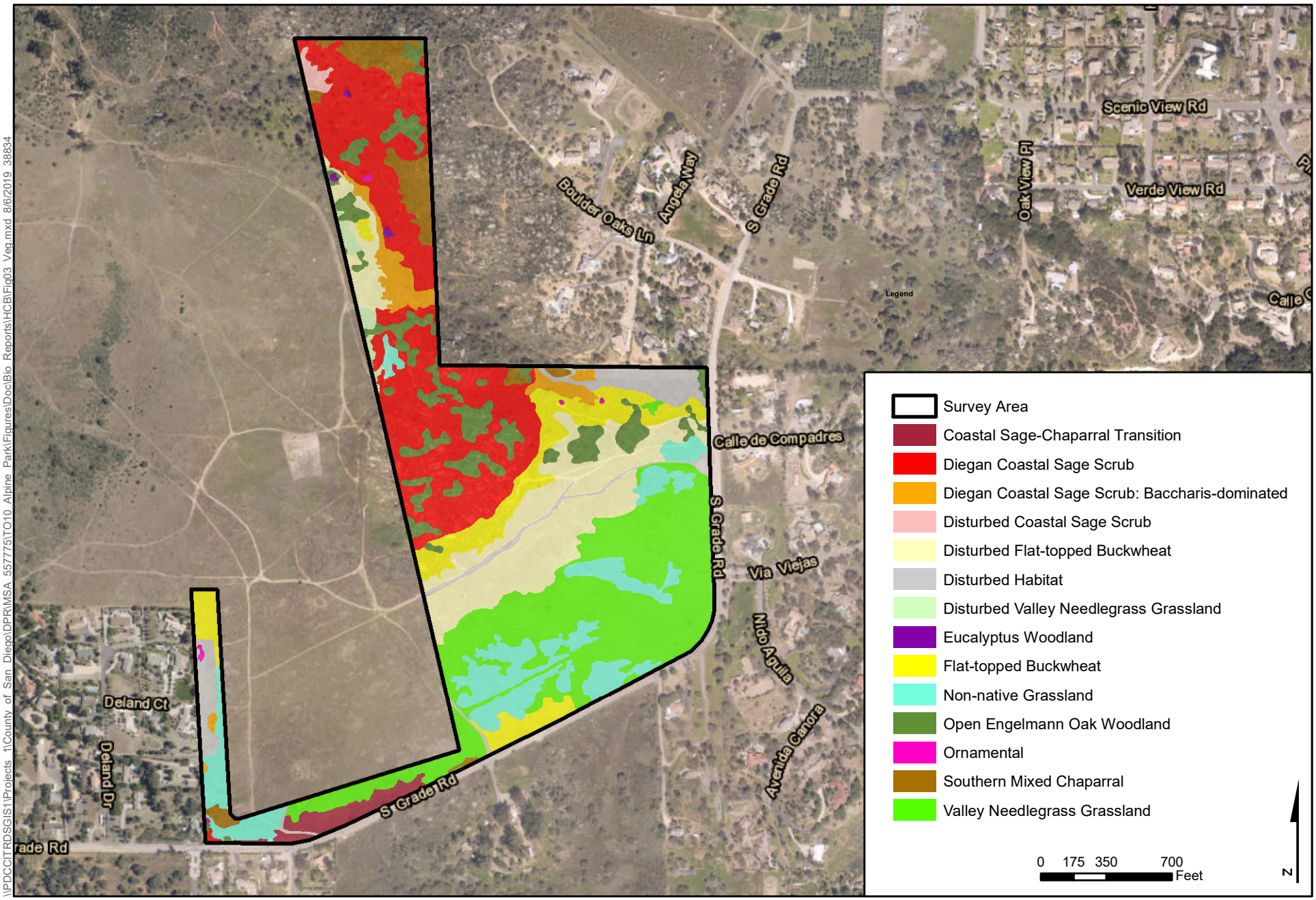

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Figure 3
Vegetation Communities
Alpine Park

Site Photographs



Photo 1. View facing east from the hill in the north-central portion of the survey area. The CSS habitat visible in the foreground is dominated by California sagebrush.



Photo 2. View facing south from the hill in the north-central portion of the site. The CSS habitat visible in the foreground is dominated by California sagebrush and California buckwheat.

Site Photographs



Photo 3. View facing south from the extreme northern boundary of the site. The CSS habitat visible at center is dominated by California sagebrush, with Engelmann oaks and Eucalyptus also visible.



Photo 4. View facing east from near the southwestern corner of the site. The habitat visible is coastal sage-chaparral transition, with near equal coverage of chamise and California sagebrush.

Avian Species List

Common Name	***Scientific Name***	**Status**
California Quail	*Callipepla californica*	
Eurasian Collared-Dove	*Streptopelia decaocto*	Introduced
Mourning Dove	*Zenaida macroura*	
Anna's Hummingbird	*Calypte anna*	
Costa's Hummingbird	*Calypte costae*	
Cooper's Hawk	*Accipiter cooperii*	CA-WL
Red-tailed Hawk	*Buteo jamaicensis*	
Nuttall's Woodpecker	*Picoides nuttallii*	
Ash-throated Flycatcher	*Myiarchus cinerascens*	
Cassin's Kingbird	*Tyrannus vociferans*	
California Scrub-Jay	*Aphelocoma californica*	
American Crow	*Corvus brachyrhynchos*	
Common Raven	*Corvus corax*	
Cliff Swallow	*Petrochelidon pyrrhonota*	
Bushtit	*Psaltriparus minimus*	
White-breasted Nuthatch	*Sitta carolinensis*	
Bewick's Wren	*Thryomanes bewickii*	
Blue-gray Gnatcatcher	*Polioptila caerulea*	
Wrentit	*Chamaea fasciata*	
Western Bluebird	*Sialia mexicana*	
California Thrasher	*Toxostoma redivivum*	
Northern Mockingbird	*Mimus polyglottos*	
European Starling	*Sturnus vulgaris*	Introduced
Phainopepla	*Phainopepla nitens*	
House Sparrow	*Passer domesticus*	Introduced
House Finch	*Haemorhous mexicanus*	
Lesser Goldfinch	*Spinus psaltria*	
Lawrence's Goldfinch	*Spinus lawrencei*	
Spotted Towhee	*Pipilo maculatus*	
California Towhee	*Melozone crissalis*	
Western Meadowlark	*Sturnella neglecta*	
Hooded Oriole	*Icterus cucullatus*	
CA-WL: California Watch List Species		

Appendix G

Bat Survey Reports from 2019

Alpine Park Bat Surveys, 2019

Prepared by the San Diego Natural History Museum

Drew Stokes, San Diego Natural History Museum biologist, conducted active and passive bat surveys within a 92.6-acre parcel (survey area) owned by the County of San Diego. This report documents the methods and findings of the survey.

Methods

Passive and active bat surveys were conducted using Titley Electronics Anabat bat detectors, the unaided ear, and visual techniques including use of a handheld spotlight:

Passive Anabats

Four 'Passive Express' Anabat bat detectors were deployed at suitable and representative habitat locations within the survey area (Table 1). The detectors were placed to maximize detections of the entire community of bat species expected in the area. The detectors were run in the summer (July 8-10, 2019) and again in the fall (September 3-5, 2019) in an attempt to document both resident and migratory bats in the survey area. The detectors ran for three consecutive nights during each of the two sampling periods. The detectors automatically turned on 30 minutes before sunset and turned off 30 minutes after sunrise. During each nightly monitoring period, bat calls were automatically recorded to an SD Card. The calls were then downloaded and analyzed in the laboratory after the field surveys. The calls were identified to the species level in as many cases as possible, by making comparisons to known bat calls. All bat call identification was carried out manually by Drew Stokes, who has over 23 years of bat call identification and vetting experience in the southern California and Baja region.

Active Anabats

Active Anabat surveys were carried out using a Titley Electronics Anabat 'walkabout' bat detector allowing for real time bat call observation and identification. The bat calls were also recorded and manually identified in the laboratory after the field surveys were conducted. One active survey was conducted on August 5, 2019 by starting at a point in the northern portion of the survey area and an elliptical-shaped transect was hiked counterclockwise covering the northern half of the survey area and ending at the start point after a 2-hour monitoring period (Table 1). The unaided ears were also used to listen for audible bat echolocation calls such as those produced by the western mastiff bat (*Eumops perotis*). The second active survey was conducted on August 6, 2019 by starting at a point in the southern portion of the survey area. An elliptical shaped transect was hiked counterclockwise covering the southern rocky/scrubby portion of the survey area and ended at the start point after a 2-hour monitoring period. When possible, visual observations of bats and other nocturnal wildlife were made using a handheld spotlight.

Results

Passive surveys

Fifteen bat species of the 22 known from San Diego County were detected using the passive Anabats (Table 2). The bats detected included seven California species of special concern: the pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhnus townsendii*), western red bat (*Lasiurus blossevillii*), western yellow bat (*Lasiurus xanthinus*), western mastiff bat, pocketed free-tailed bat (*Nyctinomops femorosaccus*), and big free-tailed bat (*Nyctinomops macrotis*). Three migratory bats were detected during the fall (September) monitoring period: the hoary bat (*Lasiurus cinereus*), and the western yellow bat and big free-tailed bat mentioned above.

During the summer monitoring period, bat activity was reduced (232 calls identified representing 11 species), possibly due to high heat conditions. There were also numerous insects calling at night that may have interfered with recorded bat activity levels. The Yuma myotis was the most active species accounting for over 32% of recorded bat calls. The big brown bat (*Eptesicus fuscus*) was fairly active and accounted for over 15% of calls. During the fall period, recorded bat activity was much higher with 702 calls recorded and identified representing 13 species. The Mexican free-tailed bat (*Tadarida brasiliensis*) was the most active species during this period, accounting for over 43% of recorded and identified calls. The pocketed free-tailed bat was also active during this period, accounting for over 23% of calls. Both are found year-round in San Diego County but have migratory tendencies (Stokes 2017).

Active surveys

The active surveys resulted in detections of nine of the 15 bat species found on the property. During the active surveys, visual attention was focused on rocky outcrops that might serve as roost sites around the survey area, but no bats were observed exiting any outcrops such that a roost was obvious. There were a number of canyon bats (*Parastrellus hesperus*) observed flying around early in the evenings of the active surveys, a species known to roost mostly solitarily in crevices and fractures of rocky outcrops (Krutzsch 1948, Stokes 2017).

Most notable during the active surveys: on the first active survey night (Aug 5), a number of western mastiff bats were heard coming to the survey area from the south. These bats spent a considerable amount of time foraging over the oaks and grassland interface located near the north west edge of the preserve. The western mastiff bat produces an audible echolocation call that is easily heard by experienced biologists. These audible bats were also heard actively producing 'feeding buzzes' as they intently foraged just above the canopy level in this northwest section immediately adjacent to Wright's Field. Because western mastiff bats typically fly high and beyond the range of bat detectors, they are often grossly underrepresented by passive bat detector surveys as evidenced by the few calls recorded with passive anabats compared to the active anabat and audible survey techniques. Only six passively recorded calls were made during the six full nights compared to 11 calls that were recorded plus numerous audible calls heard during the two 2-hour active survey periods.

Discussion and management recommendations

The survey area appears to support a high diversity of bats with near 70% of San Diego County's bat species found there. Most notable were detections of local and state species of concern: the pallid bat and Townsend's big-eared bat. Both were recorded in low frequency (5 and 1 calls respectively)

suggesting they are not necessarily very active on the preserve. In fact, all the pallid bat calls were recorded late in the night (after midnight), only during September, and mostly in the northern portion of the preserve. There is a known pallid bat population in the area with historical detections from the nearby Palo Verde area of Alpine, and more recent detections near Viejas Casino (Stokes 2017). Western mastiff bats were also notably active on the preserve, particularly in the northern portion of the preserve based on these surveys. The considerable amount of time multiple bats spent feeding over the oak woodland and grassland interface in the north part of the preserve indicates strong usage patterns.

The oak woodland and grassland habitats found on the Alpine Park preserve are likely serving as high quality foraging (and perhaps roosting) habitats for a high diversity of bats including several California species of special concern. Particularly valuable might be the Engelmann oaks and grasslands located near the northwest part of the preserve based on the bats documented actively foraging there. It is strongly recommended that impacts and disturbance to the oak woodland and grassland habitats on the Alpine Preserve, especially at the northwest end, are kept to a minimum and that these habitats should be maintained and protected. There are also numerous rocky outcrops on the preserve that could serve as roosting habitat and refugia from wildfires and should be protected. The only thing lacking on the preserve are any obvious open water sources from which bats could drink. There are a few open water sources nearby on private land. However, since habitats found on private land are not predictably maintained and conserved, and they potentially attract bats and other wildlife away from preserves to private lands resulting in human-wildlife conflicts, it is recommended that an open water source be created on the preserve that could serve as a reliable drinking source for bats and other wildlife.

References

Krutzsch, P. H. 1948. Ecological study of the bats of San Diego County, California. MA Thesis, Univ. Calif., Berkeley, Calif. 184 pp.

Stokes, D. 2017. Canyon bat, *Parastrellus hesperus*. In Tremor, S., D. Stokes, W. Spencer, J. Diffendorfer, H. Thomas, S. Chivers, and P. Unitt, editors. San Diego County Mammal Atlas. Proceedings of the San Diego Society of Natural History 46.

Stokes, D. 2017. Mexican free-tailed bat, *Tadarida brasliensis*. In Tremor, S., D. Stokes, W. Spencer, J. Diffendorfer, H. Thomas, S. Chivers, and P. Unitt, editors. San Diego County Mammal Atlas. Proceedings of the San Diego Society of Natural History 46.

Stokes, D. 2017. Pallid bat, *Antrozous pallidus*. In Tremor, S., D. Stokes, W. Spencer, J. Diffendorfer, H. Thomas, S. Chivers, and P. Unitt, editors. San Diego County Mammal Atlas. Proceedings of the San Diego Society of Natural History 46.

Stokes, D. 2017. Pocketed free-tailed bat, *Nyctinomops femorosaccus*. In Tremor, S., D. Stokes, W. Spencer, J. Diffendorfer, H. Thomas, S. Chivers, and P. Unitt, editors. San Diego County Mammal Atlas. Proceedings of the San Diego Society of Natural History 46.

Notable incidental wildlife

Barn owl (*Tyto alba*)

Common poorwill (*Phalaenoptilus nuttallii*)

Southern pacific rattlesnake (*Crotalus oreganus*)

Granite spiny lizard (*Sceloperus orcuttii*)

Western whiptail (*Aspidoscelus tigris*)

Coyote (*Canis latrans*)

Table 1. Anabat locations and survey dates.

Anabat station	Latitude (wgs84)	Longitude (wgs84)	Survey dates (2019)
SDNHM1_East Oaks	32.82208	-116.75903	July 8-10 & Sep 3-5, 2019
SDNHM2_North Oaks	32.82735	-116.76481	July 8-10 & Sep 3-5, 2019
SDNHM4_West Oaks	32.8174	-116.76242	July 8-10 & Sep 3-5, 2019
SDNHM6_South Oaks	32.82091	-116.76308	July 8-10 & Sep 3-5, 2019
	Eliptical transect start/end		
Active Anabat_North	32.82508	-116.76374	August 5, 2019
Active Anabat_South	32.82138	-116.76223	August 6, 2019

Table 2. Passive and active anabat survey results from Alpine Park, 2019.

		Passive surveys				*Active surveys*
		July 8-10, 2019		September 3-5, 2019		August 5-6, 2019
Common name	Species	No. of passes	Relative activity (%)	No. of passes	Relative activity (%)	No. of passes**
Big brown bat	*Eptesicus fuscus*	36	15.5	32	4.6	1
Big free-tailed bat*	*Nyctinomops macrotis**	--	--	1	0.1	--
California myotis	*Myotis californicus*	29	12.5	4	0.6	1
Canyon bat	*Parastrellus hesperus*	17	7.3	88	12.5	12
Hoary bat	*Lasiurus cinereus*	--	--	2	0.3	--
Mexican free-tailed bat	*Tadarida brasiliensis*	32	13.8	307	43.7	--
Pallid bat*	*Antrozous pallidus**	--	--	5	0.7	--
Pocketed free-tailed bat*	*Nyctinomops femorosaccus**	18	7.8	163	23.2	11
Townsend's big-eared bat*	*Corynorhinus townsendii**	1	0.4	--	--	--
Western long-eared myotis	*Myotis evotis*	5	2.2	4	0.6	--
Western mastiff bat*	*Eumops perotis**	1	0.4	5	0.7	11
Western red bat*	*Lasiurus blossevillii**	14	6.0	--	--	1
Western small-footed myotis	*Myotis ciliolabrum*	3	1.3	9	1.3	1
Western yellow bat*	*Lasiurus xanthinus**	--	--	6	0.9	1
Yuma myotis	*Myotis yumanensis*	76	32.8	76	10.8	2
	Total =	*232*	*Total =*	*702*		

** Bat species designated as California species of special concern*

*** Number of passes during 2-hour active survey periods during nights of August 5 & 6, 2019*

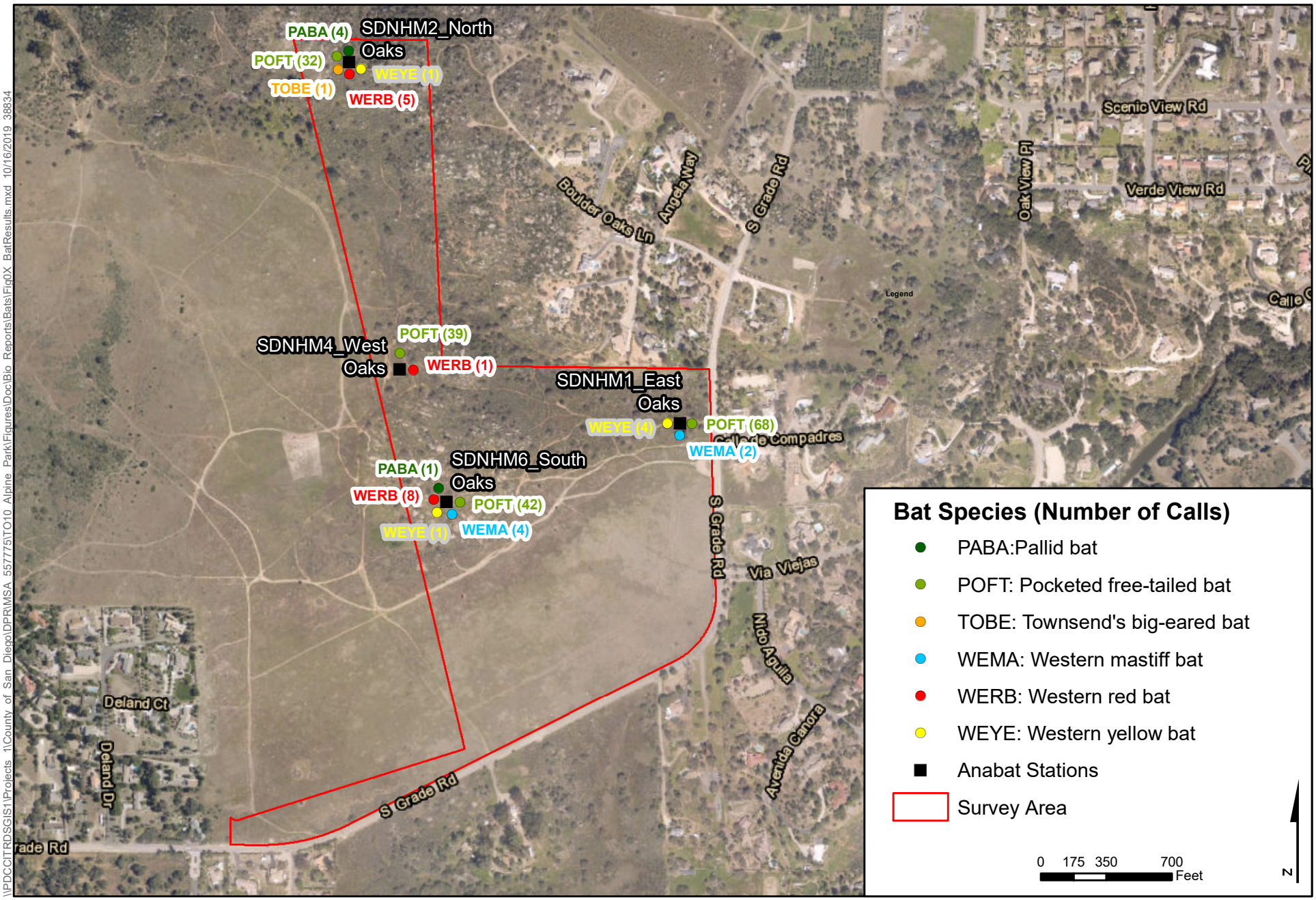

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Figure 1
Biological Resources Technical Report
Alpine Park Project

Appendix H

Bat Survey Report 2022

July 22, 2022

Resource Management Division
County of San Diego, Parks and Recreation

Subject: Alpine Park Project Bat Survey Report

This report documents the results of acoustic bat surveys within grasslands of the Alpine Park Project. These surveys were performed to identify the extent to which bats may currently be utilizing grasslands within, and outside of, the proposed project limits. Specifically, the purpose of the surveys was to identify whether the grasslands are currently being used for foraging by pallid bats (*Antrozous pallidus*), western red bat (*Lasiurius frantzii*), and other bats, in the proposed project footprint and preserve.

Location

The Alpine Park Project site (project site) is located southeast of the community of Alpine, in San Diego County, California (Appendix A, Figure 1). The project site is adjacent to, and east of Wright's Field along South Grade Road (Appendix A, Figure 2). For this study, the study area consists of grassland portions located in the proposed footprint and southern part of the proposed preserve (Appendix A, Figure 3).

Existing Conditions

The study area consists of relatively flat land among a more general backdrop of rolling hills and is made up of valley needlegrass and non-native grassland vegetative cover. Areas immediately adjacent to the study area include open space to the north and west, and generally low-density residential development elsewhere. The open space to the north includes part of the project site and consists of scrub habitats with relatively small patches of oak woodlands and grasslands intermixed. To the west is Wright's Field, a nature reserve consisting of grasslands immediately west of the study area, and scrub and grasslands elsewhere. Residential areas in the general area include patches of oak woodlands, scrub habitats, grasslands, and disturbances associated with low to medium density development. Pedestrian trails are found in portions of the open space north and west of the study area. Grasslands conditions during the study period consisted mostly of a dense cover of native and non-native grasses and forbs with few open areas.

Background

Previous Surveys and Recommendations

Acoustic surveys were conducted in 2019 as part of an environmental impact report for the proposed project, with a particular focus on roosting areas near Engelmann oak trees located on the project site. At that time, multiple bat species were recorded, including pallid bats, which forage in open areas and grasslands. Surveys were not conducted within grasslands during the 2019 surveys. The acoustic analysis in July 2019 assumed that all of the grassland areas would be utilized for foraging and did not evaluate the level of use or whether there were differences in use between areas that would be developed, and areas that would be preserved as mitigation for impacts to foraging bat habitat.

Dr. Patricia Brown reviewed the previous report and made recommendations to conduct additional acoustic surveys in the grassland areas in order to identify the relative importance of these areas for bats. Specifically, Dr. Brown recommended that four detectors be setup for 4-5 nights in the grassland areas. Two detectors were to be setup in the area proposed for development, and two setup in the area proposed for preservation. This would allow for an evaluation on how the proposed preservation area functions for bat foraging compared to the area that is proposed for development.

Methods

Acoustic Data Collection

Acoustic surveys were conducted by ICF biologists in grassland communities in the Alpine Park project site proposed for development, as well as adjacent grassland habitat proposed for preservation. Acoustic data was collected using Pettersson D500X ultrasound recording units. Four units were set up in four locations spread out in the identified grassland communities (Figure 4). A map was used to select four locations spaced to sample the grasslands relatively evenly while keeping the equipment away from pedestrian trails to minimize the risk that members of the public would interfere with the surveys. Detectors labeled as Alpine 1 and Alpine 2 were placed in the area proposed for development, while Alpine 3 and Alpine 4 were placed in the area proposed for preservation.

The detectors were set up to record bat calls beginning the evening of 6/23/2022 and ending the morning of 6/29/2022. Four to five nights of surveys were recommended; however, the detector set up at Alpine 2 malfunctioned and no data was collected on nights two and three. As such, a sixth night was added to the survey to ensure at least four nights of data were collected at all four locations. All other locations resulted in five nights (Alpine 1) or six nights (Alpine 3 and Alpine 4) of data.

The surveys were conducted during generally favorable weather conditions (i.e., calm winds with temperatures conducive to bat activity [52°F and above] and no precipitation). The detectors were set to record ultrasound calls from 30 minutes before sunset until 30 minutes after sunrise each

night. The detectors were placed just before the survey time each evening and picked up each morning to collect data and prevent theft or vandalism. Each microphone was attached to a PVC pipe so that the microphone would be set approximately 6' above the ground. No visual surveys were conducted as part of this survey effort.

Acoustic Analysis

Recordings of bat echolocation calls were downloaded from each monitor and processed using Sonobat version 4.2.2. Each recording was initially processed through the Sonobat program using the vetting function, which identified calls recorded to species when possible. There are generally three types of echolocation sequences: search phase, approach phase, and terminal phase. Search phase calls are used when searching for prey (i.e., insects), which are longer, lower frequency calls. Approach phase and terminal phase calls are used when approaching and closing in on prey, respectively, and become much more frequent and higher frequency. As a bat gets closer to an insect, the calls become shortened to detect the quick movements of the insect (Feldhamer et. al. 2007). Due to the variation in approach and terminal phase calls, echolocation calls are identified to species best by the search phase recordings. These types of calls generally have a consistent structure throughout the call sequence and usually have species-specific characteristics (Fenton and Bell 1981; O'Farrell et al. 1999 as cited by Murray et al.).

Each of the calls Sonobat identified to species were then manually assessed to determine if the identification to species was accurate. Although search phase calls are typically consistent in structure, species within the same frequency range can be similar in the different echolocation phases and can be misidentified within the program automation identification.

The number of echolocation calls recorded cannot be used to correlate the number of bats of a particular species in the area or detected in the recordings. Each time a call is emitted within range of detector, a recording is created. Therefore, it is possible for a single bat to be recorded multiple times if it is foraging for an extended period within range of the detector.

Results and Discussion

Acoustic Analysis

A total of five bat species were confidently identified acoustically during the surveys: big brown bat (*Eptesicus fuscus*), canyon bat (*Parastrellus hesperus*), California myotis (*Myotis californicus*), Yuma myotis (*Myotis yumanensis*), a Western Bat Working Group (WBWG) Low-Medium Priority species, and a County of San Diego Group II wildlife species, and Mexican free-tailed bat (*Tadarida brasiliensis*) (Table 1). Not all calls are recorded equally. The quality of a recorded call can be affected by various factors, including background noise, the microphone height and directionality, the bat's flight angle to the microphone, the bat's distance from the microphone, and site conditions (i.e., trees and rocks). As such, some poor-quality calls cannot be identified to species. Myotis species detected within the study area emit echolocation calls that have similar call shape and are within the same frequency range as both *M. californicus* and *M. yumanensis*. Species-specific call characteristics can be difficult to determine with poor quality calls. At most locations, low frequency

calls were recorded; however, due to the poor quality of the recordings, species could not be identified. All species confirmed as recorded during the surveys, and their locations are depicted in Table 1. Tables 2 through 5 depict bats detected at each location by survey night.

Table 1. Species Recorded at Each Monitoring Location During the Surveys.

Species Recorded	Monitors			
	Alpine 1 (Proposed Footprint)	**Alpine 2 (Proposed Footprint)**	**Alpine 3 (Proposed Preserve)**	**Alpine 4 (Proposed Preserve)**
Big brown bat (*Eptesicus fuscus*)			X	
California myotis (*Myotis californicus*)	X	X	X	
Yuma myotis (*Myotis yumanensis*)	X	X	X	
Canyon bat (*Parastrellus hesperus*)	X	X	X	X
Mexican free-tailed bat (*Tadarida brasiliensis*)				X

Table 2. Species Recorded at Location Alpine 1 (Proposed Footprint).

Species Detected	Night 1 6/23/2022	Night 2 6/24/2022	Night 3 6/25/2022	Night 4 6/26/2022	Night 5 6/27/2022	Night 6 6/28/2022
High Frequency Call						
Low Frequency Call		X	X		X	X
Myotis sp.*					X	
California myotis (*Myotis californicus*)		X				
Yuma myotis (*Myotis yumanensis*)	X					
Canyon bat (*Parastrellus hesperus*)				X		
Mexican free-tailed bat (*Tadarida brasiliensis*)						

* Based on call frequency and call characteristics, Myotis sp. calls are either *Myotis yumanensis* or *M. californicus*. However, due to the poor quality of the recording, definitive identification to species could not be made

Table 3. Species Recorded at Location of Alpine 2 (Proposed Footprint).

Species Detected	Night 1 6/23/2022	Night 2 ** 6/24/2022	Night 3 ** 6/25/2022	Night 4 6/26/2022	Night 5 6/27/2022	Night 6 6/28/2022
High Frequency Call				X	X	
Low Frequency Call	X				X	X
Myotis sp.*				X		
California myotis (*Myotis californicus*)					X	
Yuma myotis (*Myotis yumanensis*)	X				X	X
Canyon bat (*Parastrellus hesperus*)					X	
Mexican free-tailed bat (*Tadarida brasiliensis*)						

* Based on call frequency and call characteristics, Myotis sp. calls are either *Myotis yumanensis* or *M. californicus*. However, due to the poor quality of the recording definitive identification to species could not be made
**No data available due to equipment malfunctions

Table 4. Species Recorded at Location of Alpine 3 (Proposed Preserve).

Species Detected	Night 1 6/23/2022	Night 2 6/24/2022	Night 3 6/25/2022	Night 4 6/26/2022	Night 5 6/27/2022	Night 6 6/28/2022
High Frequency Call						
Low Frequency Call	X		X	X		X
Myotis sp.*				X		
Big brown bat (*Eptesicus fuscus*)						X
California myotis (*Myotis californicus*)		X		X	X	
Yuma myotis (*Myotis yumanensis*)	X	X				
Canyon bat (*Parastrellus hesperus*)	X	X				
Mexican free-tailed bat (*Tadarida brasiliensis*)						

* Based on call frequency and call characteristics, Myotis sp. calls are either *Myotis yumanensis* or *M. californicus*. However, due to the poor quality of the recording definitive identification to species could not be made

Table 5. Species Recorded at Location of Alpine 4 (Proposed Preserve).

Species Detected	Night 1 6/23/2022	Night 2 6/24/2022	Night 3 6/25/2022	Night 4 6/26/2022	Night 5 6/27/2022	Night 6 6/28/2022
High Frequency Call	X	X	X			
Low Frequency Call	X		X	X	X	X
Myotis sp.*					X	
California myotis (*Myotis californicus*)						
Yuma myotis (*Myotis yumanensis*)				X		
Canyon bat (*Parastrellus hesperus*)	X	X	X		X	
Mexican free-tailed bat (*Tadarida brasiliensis*)			X			

* Based on call frequency and call characteristics, Myotis sp. calls are either *Myotis yumanensis* or *M. californicus*. However, due to the poor quality of the recording definitive identification to species could not be made

Several poor-quality calls were recorded but were not identifiable to species. Some calls were identified as only a "high frequency" call, as the quality was too poor to determine to a specific species. These calls fell within the frequency range of both California and Yuma myotis, with similar call characteristics to these species. These were identified as "Myotis". Good quality calls were recorded for both these species during surveys.

Similarly, species that were identified as a "low frequency" call were reviewed. These recordings consisted of two or less calls, and not a full sequence. These calls had both characteristics and fell within the frequency of big brown bat, Mexican free-tailed bat, and silver haired bat (*Lasionycteris noctivagans*). Since these calls were only fragments of a call sequence and/or the quality of the recording was poor, identification to a specific species could not be made.

Additionally, two calls within the frequency range and with characteristics similar to pallid bats were recorded. One of these was at Alpine 3 (proposed preserve) and one was Alpine 2 (proposed footprint). One of the two recordings had calls that appeared to have the "dog paw" ledge near the characteristic frequency which is indicative of pallid bat. In both recordings, the overall call shape and frequency also show similarities to those of big brown bat. Due to the poor quality of the recording, and lack of a full call sequence, a conclusive determination could not be made.

Discussion

ICF set up four ultrasonic detectors within the proposed Alpine Park project site and preserve to determine how the grasslands might be used by pallid bats and bats in general. The data collected provides the opportunity to identify whether bats are currently using the surveyed areas, and

importantly, whether pallid bat use is consistent in the portion of the site proposed for development and the portion proposed for preservation. In general, multiple common bat species, as well as one special-status bat, Yuma myotis, were detected within both the proposed footprint and the proposed preserve. Based on the confirmed bat calls detected, there is a possibility that one or two pallid bats were detected, although no pallid bats were conclusively identified to be using either the footprint or the preserve during the survey window.

Pallid bats were previously detected in 2019 in low frequency near Engelmann oak trees on the project site, at one location in the far north of the preserve (4 calls recorded) and at one location within oak trees just to the north of the study area (1 call recorded). These calls were recorded only during the September survey, with no detections during the July or August surveys. The calls were also only recorded after midnight. Although not detected during this survey, it is reasonable to assume that pallid bats do, or may in the future, use the surveyed grasslands for foraging. Pallid bats are also known to forage primarily using sight and hearing rather than echolocation, with echolocation used primarily as a navigational and obstacle avoidance system rather than for prey detection (Dr. Patricia Brown, pers comm), which could potentially explain the low frequency of detections during the September 2019 survey, no detections during the July and August 2019 surveys, and no confirmed detections during this survey. In addition, altering the positioning and directionality of the microphones, as well as extending surveys over longer time periods, may yield a higher frequency of detections of pallid bats.

The results of this study suggest that there was no substantial use of the study area by pallid bats and that bat detections were consistent between the area proposed for development and the area proposed for preservation. However, two potential but unconfirmed pallid bat calls were detected, one in the impact footprint and one in the preserve area. Pallid bat use of the study area cannot be ruled out and further studies would be needed to conclusively determine pallid bat use of the grasslands for foraging. Nonetheless, this study suggests that establishing a permanent preserve containing grassland foraging habitat would serve to offset the development of the project footprint.

Should you have any questions please contact me at (909) 499-8230 or James.Hickman@icf.com.

Sincerely,

James Hickman
Senior Biologist
ICF

Enclosed:

Appendix A: Figures
Appendix B: Site Photos

References

Brown, Patricia. 2022. *Assessment of the Bat Report and Mitigation for the Alpine County Park Project*.

Feldhamer, G.A., L.C. Drickamer, S.H. Vessey, J. . Merritt, C. Krajewski. 2007. *Mammalogy: Adaptation, Diversity, Ecology. 3rd Edition*. The Johns Hopkins University Press, Baltimore, Maryland.

Fenton M.B., G.P. Bell. 1981. *Recognition of Species of Insectivorous Bats by Their Echolocation Calls*. Journal of Mammalogy, Volume 62, Issue 2, 21 May 1981. Available: https://doi.org/10.2307/1380701.

Murray, K.L., E.R. Britzke, and L.W. Robbins. 2001. *Variation in Search-Phase Calls of Bats*. Journal of Mammalogy, Volume 82, Issue 3, August 2001. Available: https://doi.org/10.1644/1545-1542(2001)082<0728:VISPCO>2.0.CO;2.

O'Farrell M.J., B.W. Miller, and W.L. Gannon. 1999. *Qualitative Identification of Free-flying Bats Using the Anabat Detector*. Journal of Mammalogy, Volume 80, Issue 1, 16 February 1999. Available: https://doi.org/10.2307/1383203.

Appendix A
Figures

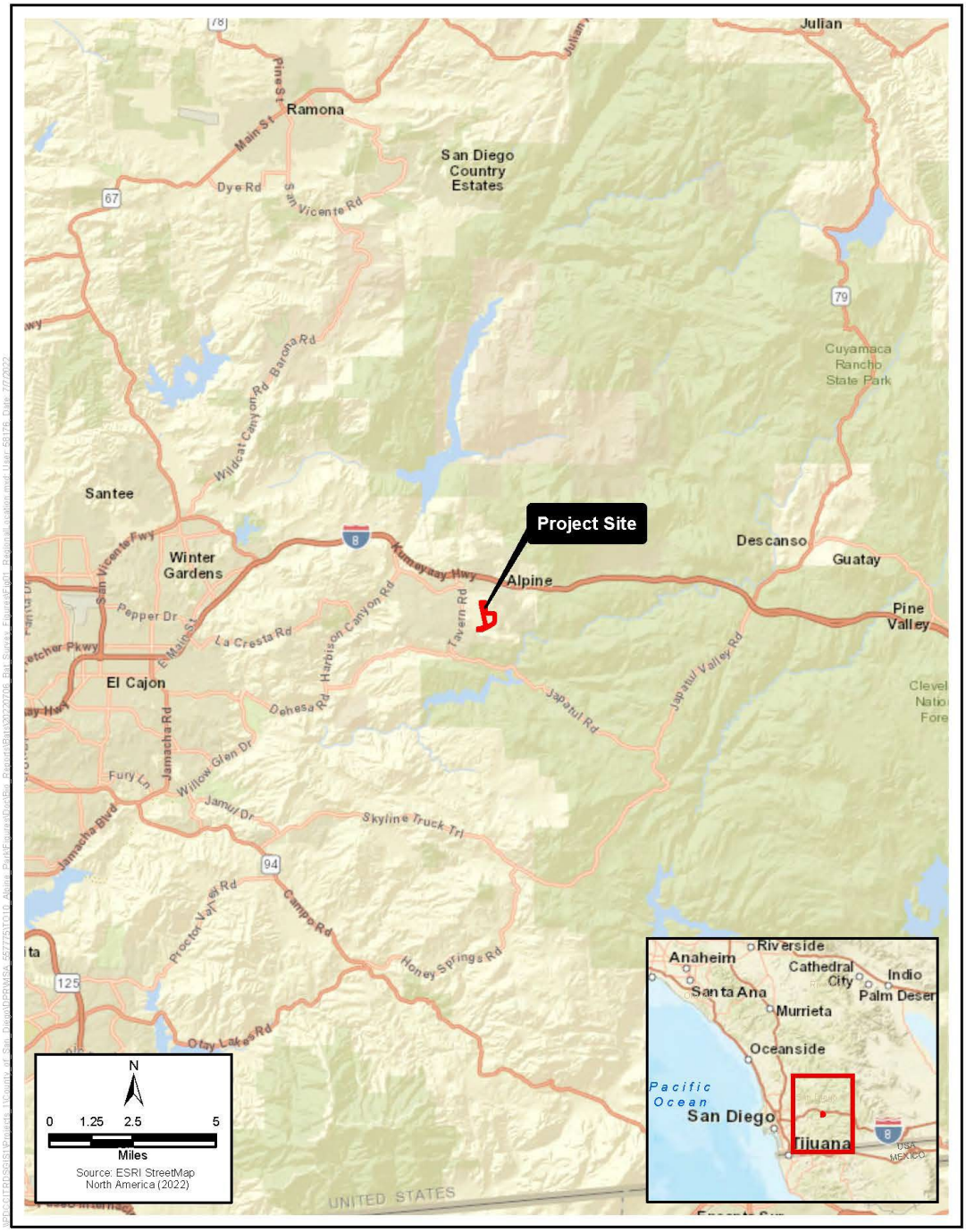

Figure 1
Regional Location
Alpine Park Project

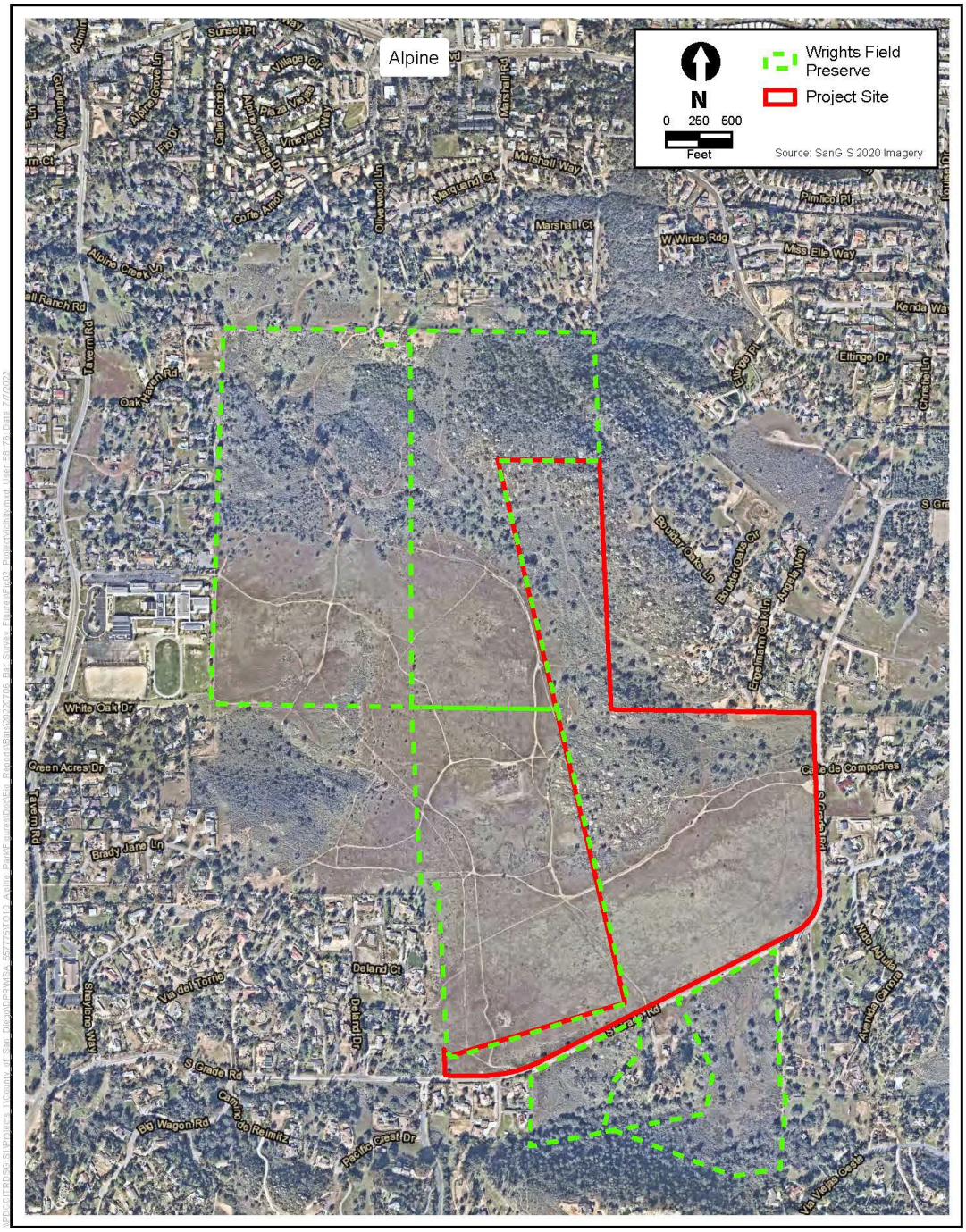

Figure 2
Project Vicinity
Alpine Park Project

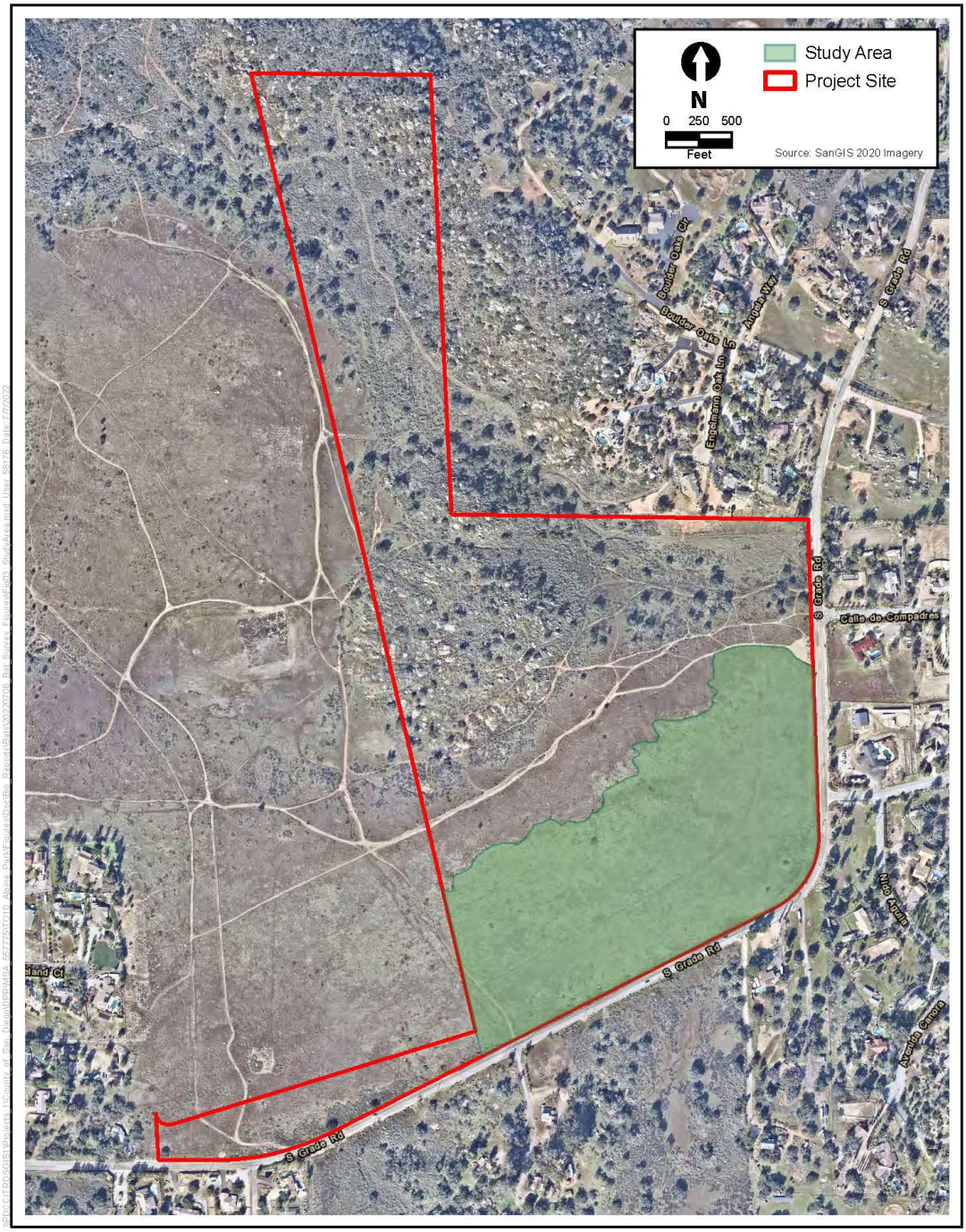

Figure 3
Study Area
Alpine Park Project

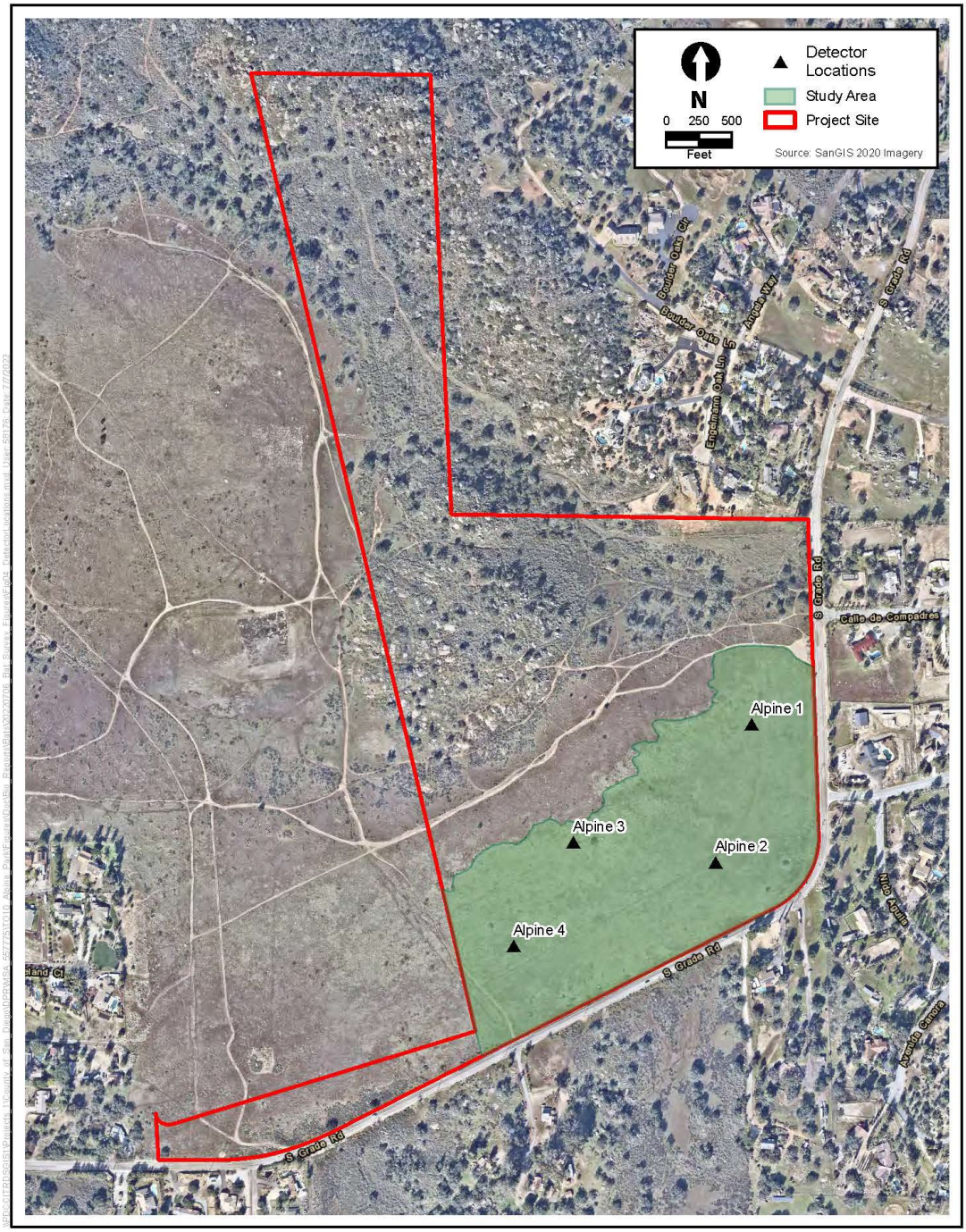

Figure 4
Detector Locations
Alpine Park Project

Appendix B
Site Photos



Photograph 1: Detector Alpine 1 positioned for recording data



Photograph 2: Detector Alpine 2 positioned for recording data



Photograph 3: Detector Alpine 3 positioned for recording data



Photograph 4: Detector Alpine 4 positioned for recording data

Appendix I

Observed Species List–Flora

Appendix H: Observed Species List - Flora

Scientific Name	Common Name	Special Status
EUDICOTS		
Adoxaceae - Muskroot family		
Sambucus nigra ssp. caerulea	Blue elderberry	
Anacardiaceae - Sumac Or Cashew family		
Rhus integrifolia	Lemonade berry	
Rhus ovata	Sugar bush	
Toxicodendron diversilobum	Western poison oak	
Apiaceae - Carrot family		
Apiastrum angustifolium	Mock parsley	
Daucus pusillus	Rattlesnake weed	
Lomatium dasycarpum ssp. dasycarpum	Woolly fruit lomatium	
Sanicula arguta	Sharptooth sanicle	
Sanicula bipinnata	Poison sanicle	
Asteraceae - Sunflower family		
Achillea millefolium	Common yarrow	
Acourtia microcephala	Sacapellote	
Amblyopappus pusillus	Dwarf coastweed	
Artemisia californica	California sagebrush	
Baccharis pilularis ssp. pilularis	Coyote brush	
Baccharis sarothroides	Broom baccharis	
Bahiopsis laciniata	San Diego County viguiera	CRPR 4.2
* *Carduus pycnocephalus ssp. pycnocephalus*	Italian thistle	
* *Centaurea melitensis*	Tocalote	
Chaenactis artemisiifolia	White pincushion	
Cirsium occidentale	Cobwebby thistle	
* *Cirsium vulgare*	Bull thistle	
Corethrogyne filaginifolia	Common sand aster	
Deinandra fasciculata	Fascicled tarplant	
* *Dimorphotheca sinuata*	Cape marigold	
Erigeron foliosus var. foliosus	Leafy daisy	
Eriophyllum confertiflorum	Yarrow	
Grindelia camporum	Field gumplant	
Gutierrezia californica	California matchweed	

Scientific Name	Common Name	Special Status
Hazardia squarrosa	Saw toothed goldenbush	
* *Hedypnois cretica*	Crete weed	
Helianthus annuus	Annual sunflower	
* *Hypochaeris glabra*	Smooth cat's-ear	
Isocoma menziesii var. decumbens	Decumbent goldenbush	CRPR 1B.2
Lasthenia californica ssp. californica	California goldfields	
Microseris douglasii ssp. platycarpha	Small-flowered microseris	CRPR 4.2
Osmadenia tenella	Osmadenia	
Pseudognaphalium californicum	California everlasting	
* *Senecio vulgaris*	Common ragwort	
* *Sonchus asper ssp. asper*	Prickly sow thistle	
* *Sonchus oleraceus*	Common sow thistle	
Stephanomeria exigua ssp. exigua	Small wire-lettuce	
Boraginaceae - Borage family		
Amsinckia menziesii	Menzies's fiddleneck	
Cryptantha intermedia	Clearwater cryptantha	
Emmenanthe penduliflora var. penduliflora	Whisperingbells	
Eucrypta chrysanthemifolia var. chrysanthemifolia	Spotted hideseed	
Harpagonella palmeri	Palmer's grapplinghook	CRPR 4.2
Pectocarya linearis ssp. ferocula	Narrow-toothed pectocarya	
Pectocarya peninsularis	Baja pectocarya	
Phacelia cicutaria var. hispida	Hairy caterpillar phacelia	
Phacelia parryi	Parry's phacelia	
Plagiobothrys acanthocarpus	Adobe popcornflower	
Plagiobothrys fulvus var. campestris	Field popcornflower	
Plagiobothrys nothofulvus	Rusty popcornflower	
Brassicaceae - Mustard family		
* *Brassica nigra*	Black mustard	
* *Capsella bursa-pastoris*	Shepherd's purse	
Descurainia pinnata	Western tansymustard	
* *Hirschfeldia incana*	Shortpod mustard	
Lepidium nitidum	Shining pepper-grass	
* *Lobularia maritima*	Sweet alyssum	
* *Sisymbrium irio*	London rocket	

Scientific Name	Common Name	Special Status
Cactaceae - Cactus family		
Opuntia littoralis	Coastal prickly pear	
Caryophyllaceae - Pink family		
* *Silene gallica*	Windmill catchfly	
Convolvulaceae - Morning-glory family		
Calystegia macrostegia ssp. cyclostegia	Coast morning-glory	
Crassulaceae - Stonecrop family		
Crassula connata	Pygmyweed	
Dudleya pulverulenta	Chalk dudleya	
Cucurbitaceae - Gourd family		
Marah macrocarpa	Wild cucumber	
Elaeagnaceae - Oleaster family		
* *Elaeagnus angustifolia*	Russian olive	
Ericaceae - Heath family		
Xylococcus bicolor	Mission manzanita	
Euphorbiaceae - Spurge family		
Croton setigerus	Doveweed	
Fabaceae - Legume family		
Acmispon americanus var. americanus	Spanish-Clover	
Acmispon glaber var. brevialatus	Long keeled deerweed	
Acmispon micranthus	San Diego lotus	
Acmispon strigosus	Strigose lotus	
* *Genista monspessulana*	French broom	
Lathyrus vestitus	Canyon sweet pea	
Lupinus bicolor	Miniature lupine	
Lupinus hirsutissimus	Stinging lupine	
Lupinus succulentus	Arroyo lupine	
Lupinus truncatus	Cut leaf lupine	
* *Medicago polymorpha*	California burclover	
* *Melilotus indicus*	Indian sweetclover	
Vicia hassei	Slender vetch	
Fagaceae - Oak family		
Quercus engelmannii	Engelmann oak	CRPR 4.2
Gentianaceae - Gentian family		
Zeltnera venusta	California centaury	

Scientific Name	Common Name	Special Status
Geraniaceae - Geranium family		
* *Erodium botrys*	Longbeak filaree	
* *Erodium cicutarium*	Redstem filaree	
Juglandaceae - Walnut family		
Juglans californica	Southern California black walnut	CRPR 4.2
Lamiaceae - Mint family		
* *Lamium amplexicaule*	Henbit	
* *Marrubium vulgare*	Horehound	
Salvia apiana	White sage	
Salvia columbariae	Chia	
Trichostema lanceolatum	Vinegar weed	
Montiaceae - Purslane family		
Calandrinia menziesii	Red maids	
Claytonia parviflora	Small flowered miner's-lettuce	
Myrsinaceae - Myrsine family		
* *Anagallis arvensis*	Scarlet pimpernel	
Nyctaginaceae - Four O'clock family		
Mirabilis laevis var. crassifolia	Coastal wishbone plant	
Onagraceae - Evening Primrose family		
Camissoniopsis bistorta	California sun cup	
Camissoniopsis hirtella	Hairy suncup	
Clarkia delicata	Delicate clarkia	CRPR 1B.2
Clarkia purpurea ssp. quadrivulnera	Four spot purple clarkia	
Epilobium canum	California fuchsia	
Oxalidaceae - Oxalis family		
Oxalis californica	California wood-sorrel	
* *Oxalis pes-caprae*	Bermuda buttercup	
Paeoniaceae - Peony family		
Paeonia californica	California peony	
Phrymaceae - Lopseed family		
Diplacus longiflorus	Bush monkeyflower	
Plantaginaceae - Plantain family		
Antirrhinum kelloggii	Climbing snapdragon	
Antirrhinum nuttallianum	Nuttall's snapdragon	
Nuttallanthus texanus	Blue toadflax	
Plantago erecta	Dot seed plantain	

Scientific Name	Common Name	Special Status
Polemoniaceae - Phlox family		
Eriastrum sapphirinum ssp. sapphirinum	Sapphire woollystar	
Gilia angelensis	Chaparral gilia	
Navarretia hamata ssp. hamata	Hooked navarretia	
Navarretia hamata ssp. leptantha	Slender hooked navarretia	
Polygonaceae - Buckwheat family		
Eriogonum fasciculatum var. foliolosum	Leafy California buckwheat	
Pterostegia drymarioides	Granny's hairnet	
Primulaceae - Primrose family		
Primula clevelandii	Padre's shooting star	
Primula clevelandii ssp. clevelandii	Padre's shooting star	
Ranunculaceae - Buttercup family		
Clematis pauciflora	Few-flowered virgin's bower	
Delphinium parishii ssp. parishii	Parish's larkspur	
Rhamnaceae - Buckthorn family		
Rhamnus crocea	Spiny redberry	
Rosaceae - Rose family		
Cercocarpus betuloides var. betuloides	Birchleaf mountain mahogany	
Drymocallis glandulosa var. wrangelliana	Field sticky woodbeauty	
Heteromeles arbutifolia	Toyon	
Rubiaceae - Madder family		
Galium angustifolium ssp. angustifolium	Narrow leaved bedstraw	
Scrophulariaceae - Figwort family		
Scrophularia californica	California figwort	
Solanaceae - Nightshade family		
Solanum americanum	White nightshade	
Solanum parishii	Parish's nightshade	
Verbenaceae - Vervain family		
Verbena lasiostachys var. lasiostachys	Western vervain	
Violaceae - Violet family		
Viola pedunculata	Johnny-jump-up	
MONOCOTS		
Agavaceae - Century Plant family		
Chlorogalum parviflorum	Smallflower soap plant	
Hesperoyucca whipplei	Chaparral yucca	

Scientific Name	Common Name	Special Status
Alliaceae - Onion or Garlic family		
Allium praecox	Early onion	
Iridaceae - Iris family		
Sisyrinchium bellum	Lovely blue-eyed-grass	
Liliaceae - Lily family		
Calochortus splendens	Splendid mariposa lily	
Calochortus weedii var. weedii	Weed's mariposa lily	
Fritillaria biflora var. biflora	Chocolate Lily	County List D
Poaceae - Grass family		
* *Avena barbata*	Slender wild oat	
* *Avena fatua*	Wild oat	
* *Bromus rubens*	Red brome	
* *Lamarckia aurea*	Goldentop grass	
Stipa pulchra	Purple needle grass	
Themidaceae - Brodiaea family		
Brodiaea terrestris ssp. kernensis	Dwarf brodiaea	
Dichelostemma capitatum ssp. capitatum	Blue dicks	
Muilla maritima	Common muilla	

Legend

*= Non-native or invasive species

Special Status:

Federal:
FE = Endangered
FT = Threatened

State:
SE = Endangered
ST =Threatened

CRPR – California Rare Plant Rank
1A. Presumed extinct in California and elsewhere
1B. Rare or Endangered in California and elsewhere
2A. Presumed extinct in California, more common elsewhere
2B. Rare or Endangered in California, more common elsewhere
3. Plants for which we need more information - Review list
4. Plants of limited distribution - Watch list

Threat Ranks
.1 - Seriously endangered in California
.2 – Fairly endangered in California
.3 – Not very endangered in California

Appendix J

Special-Status Species Evaluated for Occurrence

Appendix J
Special-Status Species Evaluated for Occurrence

Species Common/ Scientific Name	Status[a] Federal/ State/CNPS/San Diego County/MSCP	Habitat Requirements	Potential to Occur
Special-Status Plants			
Abrams' spurge (*Euphorbia abramsiana*)	-/-/2.2/-	Annual herb. Sandy soils in Mojavean desert scrub and Sonoran desert scrub; -5–915 m (-16–3,000 ft). Blooming period: August–November.	**Not expected.** Species not expected to occur, based on lack of suitable macrohabitat conditions.
Ashy spike-moss (*Selaginella cinerascens*)	-/-/4.1/SDC List D	Perennial rhizomatous herb. Chaparral and coastal sage scrub; 20–640 m (65–2,100 ft).	**Low potential.** Suitable macrohabitat conditions are present within the BSA. Species not observed during special-status plant surveys conducted in 2019.
Brewer's calandrinia *(Calandrinia breweri*)	-/-/4.2/SDC List D	Annual herb. Sandy or loamy soils, disturbed and/or burned sites in chaparral and coastal scrub; 10–1,220 m (32–4,000 ft). Blooming period: March–June.	**Low potential.** Suitable macrohabitat conditions are present within the BSA. Species not observed during special-status plant surveys conducted in 2019.
California adder's-tongue (*Ophioglossum californicum*)	-/-/4.2/SDC List D	Perennial rhizomatous herb. Mesic areas in chaparral, valley and foothill grasslands, and the margins of vernal pools; 60–525. Blooming period: December–June.	**Low potential.** Suitable macrohabitat conditions are present within the BSA. Species not observed during special-status plant surveys conducted in 2019.
California adolphia (Adolphia californica)	-/-/2B.1/SDC List B	Deciduous shrub. Clay soils in chaparral, coastal scrub, and valley and foothill grassland; 45–740 m (147–2,428 ft). Blooming period: December–May.	**Not expected.** Species is a conspicuous shrub that would have been readily observed during surveys if present.
Cedros Island oak *(Quercus cedrosensi*)	-/-/2B.2/	Evergreen tree. Closed-cone coniferous forest, chaparral, coastal scrub; 255–960 m (836–3,148 ft). Blooming period: April–May.	**Not expected.** Species is a conspicuous tree that would have been readily observed during surveys if present. This species is restricted to the far southern San Diego County border with Baja California.
Chaparral ash (*Fraxinus parryi*)	-/-/2B.2/-	Perennial shrub. Chaparral; 213–620 m (698–2,033 ft). Blooming period March–May.	**Not expected.** Species is a conspicuous shrub that would have been readily observed during surveys if present.

Species Common/ Scientific Name	Status[a] Federal/ State/CNPS/San Diego County/MSCP	Habitat Requirements	Potential to Occur
Chaparral nolina (*Nolina cismontana*)	-/-/1B.2/SDC List A	Perennial evergreen shrub. Sandstone and gabbro soils in chaparral, and coastal scrub; 140–1,275 m (459–4,183 ft). Blooming period: May–July.	**Not expected.** Species is a conspicuous shrub that would have been readily observed during surveys if present.
Chaparral ragwort (*Senecio aphanactis*)	-/-/2B.2/SDC List B	Annual herb. Chaparral, cismontane woodland, coastal scrub, and alkaline flats; 15–800 m (49–2,624 ft.). Blooming period: January–April.	**Low potential.** Suitable macrohabitat conditions are present within the BSA. Species not observed during special-status plant surveys conducted in 2019.
Chaparral Rein Orchid (*Piperia cooperi*)	-/-/4.2/SDC List D	Perennial herb. Chaparral, cismontane woodland, and valley and foothill grassland; 15–1,585 m (49–5,200 ft). Blooming period: March–June.	**Low potential.** Suitable macrohabitat conditions are present within the BSA. Species not observed during special-status plant surveys conducted in 2019.
Chocolate lily (*Fritillaria biflora*)	SDC List D	Perennial bulb. Clay soils in grassland habitats. Blooming period: March.	**Observed.** Small scattered locations of chocolate lily were noted incidentally during 2019 QCB surveys and again during focused surveys for this species in March 2021. All occurrences are outside of the proposed project footprint.
Cleveland's bush monkeyflower (*Diplacus clevelandii*)	-/-/4.2/-	Perennial herb. Gabbroic, often in disturbed areas, openings, rocky. Chaparral, cismontane woodland, lower montane coniferous forest. 450–2,000 m (1,475–6,560 ft). Blooming period: April-June.	**Not expected.** Species is a conspicuous shrub that would have been readily observed during surveys if present. Also, this species is typically found at higher elevations within the Laguna and Cuyamaca Mountains of San Diego County.
Colorado Desert larkspur (*Delphinium parishii* ssp*. subglobosum*)	-/-/4.3/SDC List D	Perennial herb. Chaparral, cismontane woodland, pinyon and juniper woodland, and Sonoran desert scrub; 600–1,800 m (1,960–5,900 ft). Blooming period: March–June.	**Low potential.** Suitable macrohabitat conditions are present within the BSA. Species not observed during special-status plant surveys conducted in 2019.
Coulter's goldfields (*Lasthenia glabrata* ssp*. coulteri*)	-/-/1B.1/SDC List A	Annual herb. Coastal salt marsh, coastal salt swamps, playas, vernal pools; 1–1,220 m (3–4,000 ft). Blooming period: February–June.	**Not expected.** Suitable macrohabitat conditions are not present within the BSA. Species not observed during special-status plant surveys conducted in 2019.

Species Common/ Scientific Name	Status[a] Federal/ State/CNPS/San Diego County/MSCP	Habitat Requirements	Potential to Occur
Coulter's matilija poppy (*Romneya coulteri*)	-/-/4.2/SDC List D	Perennial rhizomatous herb. Chaparral and coastal scrub; often in burned areas; 20–1,200 m (65–3,900 ft). Blooming period: March–July.	**Low potential.** Suitable macrohabitat conditions are present within the BSA. Species not observed during special-status plant surveys conducted in 2019.
Cove's cassia (*Senna covesii*)	-/-/2B.2/SDC List B	Perennial herb. Sandy Sonoran desert scrub; 285–1,070 m (935–3,500 ft). Blooming period: March–June.	**Not expected.** Suitable macrohabitat conditions are not present within the BSA. Species not observed during special-status plant surveys conducted in 2019.
Cuyamaca larkspur (*Delphinium hesperium* ssp. *cuyamacae*)	-/SR/B.2/SDC List A	Perennial herb. Relatively densely vegetated montane meadows and seeps, mesic lower montane coniferous forest, and vernal pools; 1,220–1,631 m (4,000–5,350 ft). Blooming period: May –July.	**Not expected.** Suitable macrohabitat conditions are not present within the BSA. Species occurs at much higher elevations than the BSA. Species not observed during special-status plant surveys conducted in 2019.
Dean's milk-vetch (*Astragalus deanei*)	-/-/1B.1/SDC List A	Perennial herb. Open shrubby slopes, coastal sage scrub, chaparral, cismontane woodland, riparian forest, and sandy washes; 75–695 m (246–2,279 ft). Blooming period: February–May.	**Low potential.** Suitable macrohabitat conditions are present within the BSA. Species not observed during special-status plant surveys conducted in 2019.
decumbent goldenbush (*Isocoma menziesii* var. *decumbens*)	-/-/1B.2/SDC List A	Perennial shrub. Chaparral and in sandy coastal scrub, often in sandy disturbed areas; 10–135 m (33–443 ft). Blooming period: April–November.	**Present.** Approximately 226 individuals observed in southern and eastern portions of BSA during special-status plant surveys in 2019.
Dehesa nolina (*Nolina interrata)*	-/-/1B.1, SDC List A	Perennial herb. Gabbroic, metavolcanic, or serpentinite soils in open southern mixed chaparral and chamise chaparral; 185–855 m (600–2,800 ft). Blooming period: June–July.	**Low potential**. Suitable macrohabitat conditions are present, though suitable soils are not present within the BSA. Species not observed during special-status plant surveys conducted in 2019.
Delicate clarkia (*Clarkia delicata*)	-/-/1B.2/SDC List A	Annual herb. Oak woodlands and chaparral, often on gabbroic soils; 235–1,000 m (770–3,280 ft). Blooming period: April–June.	**Present.** Two individuals observed in central portion of BSA during special-status plant surveys in 2019.

Species Common/ Scientific Name	Status[a] Federal/ State/CNPS/San Diego County/MSCP	Habitat Requirements	Potential to Occur
Dunn's mariposa-lily (*Calochortus dunnii*)	-/SR/1B.2/SDC NE/MSCP	Perennial bulbiferous herb. Gabbroic or metavolcanic soils, or rocky openings in chaparral or grassland/chaparral ecotone, also in closed-cone coniferous forest; 185–1,830 m (606–6,002 ft). Blooming period: February–June.	**Low potential.** Suitable macrohabitat conditions are present within the BSA. Species not observed during special-status plant surveys conducted in 2019.
Encinitas baccharis (*Baccharis vanessae*)	FT/SE/1B.1/SD NE/MSCP	Deciduous shrub. Sandstone in maritime chaparral and cismontane woodland; 60–720 m (196–2,362 ft). Blooming period: August–November.	**Not expected.** Suitable macrohabitat conditions are not present within the BSA. Species not observed during special-status plant surveys conducted in 2019.
Engelmann Oak (*Quercus engelmannii*)	-/-/4.2/SDC List B	Deciduous tree. Cismontane woodland, chaparral, riparian woodland, and valley and foothill grassland; 50–1,300 m (164–4,265 ft). Blooming period: March–June.	**Present.** Approximately 127 individuals observed concentrated in the northern portion of BSA during special-status plant surveys in 2019.
Fish's Milkwort (*Polygala cornuta* var. *fishiae*)	-/-/4.3/SDC List D	Perennial deciduous shrub. Chaparral, cismontane woodland, and riparian woodland; 100–1,000 m (328–3,280 ft). Blooming period: May–August.	**Not expected.** Species is a conspicuous shrub that would have been readily observed during surveys if present.
Gander's pitcher sage *(Lepechinia ganderi*)	-/-/1B.3/SDC List A/MSCP	Perennial shrub. Gabbroic or metavolcanic soils in closed-cone coniferous forest, chaparral, coastal scrub, and valley and foothill grassland; 305–1,005 m (1,000–3,296 ft). Blooming period: June–July.	**Not expected.** Species is a conspicuous shrub that would have been readily observed during surveys if present.
Gander's ragwort (*Packera ganderi*)	-/CR/1B.2/SDC List A	Perennial herb. Chaparral often in burned areas and gabbroic outcrops; 400–1,200 m (1,312–3,937 ft). Blooming period April–June.	**Low potential.** Suitable macrohabitat conditions are present within the BSA. Species not observed during special-status plant surveys conducted in 2019.
Golden-Rayed pentachaeta (*Pentachaeta aurea* ssp. *aurea*)	-/-/4.2/SDC List D	Annual herb. Chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, riparian woodland, and valley and foothill grassland; 80–1,850 m (262–6,068 ft). Blooming period: March–July.	**Low potential.** Suitable macrohabitat conditions are present within the BSA. Species not observed during special-status plant surveys conducted in 2019.
Graceful Tarplant (*Holocarpha virgata* ssp. *elongata*)	-/-/4.2/SDC List D	Annual herb. Chaparral, cismontane woodland, coastal scrub, and valley and foothill grassland; 60–1,100 m (196–3,600 ft). Blooming period: May–November.	**Low potential.** Suitable macrohabitat conditions are present within the BSA. Species not observed during special-status plant surveys conducted in 2019.

Species Common/ Scientific Name	Status[a] Federal/ State/CNPS/San Diego County/MSCP	Habitat Requirements	Potential to Occur
Hammitt's clay-cress (*Sibaropsis hammittii*)	-/-/1B.2, SDC List A	Annual herb. Clay soils in openings in chaparral and valley and foothill grassland; 720–1,065 m (2,362–3,501 ft). Blooming period: March–April.	**Low potential.** Suitable macrohabitat conditions are present within the BSA. Elevation of BSA outside of suitable range for species. Species not observed during special-status plant surveys conducted in 2019.
Heart-leaved pitcher sage (*Lepechinia cardiophylla*)	-/-/1B.2/SDC List A/MSCP	Perennial shrub. Closed-cone coniferous forest, chaparral, cismontane woodland; 520–1,370 m (1,705–4,493 ft). Blooming period: April–July.	**Not expected.** Species is a conspicuous shrub that would have been readily observed during surveys if present.
Lakeside ceanothus (*Ceanothus cyaneus*)	-/-/1B.2/SDC List A/MSCP	Evergreen shrub. Closed-cone coniferous forest, dense chaparral; 235–755 m (771–2,543 ft). Blooming period: April–June.	**Not expected.** Species is a conspicuous shrub that would have been readily observed during surveys if present.
Little mousetail (*Myosurus minimus* ssp. *apus*)	-/-/3.1/SDC List C	Annual herb. Valley and foothill grassland, and alkaline vernal pools; 20–640 m (65–2,100 ft). Blooming period: March–June.	**Low potential.** Suitable macrohabitat conditions are present within the BSA, though commonly associated with vernal pools and wetlands, which are not present in BSA. Species not observed during special-status plant surveys conducted in 2019.
Long-spined spineflower (*Chorizanthe polygonoides* var. *longispina*)	-/-/1B.2/SDC List A	Annual herb. Clay lenses, largely devoid of shrubs in chaparral, coastal scrub, meadows and seeps, valley and foothill grassland, and vernal pools; 30–1,530 m (98–5,018 ft). Blooming period: April–July.	**Low potential.** Suitable macrohabitat conditions are present within the BSA. Species not observed during special-status plant surveys conducted in 2019.
Mexican flannelbush *(Fremontodendron mexicanum*)	FE/SR/1B.1/SDC List A	Evergreen shrub. Gabbroic, metavolcanic, or serpentine soils in closed-cone coniferous forest, chaparral, and cismontane woodland; 10–716 m (32–2,349 ft). Blooming period: March–June.	**Not expected.** Species is a conspicuous shrub that would have been readily observed during surveys if present.
Mission Canyon bluecup (*Githopsis diffusa* ssp. *filicaulis*)	-/-/3.1/SDC List C	Annual herb. Mesic soils and disturbed areas within chaparral; 450–700 m (1,476–2,296 ft). Blooming period: April–June.	**Not expected.** Suitable macrohabitat conditions exist, but no suitable mesic soils present within the BSA. Species not observed during special-status plant surveys conducted in 2019.

Species Common/ Scientific Name	Status[a] Federal/ State/CNPS/San Diego County/MSCP	Habitat Requirements	Potential to Occur
Mojave paintbrush (*Castilleja plagiotoma*)	-/-/4.3/-	Perennial herb. Dry sagebrush scrub, pinyon woodland. 300–2,500 m (984–8,202 ft). Blooming period: April–June.	**Not expected.** Suitable macrohabitat conditions are not present within the BSA. Species not observed during special-status plant surveys conducted in 2019. Species presence in San Diego County (El Cajon quad) is not verified, and species is not listed in Simpson and Rebman's *Checklist of the Vascular Plants of San Diego County*.
Moreno currant (*Ribes canthariforme*)	-/-/1B.3/SDC List A	Deciduous shrub. Chaparral and riparian scrub; 340–1,200 m (1,115–3,937 ft). Blooming period: February–April.	**Not expected.** Species is a conspicuous shrub that would have been readily observed during surveys if present.
Mud nama (*Nama stenocarpa*)	-/-/2B.2/SDC List B	Annual/perennial herb. Marshes and swamps, also riverbanks and lake margins; 5–500 m (16–1,640 ft). Blooming period: January–July	**Not expected.** Suitable macrohabitat conditions are not present within the BSA. Species not observed during special-status plant surveys conducted in 2019.
Munz's sage (*Salvia munzii*)	-/-/2B.2/SDC List B	Evergreen shrub. Chaparral and coastal sage scrub; 120–1,065 m (393–3,493 ft). Blooming period: February–April.	**Not expected.** Species is a conspicuous shrub that would have been readily observed during surveys if present.
Orcutt's brodiaea (*Brodiaea orcuttii*)	-/-/1B.1/SDC List A/MSCP	Bulbiferous herb. Found on mesic, clay, sometimes serpentinite soils in closed-cone coniferous forest, chaparral, cismontane woodland, meadows and seeps, valley and foothill grassland, and vernal pools; 30–1,692 m (98–5,550 ft). Blooming period: May–July.	**Not expected.** Suitable macrohabitat conditions are not present within the BSA. Species not observed during special-status plant surveys conducted in 2019.
Otay manzanita (*Arctostaphylos otayensis*)	-/-/1B.2/SDC List A	Evergreen shrub. Chaparral or cismontane woodlands on volcanic rock outcrops; 275–1,700 m (902–5,576 ft). Blooming period: January–April.	**Not expected.** Species is a conspicuous shrub that would have been readily observed during surveys if present.
Otay Mountain ceanothus (*Ceanothus otayensis*)	-/-/1B.2/-	Perennial evergreen shrub. Metavolcanic or gabbroic chaparral; 600–1,100 m (1,968–3,608 ft). Blooming period: January–April.	**Not expected.** Species is a conspicuous shrub that would have been readily observed during surveys if present.
Palmer's goldenbush (*Ericameria palmeri* var. *palmeri*)	-/-/1B.1/SDC List B/MSCP	Evergreen shrub. Coastal drainages, in mesic chaparral sites, or rarely in coastal sage scrub; below 600 m (1,969 ft). Blooming period: August–October (uncommon in July).	**Not expected.** Species is a conspicuous shrub that would have been readily observed during surveys if present.

Species Common/ Scientific Name	Status[a] Federal/ State/CNPS/San Diego County/MSCP	Habitat Requirements	Potential to Occur
Palmer's grapplinghook (*Harpagonella palmeri*)	-/-/4.2/SDC List D	Annual herb. Clay soils in chaparral, grasslands, coastal sage scrub; 20–955 m (65 to 3,132 ft). Blooming period: March–May.	**Present.** Approximately 13,857 individuals observed during special-status plant surveys in 2019 within numerous clay lenses, primarily in the central and southern portions of the site.
Paniculate tarplant (*Deinandra paniculata*)	-/-/4.2/SDC List D	Annual herb. Usually found in vernally mesic soils in coastal scrub, valley and foothill grassland, and vernal pools; 25–940 m (82–3,084 ft). Blooming period: April–November.	**Low potential.** Suitable macrohabitat conditions are present within the BSA. Species not observed during special-status plant surveys conducted in 2019.
Parry's tetracoccus (*Tetracoccus dioicus*)	-/-/1B.2/SDC List A/MSCP	Deciduous shrub. Chaparral and coastal sage scrub; 165–1,000 m (541–3,280 ft). Blooming period: April–May.	**Not expected.** Species is a conspicuous shrub that would have been readily observed during surveys if present.
Payson's jewel-flower (*Caulanthus simulans*)	-/-/4.2/SDC List D	Annual herb. Sandy and granitic soils in chaparral and coastal scrub; 90–2,200 m (295–7,218 ft). Blooming period: February–June.	**Low potential.** Suitable macrohabitat conditions are present within the BSA. Species not observed during special-status plant surveys conducted in 2019.
Peninsular spineflower (*Chorizanthe leptotheca*)	-/-/4.2/SDC List D	Annual herb. Alluvial fans or granitic areas in chaparral, coastal scrub, and lower montane coniferous forest; 300–1,900 m (984–6,232 ft). Blooming period: May–August.	**Low potential.** Suitable macrohabitat conditions are present within the BSA. Species not observed during special-status plant surveys conducted in 2019.
Pride-of-California (*Lathyrus splendens*)	-/-/4.3/SDC List D	Perennial herb. Chaparral; 200–1,525 m (656–5,002 ft). Blooming period: March–June.	**Low potential.** Suitable macrohabitat conditions are present within the BSA. Species not observed during special-status plant surveys conducted in 2019.
Ramona horkelia (*Horkelia truncata*)	-/-/1B.3/SDC List A	Perennial herb. Clay and gabbroic soils in chaparral and cismontane woodland; 400–1,300 m (1,312–4,265 ft). Blooming period: May–June.	**Low potential.** Suitable macrohabitat conditions are present within the BSA. Species not observed during special-status plant surveys conducted in 2019.
Robinson's pepper-grass (*Lepidium virginicum* var. *robinsonii*)	-/-/4.3/SDC List A	Annual herb. Openings in chaparral and sage scrub; below 885 m (2,900 ft). Blooming Period: January–July.	**Low potential.** Suitable macrohabitat conditions are present within the BSA. Species not observed during special-status plant surveys conducted in 2019.

Species Common/ Scientific Name	Status[a] Federal/ State/CNPS/San Diego County/MSCP	Habitat Requirements	Potential to Occur
Rush-like Bristleweed (*Xanthisma junceum*)	-/-/4.3/SDC List D	Perennial herb. Chaparral and coastal scrub; 240–1,000 m (787–3,280 ft.). Blooming period: June–January.	**Low potential.** Suitable macrohabitat conditions are present within the BSA. Species not observed during special-status plant surveys conducted in 2019.
San Bernardino aster (*Symphyotrichum defoliatum*)	-/-/1B.2/-	Perennial rhizomatous herb. Near ditches, streams, and springs in cismontane woodland, coastal scrub, lower montane coniferous forest, meadows and seeps, marshes and swamps, and vernally mesic valley and foothill grassland; 2–2,040 m (7–6,693 ft). Blooming period: July–November.	**Low potential.** Suitable macrohabitat conditions are present within the BSA. Species not observed during special-status plant surveys conducted in 2019.
San Diego button-celery (*Eryngium aristulatum* var. *parishii*)	FE/SE/1B.1/-/MSCP	Annual/perennial herb. Mesic soils in coastal scrub, valley and foothill grassland, and vernal pools; 20–620 m (65–2,034 ft). Blooming period: April–June.	**Low potential.** Suitable macrohabitat conditions are present within the BSA. Species not observed during special-status plant surveys conducted in 2019.
San Diego County needle grass (*Stipa diegoensis*)	-/-/4.2/SDC List D	Perennial herb. Rocky, often mesic soils within chaparral and coastal scrub; 10–800 m (32–2,624 ft). Blooming period: February–June.	**Low potential.** Suitable macrohabitat conditions are present within the BSA, though commonly associated with vernal pools, which are not present in BSA. Species not observed during special-status plant surveys conducted in 2019.
San Diego County viguiera (*Bahiopsis laciniate*)	-/-/4.2/SDC List D	Perennial shrub. Chaparral and coastal scrub; 10–750 m (33–2,461 ft). Blooming period: February–August.	**Present.** Approximately 67 individuals observed in the most northern and southwestern portions of the BSA during special-status plant surveys in 2019.
San Diego gumplant (*Grindelia hallii*)	-/-/1B.2/SDC List A	Perennial herb. Meadows, chaparral, lower montane coniferous forest, and valley and foothill grassland; 185–1,745 m (606–5,723 ft). Blooming period: May–October.	**Low potential.** Suitable macrohabitat conditions are present within the BSA. Species not observed during special-status plant surveys conducted in 2019.
San Diego marsh-elder (*Iva hayesiana*)	-/-/2B.2/SDC List B	Perennial herb. Marshes and swamps, wetland areas, and playas; 10–500 m (32–1,640 ft). Blooming period: April–October.	**Not expected.** Suitable macrohabitat conditions are not present within the BSA. Species not observed during special-status plant surveys conducted in 2019.

Species Common/ Scientific Name	Status[a] Federal/ State/CNPS/San Diego County/MSCP	Habitat Requirements	Potential to Occur
San Diego milk-vetch (*Astragalus oocarpus*)	-/-/1B.2/SDC List A	Perennial herb. Openings in chaparral and cismontane woodland, at the periphery of meadows; 305–1,524 m (1,000–4,999 ft). Blooming period: May–August.	**Low potential.** Suitable macrohabitat conditions are present within the BSA. Species not observed during special-status plant surveys conducted in 2019.
San Diego sagewort (*Artemisia palmeri*)	-/-/4.2/SDC List D	Deciduous shrub. Sandy soils in mesic areas in chaparral, coastal scrub, riparian forest, riparian scrub, riparian woodland; 15–915 m (49–3,002 ft). Blooming period: February–September.	**Not expected.** Species is a conspicuous shrub that would have been readily observed during surveys if present.
San Diego thorn-mint (*Acanthomintha ilicifolia*)	FT/SE/1B.1/SDC NE/MSCP	Annual herb. Prefers friable or broken clay soils in grassy openings in chaparral and coastal sage scrub, valley and foothill grassland, and vernal pools; 10–960 m (33–3,150 ft). Blooming period: April–June.	**Low potential.** Suitable macrohabitat conditions are present within the BSA. Species not observed during special-status plant surveys conducted in 2019.
San Luis Obispo sedge (*Carex obispoensis*)	-/-/1B.2/-	Perennial rhizomatous herb. Often found on serpentine or gabbro seeps or on clay soils in closed-coned coniferous forest, chaparral, coastal prairie, coastal scrub, and valley and foothill grassland often in wetland conditions. 10–820 m (32–2,689 ft). Blooming period: April–June.	**Not expected.** Suitable macrohabitat conditions (i.e., wetlands) are not present within the BSA. Species not observed during special-status plant surveys conducted in 2019.
San Miguel savory (*Clinopodium chandleri*)	-/-/1B.2/SDC List A/MSCP	Perennial shrub. Rocky, gabbroic, or metavolcanic areas in chaparral, cismontane woodland, coastal scrub, riparian scrub, and valley and foothill grassland; 120–1,075 m (393–3,526 ft). Blooming period: March–July.	**Low potential.** Suitable macrohabitat conditions are present within the BSA. Species not observed during special-status plant surveys conducted in 2019.
Short-bracted bird's-beak (*Cordylanthus rigidus* ssp*. brevibracteatus*)	-/-/4.3/?	Annual herb. Granitic openings in Jeffrey-pine and pinyon/juniper forest, sagebrush scrub. 850–2,560 m (2,789–8,398 ft). Blooming Period: July–September.	**Low potential.** Suitable macrohabitat conditions are present within the BSA, though BSA is outside of this species expected range. Species not observed during special-status plant surveys conducted in 2019.
Singlewhorl burrobrush (*Ambrosia monogyra*)	-/-/2B.2/-	Perennial shrub. Sandy soils in chaparral, coastal sage scrub, Sonoran desert scrub, and washes; 10–500 m (328–1,640 ft). Blooming period: August–November.	**Not expected.** Species is a conspicuous shrub that would have been readily observed during surveys if present. BSA is east of species' expected habitat range.

Species Common/ Scientific Name	Status[a] Federal/ State/CNPS/San Diego County/MSCP	Habitat Requirements	Potential to Occur
Small-flowered microseris (*Microseris douglasii* ssp. *platycarpha*)	-/-/4.2/SDC List D	Annual herb. Clay soils in cismontane woodland, coastal scrub, valley and foothill grassland, and vernal pools; 15–1,070 m (49–3,510 ft). Blooming period: March–May.	**Present.** Two individuals observed in the southwestern portion of the BSA during special-status plant surveys in 2019.
Small-flowered morning glory (*Convolvulus simulans*)	-/-/4.2/SDC List D	Annual herb. Friable clay soils or serpentine seeps in chaparral openings, coastal scrub, and valley and foothill grassland; 30–700 m (98–2,297 ft). Blooming period: March–July.	**Low potential.** Suitable macrohabitat conditions are present within the BSA, though species tends to be found near seeps, which are not present within the BSA. Species not observed during special-status plant surveys conducted in 2019.
Smooth tarplant (*Centromadia pungens* ssp. *laevis*)	-/-/1B.1/SDC List A	Annual herb. Alkaline soils in chenopod scrub, meadows and seeps, playas, riparian woodland, and valley and foothill grassland; 0–640 m (0–2,100 ft). Blooming period: April–September.	**Low potential.** Suitable macrohabitat conditions are present within the BSA. Species not observed during special-status plant surveys conducted in 2019.
Southern California black walnut (*Juglans californica*)	-/-/4.2/SDC List D	Deciduous tree. Alluvial areas in chaparral, cismontane woodland, and coastal scrub; 50–900 m (164–2,952 ft). Blooming period: March–August.	**Present**. One individual observed in northern portion of the BSA during special-status plant surveys in 2019.
Southern mountain misery (*Chamaebatia australis*)	-/-/4.2/SDC List D	Evergreen shrub. Gabbroic or metavolcanic chaparral; 300–1,020 m (984–3,345 ft). Blooming period: November–May.	**Low potential.** Suitable macrohabitat conditions are present within the BSA. Species not observed during special-status plant surveys conducted in 2019.
Southern Mountains Skullcap (*Scutellaria bolanderi* ssp. *austromontana*)	-/-/1B.2/SDC List A	Perennial rhizomatous herb. Moist embankments of montane creeks, mesic chaparral, mesic cismontane woodland, and mesic lower montane coniferous forest; 425–2,000 m (1,394–6,562 ft). Blooming period: June–August.	**Low potential.** Suitable macrohabitat conditions are present within the BSA. Tends to be found in wetland habitat which is not present within BSA. Species not observed during special-status plant surveys conducted in 2019.
Southwestern Spiny Rush (*Juncus acutus* ssp. *leopoldii*)	-/-/4.2/SDC List D	Perennial rhizomatous herb. Mesic soils in coastal dunes, alkaline seeps in meadows and seeps, and coastal salt marshes and swamps; 3–900 m (9–2,953 ft). Blooming period: May–June.	**Not expected.** Suitable macrohabitat conditions are not present within the BSA. Species not observed during special-status plant surveys conducted in 2019.

Species Common/ Scientific Name	Status[a] Federal/ State/CNPS/San Diego County/MSCP	Habitat Requirements	Potential to Occur
Spreading navarretia (*Navarretia fossalis*)	FT/-/1B.1/SDC List A/MSCP	Annual herb. Chenopod scrub, assorted freshwater marshes and swamps, playas, and vernal pools; 30–655 m (98–2,149 ft). Blooming period: April–June.	**Not expected.** Suitable macrohabitat conditions are not present within the BSA. Species not observed during special-status plant surveys conducted in 2019.
Sticky geraea (*Geraea viscida*)	-/-/2B.3/SDC List B	Perennial herb. Openings and disturbed areas in chaparral, often in sandy, xeric soils; 450–1,700 m (1,476–5,577 ft). Blooming period: May–June.	**Low potential.** Suitable macrohabitat conditions are present within the BSA. Species not observed during special-status plant surveys conducted in 2019.
Summer holly (*Comarostaphylis diversifolia* ssp. *diversifolia*)	-/-/1B.2/SDC List A	Evergreen shrub. Chaparral and cismontane woodland; 30–790 m (98–2,591 ft). Blooming period: April–June.	**Low potential.** Suitable macrohabitat conditions are present within the BSA. Species not observed during special-status plant surveys conducted in 2019.
Tecate cypress (*Hesperocyparis forbesii*)	-/-/1B.1/SDC List A/MSCP	Perennial evergreen tree. Clay, gabbroic, or metavolcanic soils within closed-cone coniferous forest and chaparral; 80–1,500 m (262–4,921 ft).	**Not expected.** Species is a conspicuous tree that would have been readily observed during surveys if present.
Tecate tarplant (*Deinandra floribunda*)	-/-/1B.2/SDC List A	Annual herb. Chaparral and coastal sage scrub, also in arroyos; 70–1,220 m (230–4,002 ft). Blooming period: August–October.	**Low potential.** Suitable macrohabitat conditions are present within the BSA, though located north of species' expected range. Species not observed during special-status plant surveys conducted in 2019.
Variegated dudleya (*Dudleya variegata*)	-/-/1B.2/SDC NE/MSCP	Perennial herb. Clay soils in chaparral, cismontane woodland, coastal scrub, valley and foothill grassland, and vernal pools; 3–580 m (9–1,903 ft). Blooming period: April–June.	**Low potential.** Suitable macrohabitat conditions are present within the BSA, though species is commonly associated with vernal pools. BSA located east of species' expected range. Species not observed during special-status plant surveys conducted in 2019.
Vernal barley (*Hordeum intercedens*)	-/-/3.2/SDC List C	Annual herb. Coastal dunes, coastal scrub, saline flats and depressions in valley and foothill grassland, and vernal pools; 5–1,000 m (16–3,280 ft). Blooming period: March–June.	**Low potential.** Suitable macrohabitat conditions are present within the BSA, though species is commonly associated with wetland and vernal pool habitat. Species not observed during special-status plant surveys conducted in 2019.

Species Common/ Scientific Name	Status[a] Federal/ State/CNPS/San Diego County/MSCP	Habitat Requirements	Potential to Occur
Western spleenwort (*Asplenium vespertinum*)	-/-/4.2/SDC List D	Perennial rhizomatous herb. Rocky areas in chaparral, cismontane woodland, and coastal scrub; 180–1,000 m (590–3,281 ft). Blooming period: February–June.	**Low potential.** Suitable macrohabitat conditions are present within the BSA. Species not observed during special-status plant surveys conducted in 2019.
White rabbit-tobacco (*Pseudognaphalium leucocephalum*)	-/-/2B.2/-	Perennial herb. Sandy or gravelly soils in chaparral, cismontane woodland, coastal scrub, and riparian woodland; 0–2,100 m (0–6,888 ft). Blooming period: July–December.	**Low potential.** Suitable macrohabitat conditions are present within the BSA, though located south of species' expected range. Species not observed during special-status plant surveys conducted in 2019.
Woolly Chaparral Pea (*Pickeringia montana* var. *tomentosa*)	-/-/4.3/-	Evergreen shrub. Gabbroic, granitic, or clay soils in chaparral; 0–1,700 m (0–5,577 ft). Blooming period: May–August.	**Not expected.** Species is a conspicuous shrub that would have been readily observed during surveys if present.

Species Common/ Scientific Name	Status[a] Federal/ State/San Diego County/MSCP	Habitat Requirements	Potential to Occur
Special-Status Wildlife Species			
Invertebrates			
Crotch's bumblebee (*Bombus crotchii*)	-/CE/-/-	Grasslands and shrublands in southern to central California, with occasional records in the northern portion of the state. Species requires floral resources and undisturbed nest sites and overwintering sites.	**Low potential.** Species has not been documented within 5 miles of the project site per CNDDB records. State Endangered Candidacy reinstated Sept. 30, 2022.
Hermes copper butterfly (*Lycaena hermes*)	-/CT/-/-	Mesa habitats; chaparral, mixed woodlands. Larval host plant is spiny redberry.	**Low potential.** Species not observed during surveys conducted in 2019 or 2020. However, host plant spiny redberry was observed within the survey area.
San Diego fairy shrimp (*Branchinecta sandiegonensis*)	FE/-/SDC NE/MSCP	Vernal pools. All known localities are below 701 m (2,300 ft) and are within 64 km (40 miles) of the Pacific Ocean.	**Low Potential.** Species not observed during wet and dry season protocol surveys completed in 2019.
Quino checkerspot butterfly (*Euphydryas editha quino*)	FE/-/SDC NE/-	Inhabits openings on clay soils within or in the vicinity of shrublands, grasslands, meadows, vernal pools, and lake margins. Closely tied to its larval host plant, dwarf plantain (*Plantago erecta*) or owl's clover (*Castilleja exserta* ssp*. exserta*).	**Present.** Two Quino checkerspot butterflies were observed during surveys conducted in 2019, and one was observed in 2020 within the BSA. In addition, the QCB host plant dot-seed plantain was found in the BSA.
Reptiles and Amphibians			
Arroyo toad (*Anaxyrus californicus*)	FE/SSC/SDC NE/MSCP	Exposed shallow pools with a sand or gravel base are used for breeding. Breeding pools must occur in the vicinity (ca. 10–100 m) of a braided sandy channel with shorelines or central bars made of stable, sandy terraces.	**None.** Suitable habitat not present within the project site.
Baja California coachwhip (*Masticophis fuliginosus*)	-/CSC/-/-	Found in open areas such as grassland, shrubland, and coastal sand dune.	**High potential.** Suitable grassland habitat present on-site; however, species was not observed during surveys and has not previously been observed in project vicinity.

Species Common/ Scientific Name	Status[a] Federal/ State/San Diego County/MSCP	Habitat Requirements	Potential to Occur
California glossy snake (*Arizona elegans occidentalis*)	-/CSC/-/-	Inhabits arid scrub, rocky washes, grasslands, chaparral. Appears to prefer microhabitats of open areas and areas with soil loose enough for easy burrowing.	**Moderate potential.** The nearest CNDDB record for this species is more than 6 miles away from BSA. Suitable habitat for the species is present, although the heavy clay soils within much of the BSA may be less than ideal for this species.
Coast horned lizard (San Diego horned lizard) (*Phrynosoma blainvillii*)	-/CSC/SDC Group II/MSCP	Found in arid and semi-arid climate conditions in chaparral, coastal sage scrub, primarily below 2,000 feet in elevation. Critical factors are the presence of loose soils with a high sand fraction; an abundance of native ants or other insects, especially harvester ants (*Pogonomyrmex* spp.); and the availability of both sunny basking spots and dense cover for refuge.	**Present.** One individual was observed incidentally within the BSA in 2019. Project site elevation is upper limit of species elevation range.
Coast patch-nosed snake (*Salvadora hexalepis virgultea*)	-/CSC/SDC Group II/-	Inhabits semi-arid brushy areas and chaparral in canyons, rocky hillsides, and plains.	**High potential.** Suitable habitat for this species is present within the BSA and is known from this general area of San Diego County.
Coast range newt (*Taricha torosa*)	-/CSC/SDC Group II/-	Can be found in coastal areas and coastal range mountains in oak forests, woodlands, or rolling grasslands. In the terrestrial phase, they live in moist to dry habitats under woody or leafy debris, in rock crevices, or in animal burrows. In the aquatic phase, they are found in ponds, reservoirs, lakes and slow-moving streams.	**Low potential.** Only four CNDDB records for this species are known from San Diego County, all four of which are more than 12 miles northeast of the BSA within the Cuyamaca Mountains. These individuals were documented along Cedar Creek and Boulder Creek. Required aquatic habitat, such as slow-moving streams, is not present within the BSA.
Coastal western whiptail (*Aspidoscelis tigris stejnegeri*)	-/CSC/SDC Group II/-	Found in a variety of ecosystems, primarily hot and dry open areas with sparse foliage such as chaparral, woodland, and riparian areas.	**Present.** One individual was observed incidentally within the BSA in 2019.
Coronado skink (*Plestiodon skiltonianus interparietalis*)	-/CSC/SDC Group II/-	Forest, open woodland and grassy areas. Usually found under leaf litter, logs or rocks.	**High potential.** Suitable habitat for this species is present within the BSA and is known from this general area of San Diego County.

Species Common/ Scientific Name	Status[a] Federal/ State/San Diego County/MSCP	Habitat Requirements	Potential to Occur
Orange-throated whiptail (*Aspidoscelis hyperythra*)	-/CSC/-/MSCP	Occur in semi-arid brushy areas with loose soil and rocks. Can be found in washes, streamsides, rocky hillsides, and chaparral. Typically found at elevations between 0 and 2,000 ft.	**Present.** Two individuals were observed incidentally within the BSA in 2019. Project site elevation is upper limit of species' elevation range.
Red-diamond rattlesnake (*Crotalus ruber*)	-/CSC/SDC Group II/-	As far north as Puente Hills in Yorba Linda and southwest San Bernardino County, and occurs south to Loreto, Baja California, Mexico; known elevation range is sea level to just under 15,000 feet but apparently rare above about 3,940 feet; greatest frequency in areas of heavy brush, such as chamise chaparral, but also in open areas at lower densities; boulders and rocky outcrops.	**Present.** One individual was observed in the BSA incidentally during 2019 surveys. Suitable conditions for species on project site.
Southern California legless lizard (*Anniella stebbinsi*)	-/CSC/SDC Group II/-	Occurs in sparsely vegetated areas of beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces with sycamores, cottonwoods, or oaks. Leaf litter under trees and bushes in sunny areas often indicate suitable habitat.	**Moderate potential**. Suitable habitat is present on-site, including in the leaf litter under the Engelmann oaks and within fire clearance areas where ground disturbance is not proposed. The majority of potential habitat in the proposed preserve portion of the BSA. Not observed during surveys.
Southwestern pond turtle (*Emys marmorata* [=*Actinemys pallida*])	-/CSC/SDC Group I/ MSCP	Requires slack- or slow-water aquatic habitat as well as aerial and aquatic basking sites. Also requires an upland oviposition site on an unshaded slope with clay soils, in the vicinity of the aquatic site.	**None**. Habitat for species not present in BSA.
Two-striped gartersnake (*Thamnophis hammondii*)	-/CSC/SDC Group I/-	Inhabits perennial and intermittent streams with rocky beds and bordered by willow thickets or other dense vegetation.	**None**. Habitat for species not present in BSA.
Western spadefoot (*Spea hammondii*)	-/CSC/SDC Group II/- Species is currently under review to be listed under the federal ESA	Temporary pools with water temperatures between 9°C and < 30°C that last at least 3 weeks within areas of open vegetation.	**Present**. Three individual adults were observed in the western portion of the BSA in March 2022 outside of the proposed active park footprint. An egg mass was observed in one ponded area in 2019 within the proposed active park footprint.

Species Common/ Scientific Name	Status[a] Federal/ State/San Diego County/MSCP	Habitat Requirements	Potential to Occur
Birds			
Bell's sage sparrow (*Artemisiospiza belli belli*)	-/WL/SDC Group I/-	Open chaparral and sage scrubs. Nests typically in shrubs, well below the canopy, occasionally on the ground. Nest sites were in chamise, Cleveland sage, big sagebrush, and on the ground amid broken-down branches of big sagebrush. The habitat must not be too dense or too encumbered by leaf litter to favor this bird that spends most of its time running on the ground.	**Moderate potential**. Although not observed during any of the numerous wildlife surveys conducted for the proposed project, this species could occur due to the presence of suitable habitat in the BSA. The nearest CNDDB record is more than approximately 9 miles away.
Burrowing owl (*Athene cunicularia*)	-/SSC/SDC NE/MSCP	Inhabits open, dry, nearly or quite level grassland; prairie; desert floor; shrubland should be considered potential habitat if shrub cover is below 30%. In coastal Southern California, a substantial fraction of birds are found in microhabitats highly altered by man, including flood control and irrigation basins, dikes, and banks, abandoned fields surrounded by agriculture, and road cuts and margins. Strong association between burrowing owls and burrowing mammals, especially ground squirrels (*Spermophilus* spp.); however, they will also occupy manmade niches such as banks and ditches, piles of broken concrete, and even abandoned structures.	**Present (Wintering)**. One individual was observed incidentally during winter surveys in 2018–2019 outside of the proposed Alpine Regional Park area. **Moderate potential (Breeding).** Species not observed breeding during focused burrowing owl surveys completed in 2019. Suitable ground squirrel burrows present within survey area.
Coastal cactus wren (*Campylorhynchus brunneicapillus sandiegensis*)	-/CSC/SDC NE/MSCP	Cactus thickets of *Opuntia* or *Cylindropuntia* species, preferably more than 1 meter tall.	**None.** Suitable cactus habitat not present within the BSA.
Coastal California gnatcatcher (*Polioptila californica californica*)	FT /SSC/SDC NE/MSCP	Occurs within coastal sage scrub along the California coast. Prefers low-lying vegetation dominated by sagebrush, buckwheat, salvia, and prickly-pear cactus. Forages almost exclusively on insects.	**Low potential.** Species not observed during protocol surveys completed in 2019. The project site is at the far eastern edge of this species' geographic range.
Cooper's hawk (*Accipiter cooperii*)	-/ WL/SDC Group I/MSCP	Oak groves and mature stands of riparian woodland. This species has adapted well to development and is abundant in urban canyons with eucalyptus trees.	**Present.** Observed during coastal California gnatcatcher surveys.

Species Common/ Scientific Name	Status[a] Federal/ State/San Diego County/MSCP	Habitat Requirements	Potential to Occur
Ferruginous hawk (*Buteo regalis*)	-/WL/SDC Group I/MSCP	Occurs in San Diego County as a wintering resident from October to March. Distribution is patchy and corresponds to larger tracts of grasslands.	**Moderate potential.** Only one documented CNDDB occurrence in San Diego County, approximately 20 miles north of Alpine Park project site. *San Diego Bird Atlas* identifies that migrant ferruginous hawk have been observed wintering in the quadrangle where Wright's Field/Alpine Park is located. However, ferruginous hawk was not observed during any of the many surveys on the property, including surveys conducted during winter months. It is not anticipated to breed in San Diego County.
Grasshopper sparrow (*Ammodramus savannarum*)	-/CSC/SDC Group I/-	Occurs in dry, dense grasslands, especially those with a variety of grasses and tall forbs and scattered shrubs for singing perches. Nests in slight depressions in dense grasslands.	**Moderate potential**. Only one documented CNDDB occurrence of this species is in San Diego County, approximately 13 miles west of BSA. The *San Diego Bird Atlas* identifies that breeding is "probable" and that low counts of grasshopper sparrow have been observed wintering in the quadrangle where Wright's Field/Alpine Park is located. Grasshopper sparrow was not observed during any of the surveys on the property.
Golden eagle (*Aquila chrysaetos*)	-/FP/SDC Group I/MSCP	Nest on cliff ledges or trees on steep slopes. Forage in grasslands, sage scrub or broken chaparral.	**Low potential.** Nesting habitat not present on project site, but species could forage in grasslands.
Lawrence's goldfinch (*Spinus lawrencei*)	BCC/-/-/-	Nests mostly in dry, open oak woodlands with chaparral, weedy fields, and a source of freshwater. They also nest and forage in coastal scrub, pinyon pine–juniper woodlands, and streamside habitats.	**High Potential.** Suitable habitat present within the BSA, including within the proposed active use park area. Species not observed during surveys.

Species Common/ Scientific Name	Status[a] Federal/ State/San Diego County/MSCP	Habitat Requirements	Potential to Occur
Least Bell's vireo (*Vireo bellii pusillus*)	FE/SE/SDC NE/MSCP	Found as a summer resident of Southern California where it inhabits low riparian growth in the vicinity of water or in dry river bottoms below 2,000 feet. Species selects dense vegetation low in riparian zones for nesting; most frequently located in riparian stands between 5 and 10 years old; when mature riparian woodland is selected, vireos nest in areas with a substantial robust understory of willows as well as other plant species.	**None.** Suitable riparian habitat not present on project site.
Northern harrier (*Circus hudsonius*)	-/CSC/SDC Group I/MSCP	Grasslands and marshes. Nests are on the ground and typically concealed within a marsh or other dense, low-growing vegetation. The northern harrier is considered a breeding resident and a migrant species. Nesting harriers are now considered rare and the known breeding population in San Diego County is estimated at 25 to 75 pairs (Unitt 2004).	**Low potential.** There are no CNDDB records of northern harrier within approximately 20 miles of the project site and none were observed during surveys. The *San Diego Bird Atlas* also does not identify possible or probable breeding or wintering in the quadrangle where Wright's Field/County parcel occur.
Oregon vesper sparrow (*Pooecetes gramineus affinis*)	-/CSC/-/- (Wintering)	Obligate grassland species. Wintering grounds are low elevations on mainly open ground with little vegetation or grown to short grass and low annuals, including stubble fields, meadows, and road edges. Winters in Southern California from September to April.	**High potential.** Species not observed during any of the surveys conducted during winter and early spring (e.g., fairy shrimp, Quino checkerspot butterfly) conducted for the proposed project. However, the *San Diego Bird Atlas* notes its presence within "native grassland at Wright's Field."
Red-shouldered hawk (*Buteo lineatus*)	-/-/SDC Group I/-	Found within oak woodlands, riparian woodland, scattered rural residences, orchards, and eucalyptus groves. Through the last quarter of the century it became more and more of an urban bird, adding palms to its repertoire of nest sites.	**Present.** One individual was observed in the BSA foraging over the northern portion of the proposed equestrian staging area.
Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*)	-/WL/SDC Group I/MSCP	Fairly common, widespread, and generally fairly conspicuous resident of rocky grassland and patchy shrub habitats, often including areas with disturbance from fire, trash, soil compaction, and non-native vegetation.	**Moderate potential.** Suitable habitat present within the BSA. Species not observed during any biological surveys for proposed project. The BSA represents the eastern extent of its range in San Diego County.

Species Common/ Scientific Name	Status[a] Federal/ State/San Diego County/MSCP	Habitat Requirements	Potential to Occur
Southwestern willow flycatcher (*Empidonax traillii extimus*)	FE/SE/SDC NE/MSCP	The southwestern willow flycatcher breeds in relatively dense riparian tree and shrub communities associated with rivers, swamps, and other wetlands including lakes and reservoirs.	**None**. Suitable riparian habitat not present on project site.
Swainson's hawk (*Buteo swainsoni*)	-/ST/SDC Group I/MSCP	Inhabits open, dry fields and grasslands. Forages on a variety of prey items, including small mammals, reptiles, and birds. Migratory. According to the *San Diego Bird Atlas,* this species is now a rare migrant, with the Borrego Valley serving as a stating site in the spring.	**Low potential**. Not known to breed in San Diego County. Suitable foraging habitat present on-site but, based on the rarity of sightings in San Diego County for migrating individuals, it is not expected to occur within the BSA.
Tricolored blackbird (*Agelaius tricolor*)	-/CSC/SDC Group I/MSCP	Breeds near fresh water, preferably in emergent wetland with tall, dense cattails or tules, but also in thickets of willow, blackberry, wild rose, tall herbs. Feeds in grassland and cropland habitats.	**None.** Suitable marsh habitat not present within the BSA.
Western bluebird (*Sialia mexicana*)	-/-/SDC Group II/-	Cavity nester that inhabits montane coniferous forest and oak woodlands. Species shows signs of spreading out of its primitive range, colonizing urban areas with mature trees and lawns.	**Present.** Observed during coastal California gnatcatcher surveys.
White-tailed kite (*Elanus leucarus*)	-/FP/SDC Group I/-	Species is wide-spread over the coastal slope of San Diego County, preferring riparian woodland, oak groves, or sycamore groves adjacent to grasslands. White-tailed kites build their nest in the crowns of trees, especially the coast live oak, or on clumps of mistletoe. They also use non-native trees and large shrubs for nest sites.	**High potential.** There are no CNDDB records of white-tailed kite within approximately 15 miles of the project site and none were documented during surveys. Although this species is more commonly found in coastal San Diego County, the BSA provides suitable nesting and foraging habitat. The *San Diego Bird Atlas* also identifies possible breeding and/or wintering in the quadrangle where Wright's Field/County parcel occur. Species was not documented during surveys, despite it being very conspicuous.
Yellow-breasted chat (*Icteria virens*)	-/CSC/SDC Group I/-	Dense riparian woodland.	**None.** Suitable marsh habitat not present within the BSA.

Species Common/ Scientific Name	Status[a] Federal/ State/San Diego County/MSCP	Habitat Requirements	Potential to Occur
Mammals			
American badger (*Taxidea taxus*)	-/CSC/SDC Group II/MSCP	Associated with large grassland and sparse sage scrub habitats. Occupies large dens/burrows and forages on small mammals (e.g., ground squirrels, rabbits), snakes, birds, and insects.	**Low potential**. Suitable grassland habitat present on-site but never observed during any of the numerous surveys conducted on site. This species and its burrows are easily observed if present.
Big free-tailed bat (*Nyctinomops macrotis*)	-/CSC/SDC Group II/-	Inhabits arid, rocky areas; roosts in crevices in cliffs. Has been recorded in urban locations in San Diego County. Species is rare in California.	**Present**. Documented during focused bat surveys in 2019.
Dulzura pocket mouse (*Chaetodipus californicus femoralis*)	-/CSC/SDC Group II/-	This species prefers dense chaparral and is less common in dry grassland and scrub. Burrows are excavated in gravelly or sandy soil.	**Low potential.** This species does not utilize heavy clay soils such as those within the project area. In addition, there is very little chaparral within the BSA.
Northwestern San Diego pocket mouse (*Chaetodipus fallax fallax*)	-/CSC/SDC Group II/-	Sandy herbaceous areas, usually in association with rocks and coarse gravel in southwest California; coastal and desert border areas in San Bernardino, Riverside, and San Diego counties. Elevation ranges from sea level to 6,000 feet. Vegetation community preferences include sage scrub, chamise-redshank chaparral, mixed chaparral, sage brush, desert wash, desert scrub, desert succulent scrub, pinyon-juniper, annual grassland.	**Moderate potential.** Suitable habitat present on project site. Sandy micro-habitat conditions not present within the BSA, although small pockets of sandy soils may be present.
Pallid bat (*Antrozous pallidus*)	-/CSC/SDC Group II/-	Species is found from coast to mixed conifer forest; grasslands, shrublands, woodlands, and forest; most common in open, dry habitats with rocky areas for roosting; year-long resident in most of range. Roosts in rock crevices, caves, mine shafts, under bridges, in buildings and tree hollows.	**Present.** Documented during focused bat surveys in 2019.
Pocketed free-tailed bat (*Nyctinomops femorosaccus*)	-/CSC/SDC Group II/-	Lives in deserts and sage scrub, roosts in rocky crevices.	**Present.** Documented during focused bat surveys in 2019.

Species Common/ Scientific Name	Status[a] Federal/ State/San Diego County/MSCP	Habitat Requirements	Potential to Occur
San Diego black-tailed jackrabbit (*Lepus californicus bennettii*)	-/CSC/SDC Group II/-	Common throughout state, except at high elevations in herbaceous and desert shrub areas, sage scrub, grasslands, open chaparral and woodland/forest areas; relatively disturbance tolerant.	**Moderate potential**. Suitable habitat present on-site.
San Diego desert (Bryant's) woodrat (*Neotoma lepida intermedia*)	-/CSC/SDC Group II/-	Dry and/or sunny shrublands, favoring (but not requiring) areas with cacti and abundant rocks and crevices. Does not require a source of drinking water. Sage scrub communities are frequently occupied.	**Moderate potential.** Suitable habitat present on-site.
Stephen's kangaroo rat (*Dipodomys stephensi*)	FE/CT/SDC Group I/-	Occurs in open grasslands that consist of native and nonnative annual herbs, filaree, and native and nonnative grasses. Also occurs in sparsely vegetated coastal sage scrub habitats with perennial species such as Encelia, coastal sagebrush, and California buckwheat occur. Certain nonnative grasses can exclude this species from otherwise suitable habitat (e.g., *Bromus diandrus*). Found from approximately 55–1,250 m above sea level and typically occurs on relatively flat or gently sloping ground.	**None**. The BSA is far outside of the species known range in San Diego County, which is northern San Diego County. In addition, the heavy clay soils would exclude this species from the BSA, which prefers looser gravel soils.
Townsend's big-eared bat (*Corynorhinus townsendii*)	-/CSC/SDC Group II/-	Species can be found in a variety of habitats throughout the state where appropriate roosting habitat exists. Roosts primarily in caves and cavern-like spaces; also include in abandoned buildings, mines, culverts, box-like spaces in bridges and other structures, and large hollows in trees. Very sensitive to human disturbances.	**Present**. Documented during focused bat surveys in 2019.
Western long-eared myotis (*Myotis evotis*)	-/-/SDC Group II/-	Found in a wide range of habitats, but is most common in mixed coniferous forests, from humid coastal areas to montane forests. Roosts in tree cavities in dense forests, stumps, large snags for day roosts. These bats usually prefer snags that reach high into or above the forest canopy. Also found roosting in the crevices of boulders. Other places that function as day roosts are abandoned buildings, cracks in the ground, caves, mines, and loose bark on living and dead trees.	**Present.** Documented during focus bat surveys in 2019.

Species Common/ Scientific Name	Status[a] Federal/ State/San Diego County/MSCP	Habitat Requirements	Potential to Occur
Western mastiff bat (*Eumops perotis californicus)*	-/CSC/SDC Group II/-	Primarily a cliff dwelling species for breeding. Found foraging in a variety of habitats, from dry desert washes, flood plains, chaparral, oak woodland, open ponderosa pine forest, grassland, montane meadows, and agricultural areas.	**Present.** Documented during focused bat surveys in 2019.
Western red bat (*Lasiurus blossevillii*)	-/CSC/SDC Group II/-	Usually among dense foliage, in forests and wooded areas, making long migrations from the northern latitudes to warmer climes for winter, sometimes hibernates in tree hollows or woodpecker holes.	**Present**. Documented during focused bat surveys in 2019.
Western small-footed myotis (*Myotis ciliolabrum*)	-/-/SDC Group II/-	Rears young in cliff-face crevices, erosion cavities, and beneath rocks on the ground. Commonly found near sources of water with a large insect population. Elevation of selected habitats ranges from 300 to 3,300m above sea level. These bats are unique in that they do not roost in trees, inhabiting cliff faces and rocky outcroppings no farther than 2 km away from their foraging grounds.	**Present**. Documented during focused bat surveys in 2019.
Western yellow bat (*Lasiurus xanthinus*)	-/CSC/-/-	Species recorded below 600 m (2,000 ft) in valley foothill riparian, desert riparian, desert wash, and palm oasis habitats. Occurs year-round in California. Forages over water and among trees. Roosts in trees. Has been captured roosting under palm trees. Probably forms small maternity groups in trees and palms.	**Present**. Documented during focused bat surveys in 2019.
Yuma myotis (*Myotis yumanensis*)	-/-/SDC Group II/-	Optimal habitats are open forests and woodlands with sources of water over which to feed. Roosts in buildings, mines, caves, or crevices. Fairly common in San Diego County.	**Present.** Documented during focused bat surveys in 2019 and 2022.

Species Common/ Scientific Name	Status[a] Federal/ State/San Diego County/MSCP	Habitat Requirements	Potential to Occur

[a] Status Codes

Federal

FE–listed as endangered under the federal Endangered Species Act.
FT–listed as threatened under the federal Endangered Species Act.
FP–listed as fully protected.
F Delisted–delisted.

State

SE–listed as endangered under the California Endangered Species Act.
ST–listed as threatened under the California Endangered Species Act.
CT–candidate threatened.
S Delisted–delisted.
CDFW FP–fully protected species in California.
CSC–species of special concern in California.
WL –Watch List.

CA Rare Plant Rank (CRPR) – Formerly known as CNPS List

1A. Presumed extirpated in California and either rare or extinct elsewhere.
1B. Rare, threatened, or endangered in California and elsewhere.
2A. Presumed extirpated in California, more common elsewhere.
2B. Rare, threatened, or endangered in California, more common elsewhere.
3. Plants for which we more information is needed–Review List.
4. Plants of limited distribution–Watch List

Threat Ranks

.1–Seriously endangered in California.
.2–Fairly endangered in California.
.3–Not very endangered in California.

San Diego County Group (SDC Group)

I–includes animal species that have a very high level of sensitivity, either because they are listed as threatened or endangered or because they have very specific natural history requirements that must be met.
II–includes animal species that are becoming less common but are not yet so rare that extirpation or extinction is imminent without immediate action. These species tend to be prolific within their suitable habitat types.
NE–narrow endemic species.

County MSCP–Covered Species under the MSCP South County Subarea Plan

San Diego County Sensitive Plant List

A–Rare, threatened, or endangered in California and elsewhere.
B–Rare, threatened, or endangered in California but more common elsewhere.
C–Maybe quite rare, but more information is needed to determine their status.
D–Limited distribution and uncommon but not presently rare or endangered.